

CHEMICAL AND PETROCHEMICAL STATISTICS AT A GLANCE-2023

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Government of India
Ministry of Chemicals & Fertilizers
Department of Chemicals & Petrochemicals

MESSAGE

The “Chemical & Petrochemical Statistics at a Glance”, an annual publication by the Department, serves as a reliable resource for evaluating the performance of the chemical and petrochemical sector, a major contributor to India’s economy. This sector has vast potential to drive economic growth for betterment of Indian economy.

I am glad to note that the “Chemical and Petrochemical Statistics at a Glance – 2023” publication, prepared by the Statistics and Monitoring (S&M) Division, provides a thorough statistical analysis of key indicators in the chemical sector. The data and insights in this publication will be invaluable for tracking the industry’s progress and pinpointing areas in need of further development.

I appreciate the efforts of the officers and officials of S&M Division for their hard work and dedication in producing this comprehensive publication. Their efforts in collecting and analysing data from various sources have made this year’s edition possible.

My best wishes to everyone involved.


(Ganga Kumar)



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अमृत महोत्सव



भारत सरकार
GOVERNMENT OF INDIA
रसायन और उर्वरक मंत्रालय
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Preface

The Statistics and Monitoring (S&M) Division, Department of Chemicals and Petrochemicals is mandated for gathering, organizing, and maintaining statistical data on chemical and petrochemical products from manufacturing units nationwide. The publication of “*Chemical and Petrochemical Statistics at a Glance – 2023*” offers a detailed and current overview of various facets of the chemical industry. The publication covers trends in installed capacity, production, consumption, and trade by group and product, along with crucial economic indicators such as the Index of Industrial Production (IIP), Wholesale Price Index (WPI), Gross Value Added (GVA), and others. Accurate and up-to-date data is vital for policymakers, stakeholders, and data users in the chemical sector. This resource serves as a valuable tool for understanding the sector's performance, identifying growth opportunities, and developing strategies for sustainable development.

The support of various ministries, departments, and organizations—including the Ministry of Statistics & Programme Implementation (MoS&PI), Directorate General of Commercial Intelligence and Statistics (DGCI&S), Directorate General of Foreign Trade (DGFT), Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry, Ministry of Petroleum and Natural Gas, and the Ministry of Agriculture & Farmers Welfare—is highly commendable. Their contributions have provided updated inputs that will offer valuable insights and data to all stakeholders in the chemical and petrochemical sector.

I applaud the efforts of the S&M Division team in the Department for presenting this statistical information in a user-friendly format, making it readily accessible to policymakers, investors, researchers, and industry professionals. I extend my best wishes for their continued success in delivering valuable statistical data to all stakeholders. This publication can also be accessed on the Department's website at <https://chemicals.gov.in/statistics-at-glance>.

The feedback towards enhancing the quality and relevance of future editions of this publication is welcomed.


(Ram Sajeevan)

Dated 19th November, 2024

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Introduction

Acronyms

Coverage

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Chemical and Petrochemical Sector is one of the pioneering sectors having an impact on day to day needs of the society. Chemical Industry is playing a vital role in addressing our basic needs in the fields of food and water security, shelter, clothing and textiles, health care, information, communication and entertainment and many more. In order to boost domestic production capacities as a part of Petroleum Sector, Chemicals and Petrochemicals Investment Regions (PCPIRs) policy, a perspective planning for the chemical and petrochemical industry has been initiated to study demand supply scenario keeping in view the existing and under execution capacities. This will help to realize India's vision of becoming self-reliant and provide substantial employment to the youth in the Chemical Sector.

2. Statistics and Monitoring (S&M) Division under the Department of Chemicals & Petrochemicals (DCPC) compiles statistics on monthly production data and installed capacity of selected Chemical and Petrochemical products from large and medium scale units. It also derives estimates of consumption of the chemical's products in the country. Data on Export and Import of Chemical and Petrochemical items are being maintained by the DCPC based on the data received from the Directorate General of Commercial Intelligence and Statistics (DGCIS), Ministry of Commerce and Industry.

3. This publication consists of seven chapters, namely,

- Chapter-1: An Overview of Chemical and Petrochemical Sectors;
- Chapter-2: Global Scenario;
- Chapter-3: Important Economic Indicators;
- Chapter-4: Important Definitions of CPC Coding System and Economic System;
- Chapter-5: Indices Released by Government of India;
- Chapter-6: ChemIndia - Chemicals inventory of India;
- Chapter-7: Relevant National & International regulations for C&PC Sector
- Chapter-8: Glimpses of Important Trends from the FY 2018-19 to FY 2022-23.

Chapter-1 besides defining Basic Chemicals, Specialty Chemicals & Agro-chemicals, also presents the latest status of Chemical Sector in India. Chapter-2 presents the status of Indian Chemical Sector vis-a-vis other countries of the world. Chapter-3 provides important statistics like GVA, Index of Industrial Production, Export and Import of Chemical sector. Chapter-5 describes important indices like Index of Industrial Production (IIP), Consumer Price Index (CPI) & Wholesale Price Index (WPI). Chapter-7 provides Relevant National & International regulations for C&PC Sector. Chapter-8 provides graphical representation of trends as well as summarise information

from the FY 2018-19 to FY 2022-23 on Production, Installed Capacity, Import and Export for various groups under Major Chemicals and Major Petrochemicals along with brief analysis. At the end of the Appendices Section, Statistical tables presenting information inter-alia on Production, Installed Capacity, Capacity Utilization, Imports / Exports along with their growth rates from the FY 2015-16 to FY 2022-23 have also been provided. Detailed table on Foreign Trade, FDI, IIP, WPI etc. related to Chemical and Petrochemical Sector have been included in the Appendices Section.

4. The share of Gross Value Added (GVA) of Chemicals Sector in the Manufacturing Sector in the FY 2021-22 is about 9.2% at current prices. GVA of Chemical Sector has grown with CAGR of 8.3% from the FY 2016-17 to FY 2021-22.

5. The production of selected Major Chemicals and selected Basic Major Petrochemicals for each Group is generally found to be growing consistently over the years. In case of Major Chemicals, the production has grown with a CAGR of 4.0% over a period of 8 years while Basic Major Petrochemicals has grown with a CAGR of 2.8% during the same period.

6. Installed Capacity utilization of basic Major Chemicals was 78.8% in the FY 2022-23 while it was around 84.1% in case of Basic Major Petrochemicals over the last year. The utilization of installed capacity was around 85.5% and 67.2% for the Alkali Chemicals and Inorganic Chemicals respectively in the FY 2022-23. The utilization of installed capacity was 103.4% for the Synthetic Detergent Intermediates whereas, it was 89.1%, 88.4%, 85.9% and 52.6% for Polymers, Synthetic Fibres, Synthetic Rubber and Performance Plastics respectively in the FY 2022-23.

7. Among Selected Major Chemicals, there was a substantial import of Inorganic Chemicals and Organic Chemicals into the country in the FY 2022-23. Amongst Inorganic Chemicals, three products, namely, Carbon Black (Rs.1,652/- crore), Calcium Carbonate (Rs.1,119/-crore) and Aluminium Fluoride (Rs.562/- crore) had been imported worth more than Rs.3,300/- crores. Amongst Organic Chemicals, seven products, namely, Methanol (Rs.7,524/- crore), Acetic Acid (Rs.5,127/- crore), Phenol (Rs.2,422/- crore), Citric Acid (Rs.1,407/- crore), Aniline (Rs.1,375/- crore), Maleic Anhydride (Rs.945/- crore), and Acetone (Rs.659/- crore) had imported worth more than Rs.19, 400/- crore. (Table 17).

8. Amongst Selected Basic Major Petrochemicals, substantial import was seen for Polymers, Synthetic Rubber and Synthetic Fibres/Yarn into the country in the FY 2022-23. Amongst Polymers, three products, namely, Polypropylene (Inc. Co-Polymer) (Rs. 17,789/-crore), High Density Polyethylene (Rs. 16,909/-crore) and Poly Vinyl Chloride (Rs. 5,347/-crore) had import of approximately Rs. 40,000/-crore. Amongst Synthetic Rubber, four products, namely, Ethyl Vinyl Acetate (Rs. 4,070/-crore), Styrene Butadiene Rubber (SBR) (Rs. 2,873/-crore), Poly Butadiene Rubber (Rs. 2,336/-crore) and Butyl Rubber (Rs. 1,540/-crore), was imported of approximately worth Rs. 10,800/-crore into the country (Table 25).

9. The trade deficit in the FY 2022-23 (i.e. net import) in Chemicals and Petrochemicals Sector (comprising chapters 28, 29, 32, 38, 39, 4002, 54 and 55 of HS code) was Rs. 2,60,782/-crore as per information on DGCIS portal (Table 12 A). The trade deficit of selected Major Chemicals and Petrochemical Products was around Rs. 75,190 /-crore as per figures received from DGCIS, Kolkata (Tables 15 & 23). The export / import monitored by DCPC are basically intermediate in nature.

10. In respect of Major Chemicals at group level, it is observed that Pesticides and Dyes & Pigments were in trade surplus whereas Alkali Chemicals, Inorganic Chemicals and Organic Chemicals were in trade deficit during 2022-23 (Table 18). However, in respect of Major Petrochemicals at group level Synthetic Fibre, Olefins and Aromatics were in trade surplus, whereas, Fibre Intermediates, Polymers, Synthetic Rubber, Synthetic Detergent Intermediates, Performance Plastics and Other Petro-based Chemicals were in trade deficit during the same period (Table 26). This aggregates to overall trade deficit in both Major Chemicals and Major Petrochemicals which resulted into net trade deficit for Chemicals and Petrochemicals sector.

Acronyms

AF	Acrylic Fiber (including Dry Spun)
ASI	Annual Survey of Industries
ACN	Acrylonitrile
CAGR	Compound Annual Growth Rate
CEFIC	European Chemical Industry Council
NSO	National Statistical Office
CSO	Central Statistics Office
CPI	Consumer Price Index
DGCI&S	Directorate General of Commercial Intelligence & Statistics
DPIIT	Department for Promotion of Industry and Internal Trade
DMT	Dimethyl Terephthalate
EO	Ethylene Oxide
EPDM	Ethyl Propylene Dimers
EVA	Ethyl Vinyl Acetate
EX-PS	Expandable Polystyrene
FY	Financial Year
FDI	Foreign Direct Investment
GVA	Gross Value Added
HBR	Halo Butyl Rubber
HDPE	High Density Polyethylene
IIP	Index of Industrial Production
IIR	Iso Butylene Isoprene Rubber
ISIC	International Standard Industrial Classification
ITC (HS)	Indian Trade Classification (Harmonized System)
KTPA	Thousand Tons Per Annum
LAB	Linear Alkyl Benzene
LDPE	Low Density Polyethylene
LLDPE	Linear Low Density Polyethylene
MEG	Mono Ethylene Glycol
MEK	Methyl Ethyl Ketone
MMA	Methyl Methacrylate

MMSCM	Million Metric Standard Cubic Meters
MoSPI	Ministry of Statistics and Programme Implementation
MT	Metric Tons
NBR	Nitrile Butadiene Rubber
NFY	Nylon Filament Yarn
NIC	National Industrial Classification
NIY	Nylon Industrial Yarn
ONCB	Ortho Nitro Chloro Benzene
PAN	Phthalic Anhydride
PBR	Poly Butadiene Rubber
PBT	Polybutylene Terephthalate
PET	Polyethylene terephthalate
PIB	Poly Isobutylene
PFY	Polyester Filament Yarn
PG	Propylene Glycol
PMMA	Polymethyl Methacrylate
PNCB	Para Nitro Chloro Benzene
PO	Propylene Oxide
PP	Polypropylene
PPFY	Polypropylene Filament Yarn
PPSF	Polypropylene Staple Fibre
PS	Poly Styrene
PSF	Polyester Staple Fibre
PSFF	Polyester Staple Fibre Filament
PTA	Purified Terephthalic Acid
PVC	Poly Vinyl Chloride
SAN	Styrene Acrylonitrile
SBR	Styrene Butadiene Rubber
UNSC	United Nations Statistical Commission
VAM	Vinyl Acetate Monomer
WPI	Wholesale Price Index
CAS	Chemical Abstracts Service
UN	United Nations

Coverage

Major Chemicals			
S. No.	Group	Products	
I	Alkali Chemicals	Soda Ash	Caustic Soda
		Liquid Chlorine	
II	Inorganic Chemicals	Aluminium Fluoride	Calcium Carbide
		Carbon Black	Potassium Chlorate
		Sodium Chlorate	Titanium Dioxide
		Red Phosphorous	Hydrogen Peroxide
		Calcium Carbonate	
III	Organic Chemicals	Acetic Acid	Acetic Anhydride
		Acetone	Phenol
		Methanol	Formaldehyde
		Nitrobenzene	Citric Acid
		Maleic Anhydride	Pentaerythritol
		Aniline	Chloromethane
		ONCB	PNCB
		MEK	Acetaldehyde
		Ethanol amines	Ethyl Acetate
		Menthol	Ortho- Nitro Toluene
		Isobutyl Benzene	
IV	Pesticides (Technical Grade)	D.D.T.	Malathion
		Parathion(Methyl)	Dimethoate
		D.D.V.P.	Quinalphos
		Monocrotophos	Phosphamidon
		Phorate	Ethion
		Endosulfan	Fenvalerate
		Cypermethrin	Anilophos
		Acephate	Chlorpyrifos
		Phosalone	Metasystox
		Temephos	Fenthion
		Triazophos	Lindane
		Temephos	Deltamethrin
		Alphamethrin	Profenofos Technical

S. No.	Group	Products	
		Pretilachlor Technical	Lambda Cyhalothrin
		Phenthoate	Permethrin Tech
		Imidacaloprid Tech	Captan & Captafol
		Ziram (Thio Barbamate)	Carbendazim (Bavistin)
		Calixin	Mancozeb
		Copper-Oxychloride	Hexaconazole
		Metconazole	2, 4-D (2,4-Dichlorophenoxyacetic acid)
		Butachlor	Ethofumesate Technical
		Thiamethoxam Technical	Pendimethalin
		Metribuzin	Triclopyr Acid Tech
		Isoproturon	Basalin
		Glyphosate	Paraquat
		Diuron	Atrazin
		Fluchloralin	Zinc Phosphide
		Aluminium Phosphide	Methyl Bromide
		Dicofol	
V	Dyes and Pigments	Acid Direct Dyes (other than AZO)	Azo Dyes
		Basic Dyes	Disperse Dyes
		Oil soluble (Solvent Dyes)	Fast Colour Bases
		Ingrain Dyes	Solubilised Vat Dyes
		Optical Whitening Agents	Organic Pigments
		Inorganic Pigments	Pigment Emulsion
		Reactive Dyes	Sulphur Dyes
		Vat Dyes	Food Colours
		Naphthols	Other Dyes

Major Petrochemicals			
A. Basic Major Petrochemicals			
S. No.	Group	Products	
I	Synthetic Fibres	Acrylic Fibre	Polyester Staple Fibre Filament
		Nylon Filament Yarn	Nylon Industrial Yarn/Tyre Cord
		Polyester Filament Yarn	Polyester Staple Fibre
		Polypropylene Filament Yarn	Polypropylene Staple Fibre
		Polyster Industrial Yarn	Elastomeric/Spandex Filament Yarn
II	Polymers	Low Density Polyethylene	High Density Poly Ethylene
		Poly Styrene	Polypropylene (Inc. Co-Polymer)
		Expandable Poly Styrene	Poly Vinyl Chloride
		Linear Low Density Poly Ethylene	PVC Compound
III	Synthetic Rubber (Elastomers)	Styrene Butadiene Rubber (SBR)	Poly Butadiene Rubber (PBR)
		Nitrile Butadiene Rubber (NBR)	Ethyl Propylene Dimers (EPDM)
		Ethyl Vinyl Acetate (EVA)	Butyl Rubber
IV	Synthetic Detergent Intermediates	Linear Alkyl Benzene (LAB)	Ethylene Oxide (EO)
V	Performance Plastics	Acrylonitrile Butadiene Styrene (ABS) Resin	Nylon-6
		Nylon 6,6	Poly Methyl Methacrylate (PMMA)
		Styrene Acrylonitrile (SAN) Resin	Polytetrafluoroethylene(PT FE)
		Polyester Chips/PET Chips	
B. Intermediates			
I.	Fibre Intermediates	Acrylonitrile	Caprolactum
		Mono Ethylene Glycol (MEG)	Dimethyl Terephthalate (DMT)
		Purified Terephthalic Acid (PTA)	
II.	Building Blocks	(a) Olefins	
		Ethylene	Propylene
		Butadiene	
		(b) Aromatics	
		Benzene	Toluene
		Ortho Xylene	Para Xylene
		Mixed Xylene	

C. Other Petro-based Chemicals		
Diethylene Glycol	Diacetone Alcohol	Ethylene Dichloride
Butanol	Oxo Alcohol	2-Ethyl Hexanol
Vinyl Chloride Monomer	Epichlorohydrine	Iso Butylene
PET	PIB	Polycarbonate
Propylene Oxide	Propylene Glycol	Polyvinyl Acetate Resin
Unsaturated Polyester Resin	Methyl Methacrylate	Iso-Butanol
Ethyl Benzene	C4-Raffinate	Cellulose Acetate Butyrate
Polyacetal Resin	Phthalic Anhydride	Styrene
Vinyl Acetate Monomer	Isopropanol	Polyol
Metaxylene	Methyl Isobutyl Ketone	PBT
Cellulose Acetate Sheet	Cellulose Nitrate Sheet	Melamine Moulding Powder

Data Sources & Definitions

The major sources of data presented in this publication are:

i	Production & Installed capacities	Production of Major Chemicals and Petrochemicals and their installed capacities have been aggregated based on monthly returns received from large and medium scale Chemicals & Petrochemicals Industries of the country.
ii	Imports & Exports	Directorate General of Commercial Intelligence & Statistics (DGCIS), Ministry of Commerce & Industry, Kolkata.
iii	FDI	Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry, New Delhi.
iv	IIP	National Statistical Office (NSO), Ministry of Statistics & Programme Implementation, New Delhi.
v	WPI	Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry, New Delhi.
vi	Chemical Industry (Broad definition)	The chemical industry includes organic chemicals, inorganic chemicals, pharmaceuticals products, fertilizers, tanning or dyeing extracts, dyes pigments, paints and varnishes, putty and other mastics inks, essential oils, perfumery cosmetic, soap, organic surface, active agents, washing, lubricating, artificial waxes, dental waxes, polishing, albuminoidal substance, modified starches, glues, enzymes, explosive, pyrotechnic products, beverages, spirits and vinegar, matches, pyrophoric alloys, photographic or cinematographic goods, miscellaneous chemical products, petrochemicals, plastics synthetic, rubber, man-made filaments, man-made fibre.
vii	Chemicals and Petrochemicals (Narrow definition)	The Chemicals and Petrochemical products monitored by the Department of Chemicals & Petrochemicals are selected major products and the list of these products is given in the tables 3 & 8 respectively. Unless contrary is mentioned, the terms 'Major Chemicals' and 'Major Petrochemicals' refer to the products or groups thereof as enumerated in the tables 3 & 8.

Duration of the Data

Data	Data Source	Duration
Installed Capacity Production	DCPC	FY 2015-16 to FY 2022-23
Import / Export	DGCIS, Kolkata, M/o Commerce and Industry	FY 2015-16 to FY 2022-23
Exchange Rates of Indian Rupee vis-à-vis US\$	Financial Benchmarks India Private Limited (https://www.fbil.org.in)	April 2020 to March 2023
FDI	DPIIT	FY 2020-21 to FY 2022-23
IIP	MoSPI	FY 2015-16 to FY 2022-23
WPI	Office of the Economic Advisor (http://eaindustry.nic.in)	FY 2016-17 to FY 2022-23
Gross value added, Value Output	MoSPI	FY 2016-17 to FY 2021-22
World Import / Export	UN Comrade	2022
Number of factories, Number of Workers, Total output	Annual Survey of Industries	FY 2017-18 to FY 2021-22

Chapter 1

The chemical industry is the backbone of industrial and agricultural development of the country and provides building blocks for several downstream industries, such as textiles, papers, paints, soaps, detergents, pharmaceuticals, varnish etc. It is one of the most diversified sectors of all industrial sectors covering thousands of commercial products. Indian chemical industry comprises of small scale, medium scale as well as large scale units. With initiatives like "Make in India" programme gaining steam, investments, innovation and infrastructure are going to be the major thrust areas for chemical industry players. The current per capita consumption of chemical products in India is about 1/10 of the world average, indicating that the demand potential is yet to be realized. The industry is important as it has several linkages with other sectors of an economy. Petrochemicals have backward linkages with other industries in petroleum refining, natural gas processing and forward linkages with industries dealing variety of downstream products. Also, the industry offers alternatives, which serve as substitutes for natural products and therefore, it has the capacity to meet the constantly growing demand that would otherwise strain the natural resources. The value additions in the petrochemicals chain offer immense possibilities and cater to the need of textiles and clothing, agriculture, packaging, infrastructure, healthcare, furniture, automobiles, information technology, power, electronics and telecommunication, irrigation, drinking water, construction needs and host of other articles of daily and specialized usage, amidst other emerging areas.

1.2 In Chemicals sector, 100% FDI in India is allowed under the automatic route (except in the case of certain hazardous chemicals). Manufacture of most chemical products, inter-alia, covering organic / inorganic, dyestuffs & pesticides is de-licensed. The entrepreneurs need to submit only Industries Entrepreneur Memorandum (IEM) with the Department of Industrial Policy & Promotion provided location of the project falls outside standard urban area limits of metropolitan cities and municipal cities. However, the following items are still covered in the compulsory licensing list because of their hazardous nature as required by international conventions.

- Hydrocyanic acid & its derivatives
- Phosgene & its derivatives

- Isocyanates & di-isocyanates of hydrocarbons.

1.3 Chemicals can be broadly divided into the following sub-groups: -

Two broad categories within the chemical industry, each with its own characteristics and purposes are:

1. Basic Chemicals are known as commodity-type chemicals which are usually produced in large quantities and are essential for the manufacturing of a wide range of goods.

Examples of basic chemicals include:

- I. Petrochemicals: Chemicals derived from petroleum or natural gas, such as ethylene, propylene, and benzene, used as raw materials for plastics, synthetic fibres, and more.
 - II. Inorganic Chemicals: Chemicals like sulphuric acid, chlorine, and ammonia used in various industrial processes, including manufacturing fertilizers and metals.
 - III. Bulk Polymers: These are polymers produced in large quantities, such as polyethylene, polypropylene, and polyvinyl chloride (PVC), which are used in plastics manufacturing.
2. Specialty Chemicals are higher value-added chemicals that are produced in smaller quantities and are often tailored to specific applications. These chemicals provide unique properties or functions and are used in various industries, including pharmaceuticals, electronics, cosmetics, and more.

Examples of specialty chemicals include:

- I. Pharmaceutical Intermediates: Chemical compounds used as intermediate steps in the production of pharmaceutical drugs.
- II. Agrochemicals: Chemicals like pesticides, herbicides, and fertilizers used in agriculture to enhance crop yield and protect plants from pests and diseases.
- III. Performance Chemicals: Chemicals designed to provide specific properties, such as flame retardants, anti-corrosion agents, and coatings.
- IV. Electronic Chemicals: Chemicals used in the manufacturing and assembly of electronic components, such as semiconductors and printed circuit boards.

1.4 Further, Chemicals are broadly classified into the following groups:

I. Alkali:

Alkali also known as a base, are typically found on the opposite end of the pH scale with pH values above 7 and are known for their ability to neutralize acids and react with them to form salts and water in a process called neutralization.

The main characteristics of alkalis include:

- They taste bitter unlike acids which taste sour.
- They are slippery or soapy to touch due to the reaction of alkalis with the natural oils on the skin, forming soap-like substances.
- They have the ability to turn red litmus paper blue.
- They react with acid, to form salt and water, neutralizing the acidic properties.
- The pH scale ranges from 0 to 14, with 7 being neutral, alkalis have pH values greater than 7, indicating their basic nature.

Examples of alkalis include sodium hydroxide (NaOH), potassium hydroxide (KOH), calcium hydroxide (Ca (OH)₂), and ammonia (NH₃).

II. Inorganic chemicals:

Inorganic chemicals are chemical compounds that do not contain carbon-hydrogen (C-H) bonds.

Key characteristics of inorganic chemicals include:

- They contain elements such as metals, non-metals, and metalloids. They can form various ionic or covalent bonds without the presence of carbon-hydrogen bonds.
- They encompass a diverse range of compounds. Examples include salts (such as sodium chloride), metals and metal oxides (like iron oxide), minerals (e.g., calcium carbonate), acids and bases (like sulfuric acid and sodium hydroxide, respectively) etc.
- They are naturally occurring and can be found in minerals, rocks, soil, water, and the atmosphere.
- They are used in agriculture Industry as fertilizers, in medicine field as metal-based drugs or contrast agents for medical imaging, in construction for cement production, in electronics for semiconductor materials, and in many other fields.
- They are either highly stable or can react and participate in redox reactions.

Exceptions: organometallic compounds, which contain metal-carbon bonds are considered a blend of organic and inorganic chemicals

III. Organic Compounds:

Organic chemicals contain carbon atoms bonded with other elements such as hydrogen, oxygen, nitrogen, sulphur, and more.

Key characteristics of organic chemicals include:

- They contain carbon atoms, which have the unique ability to form stable covalent bonds with other carbon atoms and various other elements.
- They include a vast array of compounds, ranging from simple hydrocarbons like methane and ethane to complex molecules like proteins, carbohydrates, lipids, and nucleic acids.
- They form the basis of biomolecules such as sugars, amino acids, fatty acids, and nucleotides, which are crucial for the structure and functioning of cells and living organisms.
- They are used in pharmaceuticals, plastics, synthetic rubber, dyes, pesticides, solvents, perfumes, and many other products.

Note: carbonates, carbides, and cyanides are examples of carbon-containing compounds that fall under the domain of inorganic chemistry, not organic.

IV. Dyes and Pigments:

Dyes and pigments are both colouring agents used to add colour to various materials even though they serve a similar purpose, there are fundamental differences in their properties and applications.

Key characteristics of dyes include:

- They are soluble in liquids, which allows them to be easily applied to different materials.
- They are generally transparent or semi-transparent, allowing the underlying material's colour or texture to show through.
- They are absorbed into the material, resulting in a more permanent and vibrant coloration.
- They are commonly used in the textile industry for colouring fabrics, in the printing industry for inks, and have other applications like food colouring, cosmetics, and medical dyes.

Key characteristics of pigments include:

- They are insoluble in the medium they are applied to, which means they do not dissolve but remain as solid particles.
- They are generally opaque, meaning they cover the underlying material's colour and texture, providing excellent hiding power.
- They are often more stable and resistant to fading than dyes, making them suitable for outdoor applications and products that need to withstand exposure to light, heat, and other environmental factors.

- Pigments are commonly used in paints, coatings, plastics, ceramics, and various other applications.

V. Pesticides and Insecticides:

Pesticides are chemical substances or mixtures of chemicals that are used to mitigate, or eliminate Pests i.e., insects, weeds, fungi, rodents, and other organisms to protect agricultural crops and indirectly protect human health and livestock from their adverse effects.

Pesticides are grouped according to the types of pests they kill, such as:

- Larvicides – Target larvae of insects
- Insecticides: Target insects and arthropods
- Herbicides: Target unwanted plants, commonly known as weeds
- Fungicides: Target fungi and mold that can damage plants
- Rodenticides: Target rodents like rats and mice
- Nematicides: Target nematodes, microscopic worms that can harm plants
- Bactericides and Virucides: Target bacteria and viruses that affect plants

Key characteristics of Pesticides include:

- They help increase agricultural productivity by protecting crops from pests that can cause yield losses.
- They also contribute to reducing the spread of disease vectors, such as mosquitoes carrying malaria or ticks carrying Lyme disease.
- However, their use needs to be balanced with careful consideration of potential environmental and health impacts.
- They are formulated as liquids, powders, granules, aerosols, or gases for specific application methods, such as spraying, dusting, or fumigation.

Examples of common pesticides and insecticides include organophosphate are insecticides, they affect the nervous system of insect, carbamate also affect the nervous system of insect, pyrethroid are synthetic version of pyrethrin, a naturally occurring pesticide, found in chrysanthemums (Flower) etc.

1.5 Petrochemicals are broadly classified into the following groups:

I. Synthetic Fibres:

Synthetic fibres, also known as man-made fibres or synthetic textiles are engineered to have specific properties, making them suitable for various applications in the textile industry. They are designed to imitate or enhance the

characteristics of natural fibres like cotton, silk, or wool, while offering distinct advantages.

Key characteristics of Synthetic fibres include:

- They are not derived from natural sources like plants or animals instead, they are created by polymerizing synthetic materials derived from petrochemicals or other raw materials.
- They can be engineered to have a wide range of properties, including strength, durability, elasticity, water resistance, and colourfastness allowing them to be tailored for specific uses.
- They exhibit resistance to chemicals, mildew, and insects, making them suitable for applications where natural fibres might be less durable.
- They are used in a variety of products, including clothing, home furnishings, industrial textiles, geotextiles, ropes, medical textiles, and more.

Examples of synthetic Fibres include polyester, nylon, acrylic, polypropylene, rayon (Viscose) etc.

II. Polymers:

Polymers are composed of repeating units called monomers. These monomers are chemically bonded together in long chains or networks, to form large molecules. Polymers can be natural or synthetic and have a wide range of applications in various fields.

Key features of polymers include:

- These monomers can be identical or different, linked together through chemical bonds to create the polymer chain. Some polymers can have thousands or even millions of monomer units in their structure.
- They have higher molecular weights being made up of repeating units, resulting in a larger mass for each molecule.
- They have diverse properties, such as flexibility, strength, elasticity, thermal resistance, and electrical conductivity, hence are chemical processed to form materials like plastics, synthetic fibres, and rubber.
- Being versatile they have applications in various industries, such as packaging, textiles, construction, electronics, automotive, healthcare, and more.

Examples of common synthetic polymers include polyethylene (used in plastic bags, bottles, and various packaging materials), polypropylene (found in automotive parts, textiles, and household items), polyvinyl chloride (PVC) (used in pipes, electrical insulation, and vinyl products), polystyrene (used in foam packaging and disposable utensils) polyethylene terephthalate (PET) (used in beverage bottles and synthetic fibres (e.g., polyester).

III. Synthetic rubber

Synthetic rubber also known as elastomers, is a man-made material designed to imitate the properties and characteristics of natural rubber obtained from the latex sap of certain plants.

Key characteristics of synthetic rubber include:

- It is produced by polymerizing various petrochemical-derived monomers, using either emulsion polymerization or solution polymerization.
- They can be engineered to have specific properties, such as elasticity, flexibility, durability, resistance to heat, chemicals, and weathering, making it suitable for diverse applications.

- It is used manufacturing of tires (largest application of synthetic rubber), gaskets, belts, hoses, rubber soles, in industrial goods such as conveyor belts, seals, and in consumer goods such as gloves, swimwear, and inflatable items etc.

Examples of common synthetic rubber include styrene-butadiene rubber (SBR), polybutadiene rubber (BR), neoprene (chloroprene rubber), and nitrile rubber (NBR).

VI. Synthetic detergent:

Synthetic detergents, commonly known as detergents, are cleaning agents that are specifically formulated to remove dirt, stains, grease, and other contaminants from various surfaces. Unlike soap, which is produced via saponification of natural fats and oils, synthetic detergents are chemically synthesized compounds designed to provide effective cleaning

Key characteristics of synthetic detergents include:

- Their molecules allow detergents to break down and emulsify grease and oils, enabling them to be washed away with water.
- They are effective in both soft and hard water i.e., even in presence of calcium and magnesium ions, synthetic detergents do produce lather and maintain their cleaning efficiency.
- They are used in various cleaning products, including laundry detergents, dishwashing liquids, surface cleaners, shampoos, body washes, and more.
- They contain chemicals that may have environmental impacts, surfactant containing wastewater, if discharged into the environment, results in harming aquatic life, polluting the water and endangering human health. Therefore, there's a growing interest in developing environmentally friendly detergents.

Examples of common synthetic rubber include sodium lauryl sulphate (SLS) (used in personal care products like shampoos, body washes, and toothpaste) cetyl trimethyl ammonium chloride (CTAC) (used in fabric softeners, hair conditioners, and some industrial cleaners) linear alkyl benzene sulfonate (LAS) (used in laundry detergents and household cleaners).

V. Performance plastics

Performance plastics, also known as engineering plastics or high-performance polymers, offer advanced mechanical, thermal, electrical, and chemical properties and are specifically designed to withstand challenging conditions and provide enhanced performance compared to standard or commodity plastics.

Key features of performance plastics include:

- They can maintain their mechanical properties over a broad temperature range, from high-temperature applications to extremely low temperatures.
- They often have higher tensile strength, impact resistance, and toughness compared to standard plastics.
- They are resistant to various chemicals, acids, solvents, and corrosive substances, making them suitable for applications involving contact with aggressive environments.
- Some of them exhibit excellent electrical insulating properties and can be used in applications requiring high dielectric strength.
- They have low coefficients of thermal expansion and exhibit minimal creep, maintaining their shape and size even under stress and temperature changes.
- They can have self-lubricating properties, reducing wear and friction in moving parts.
- They have inherent flame-retardant properties, making them suitable for applications where fire safety is a concern.
- Despite their enhanced properties, they are often lighter than metals, making them useful in weight-sensitive applications.

Examples of performance plastics include: polyether ether ketone (PEEK) (used in aerospace, medical implants, and industrial applications.) polytetrafluoroethylene (PTFE) known as Teflon, PTFE (used in non-stick cookware, gaskets, and seals) polyimides (PI) (used in aerospace, electronics, and automotive applications) polyphenylene sulphide (PPS) used in automotive parts, electrical components, and industrial applications.

VI. Fiber intermediates:

Fiber intermediates serve as precursors in the production of synthetic fibres. These intermediates are transformed into polymers through various chemical processes, which are then spun into fibres for use in textiles, plastics, and other applications.

Key points about fibre intermediates include:

- They are the initial building blocks used to create the polymers that form synthetic fibres which are then processed into fibres through spinning and other techniques.
- They may undergo chemical modifications to enhance their properties or adjust their characteristics for specific applications.
- Once they are transformed into polymers and then fibres, can be further processed into textiles, garments, industrial materials, and other products.

Examples of fibre intermediates and their corresponding synthetic fibres include: terephthalic acid and ethylene glycol are combined to produce polyethylene terephthalate (PET) polymer used in textiles, bottles, and packaging. adipic acid and hexamethylenediamine react to form nylon 6,6 polymer used in nylon fibres used in acrylonitrile and other monomers used in the production of acrylic fibres,

which have applications in textiles, clothing, and outdoor fabrics. caprolactam polymerized to create nylon 6 polymer, used in textiles and engineering plastics.

VII. Olefins

Olefins, also known as alkenes, are a class of unsaturated hydrocarbons with at least one carbon-carbon double bond in their molecular structure. They are an important group of organic compounds widely used in various industrial processes and applications. Olefins are commonly found in the production of plastics, polymers, and other chemicals.

Key characteristics of olefins include:

- The defining feature of olefins is the presence of a carbon-carbon double bond ($C=C$) in their chemical structure. This double bond gives them unique reactivity and properties.
- They are unsaturated hydrocarbons, meaning they have fewer hydrogen atoms in their structure compared to their saturated counterparts (alkanes).
- Due to the presence of the double bond, they readily undergo addition reactions, where atoms or groups of atoms are added to the double bond.
- They are crucial feedstocks in the petrochemical industry, are obtained from the cracking of hydrocarbons in processes like steam cracking, which breaks down larger hydrocarbon molecules into smaller olefin molecules.
- They serve as starting materials for the production of various polymers, including polyethylene and polypropylene.
- They are used to produce a wide range of products, including plastics, synthetic rubber, solvents, detergents, and more.

Examples of olefins include ethylene (simplest olefin), propylene (used in the production of plastics, synthetic rubber, and various chemicals), Butenes (used in the production of synthetic rubber, plastics, and fuels), hexenes and heptenes (as intermediates in the synthesis of chemicals and polymers), octenes and nonenes (used in the production of detergents, lubricants, and specialty chemicals)

VIII. Aromatics

Aromatics contain a specific type of cyclic structure called an aromatic ring or benzene ring which is stable and highly conjugated, having alternating single and double bonds.

Key characteristics of aromatic compounds include:

- They are highly stable due to the resonance (delocalization) of electrons over the entire ring. This resonance leads to a distribution of electron density that helps stabilize the molecule.
- They exhibit distinct reactivity patterns i.e., they undergo electrophilic aromatic substitution reactions, where a hydrogen atom in the ring is replaced by another atom or group.

- They are used as starting materials in the production of many chemicals, including plastics, dyes, pharmaceuticals, and solvents.

Examples of olefins include benzene (C₆H₆), simplest example which has a hexagonal ring with three alternating double bonds, toluene, xylene, naphthalene, and various aromatic compounds found in essential oils and perfumes.

1.6 Growth Drivers for the Chemical Sector:

- A large population, huge domestic market, dependence on agriculture and strong export demand are the key growth drivers for this industry.
- A global shift towards Asia as the World's chemicals manufacturing hub.
- Per capita consumption of chemicals in India is lower compared to western countries, so immense scope for new investments.
- Rise in GDP and purchasing power generates huge growth potential for the domestic market.
- A focus on new segments such as specialty and knowledge chemicals.
- Availability of skilled science professionals.
- World-class engineering and strong R&D capabilities.

1.7 Research & Development (R&D)

The Chemical sector is highly heterogeneous encompassing many segments like organic, inorganics, dyestuffs, pesticides, paints, soaps and petrochemicals etc. R&D is critical and of paramount importance for the growth & development of this sector. Continued R&D efforts in the part of the industry helps to improve the quality standards, obtain higher yields resulting reduction in cost of production and to earn competitive edge in the International Market. Indian Chemical Industry spends on R&D to the extent of 2-3% of their total turnover, as against 9-10% by the multi-national companies in overseas countries. The industry would, therefore, have to make large investments in R&D to successfully counter the competition from the international chemicals industry. India has a number of scientific institutions and the country's strength lies in its large pool of highly trained scientific manpower. With the introduction of the Patent Act 2005, product innovation has assumed high importance.

1.8 Foreign Technology Agreements

Foreign Technology Agreements in India cater to the growth of the technology in the Indian industries. The foreign technology is transferred from foreign sources such as research and development agencies, foreign parent companies and other manufacturers to the Indian counterparts. The transfer of foreign technology takes place by the means of foreign direct investments and foreign technology collaboration agreements. Foreign Technology Agreements in India enable transfer of technology by the means of Government approval or through the automatic route delegated by the RBI.

1.9 The Chemical and Petrochemical Industries occupies a pivotal position in meeting some basic human needs and in improving the quality of life. It is extremely important to the economy and is an integral part of everyday life. India has a high population base and thus, faces formidable problems in providing sufficient food, medicines and adequate shelter. From a very modest level of 52 million MT in 1951-52, food grain production increased to about 323.6 million MT in the FY 2022-23 in the country (Second Advance Estimates of Production of Food grains for 2022-23, D/o Agriculture and Farmers Welfare, M/o Agriculture and Farmers Welfare). The chemical industry provides the vital inputs required, chemical fertilizers and pesticides, to augment food production and save crops from attack by a variety of pests in a safe and selective way. The marked improvements in the average life expectancy of our countrymen can be at-least partially attributed to the Chemical Industry which has provided lifesaving drugs and other chemicals required for managing public health care. The problem of housing can be tackled effectively with the assistance of the Chemicals Industry. It plays a crucial role in housing development.

1.10 The Chemical Industry converts raw materials like water, salt, crude oil, natural gas, air, metals minerals, etc. into other valuable products. It has involved in almost every industrial process and therefore plays a significant role in economic and social development. Without Chemical Industry, there would be no electronics or microelectronics, refrigerators, recording tapes, automobiles, laser discs, super magnets, processed foods and virtually all consumer products etc. Even the power industry depends on the Chemical Industry for its operations. The use of chemicals (ion exchange resins) becomes indispensable for removing dissolved salts needs in boilers and other applications. In gold mining, cyanide solution is used for extracting gold. The crude oil refining process uses chemicals, catalysts, heat and pressure to separate and

combine the basic types of hydrocarbon molecules naturally found in crude oil into groups of similar molecules. Apart from providing a variety of drugs for alleviation of human sufferings, the chemical industry provides safe anaesthetic agents and high quality artificial aids including a hip joint made from ultra-low molecular weight polyethylene. Other health products including dental fills, contact lenses and dialyses also depend on the Chemicals Industry.

1.11 Some of the most useful materials, synthetic polymers, also known as plastics, have transformed our lives in the last few decades. The driving force for this development was provided by the need for conservation of natural resources and energy efficiency and inherent advantages of the material which created possibilities of innovative designs and cost savings. Its usefulness, adaptability and flexibility of usage have led to a shift in manufacturing from the conventional material-based products to synthetic products. The production of polymers has increased from 8.84 million tonne in the FY 2015-16 to 11.49 million ton in the FY 2022-23 (CAGR of 3.8%) while its consumption has increased from 12.05 million tons to 15.10 million tons during the same period. (Reference: Table: 6 of Section II)

1.12 Chemicals from petroleum may range from basic petrochemicals such as ethylene, propylene, benzene, xylenes to finished end-products like plastics, rubbers, fibres, detergents, pesticides, dyes etc. These may be classified as (a) first generation, (b) second generation and (c) third generation petrochemicals.

First generation petrochemicals are chemicals directly available from basic inputs such as petroleum crude oil or natural gas, either by fractionation, isomerization, cracking etc. These can also be derived from coal gasification and bio mass. These generally represent the basic petrochemicals, which are the building blocks for various chemical syntheses. Examples of this class of chemicals are methane, ethane, propane, ethylene, propylene, toluene, xylenes etc.

Second generation petrochemicals are the derivatives of the first generation petrochemicals. Example of such products are styrene (derived from benzene and ethylene), dimethyl terephthalate or terephthalic acid (derived from p-xylene), acrylonitrile (derived from propylene), ethylene glycol (derived from ethylene), vinyl chloride monomer (derived from acetylene or ethylene) etc. Second generation petrochemicals constitute the intermediate chemicals which serve as the raw materials for consumer industries like plastics, rubbers, fibres, dyes, detergents etc.

Third Generation Petrochemicals are the consumer commodities derived generally from second generation petrochemicals and represent the most important commercial products such as plastics, rubbers, fibres, detergents etc. Examples are polystyrene (from vinyl chloride monomer), DDT from (chlorobenzene), azo dyes (from styrene), Polyvinyl chloride (from aniline) etc. However, some of the products may be directly synthesized from first generation petrochemicals. Polybutadiene rubber, for instance, is obtained by polymerizing butadiene. Since most of the plastics or rubbers are derived from second generation petrochemicals, polybutadiene rubber is regarded as a third-generation petrochemical. (# Dr. G.N.Sarkar, *Advanced Petrochemicals, First Edition, Khanna Publishers, New Delhi*)

1.13 Chemical sector is predominantly based on feedstock derived from crude oil, natural gas, salt and minerals. Naphtha (used for production of Urea, Aromatics and Olefins), Heavy Gas oil (propylene and ethylene) and Kerosene (Linear Alkyl Benzene) are derived from crude oil. Steam cracking/ Catalytic Reforming of low and high aromatic naphtha in oil refineries provide Olefins (Ethylene, Propylene and Butadiene) and Aromatics (benzene, toluene and xylenes). Natural gas contains Methane (CH₄), Ethane (C₂H₆), Propane (C₃H₈) and Butane (C₄H₁₀). Rich natural gas, which contains C₂ and C₃ in extractable quantity, is used in producing Ethylene and Propylene. Methane is converted into synthesis gas. Synthesis gas is a mixture of carbon monoxide & hydrogen which is used to make ammonia & methanol. Ammonia is used to make Urea and Methanol is used to make acetic acid and derivatives. Consumption of naphtha in petrochemical sector has decreased from 10602 thousand tons in the FY 2018-19 to 10434 (Provisional) thousand ton in the FY 2022-23. The consumption of natural gas for petrochemical sector has decreased from 3386 million standard cubic meter to 1959 million standard cubic meters during the same period. (Reference: Table-42 of Section-VII).

1.14 Olefins and Fibre Intermediates (Acrylonitrile, Caprolactam, Mono Ethylene Glycol, Purified Terephthalic Acid, and Dimethyl Terephthalate) form the basis of the petrochemical industries. Olefins and Aromatics are used in producing Fibre Intermediates. Salt is the feed stock for the Chlor-alkali chemical industry, just as crude oil and Natural Gas for the petrochemical industry. Salt, Aromatics, Minerals (Limestone, Bauxite ore (Aluminium), Rock Phosphate, Sulphur, Iron ore, Indium ore (Tin), Chromite ore, Mica, Silica, Manganese ore, etc.) and Basic metals (Copper, Zinc,

Titanium, Aluminium, Iron, Chromium, Tin, Nickel, etc.) form the basis of chemical industries producing Chlor-Alkali, Organic Chemicals, Inorganic Chemicals, Pesticides and Dyes & Pigments. Dyes are organic compounds and are mainly based on Benzene, Toluene, Naphthalene (from petroleum fractions and coke oven batteries of steel plants), Anthracene and Cyanuric Chloride. Pesticides are mainly based on Benzene, Naphthalene, Phosphorous (produced from phosphate rock) and Sulphur. Pharmaceuticals are mainly based on Benzene, Toluene and Xylene.

1.15 Innovations in additives, alloys, blends, compounds, composites and high grade reinforcement materials such as glass, nano-clays, carbon nano-tubes and carbon fibres require attention for technology development. New developments in the field of bio and photodegradable plastics, are also taking place all over the world. The chemical and petrochemical industries face the challenge to operate in an environmentally acceptable manner. Chemicals are globally tradable and unless chemicals produced in India are cost effective, these cannot contribute usefully to the Nation's economy. With an eye on emerging usages, research and development efforts may focus on the need to modernize and upgrade the existing manufacturing processes, improve the quality of existing products and make them safe for environment and human health.

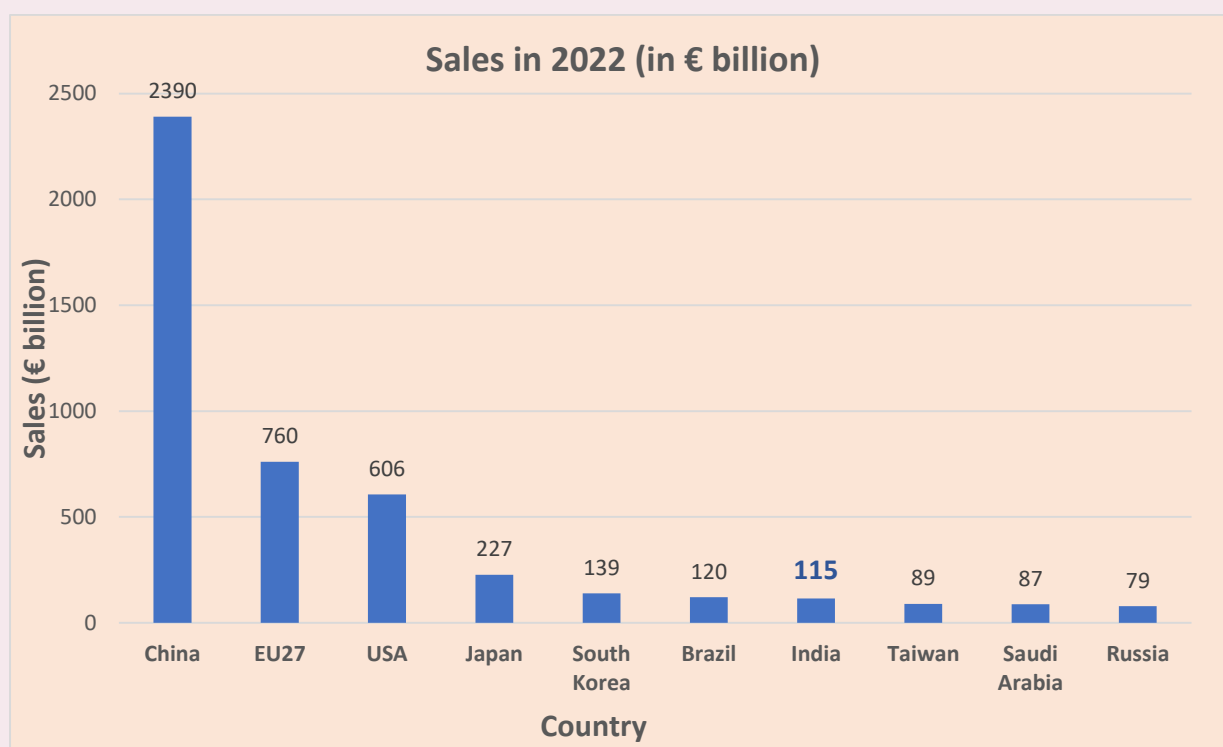
1.16 According to the Annual Survey of Industries (ASI) 2021-22 (factory sector), 10.26 lakh persons were engaged in Chemicals and Chemical Products (Industry Division 20, NIC 2008), in organised sector in medium and large-scale industries, whereas 1.72 crore persons engaged in all industries during FY 2021-22.

Chapter 2

Chapter 2

Global Scenario

As per the European Chemical Industry Council (CEFIC) Report 2023, the world chemicals (excluding pharmaceuticals) sales in 2022 are valued at €5,434 billion. India ranks 4th in Asia and 7th in world with chemicals sales valued at €115 billion in 2022. India's Capital spending in World Chemicals (excluding pharmaceuticals) is valued at €5.0 billion in 2022, as compared to €3.4 billion in 2011. India's R&I spending in the chemicals industry is valued at €2.0 billion in 2022, as compared to €1.1 billion in 2011. Top ten countries in World Chemical sales during 2022 are as under:



Source: Cefic-Facts and Figures-2023

2.2 As per UN Comtrade Database for 2022, India ranks 11th in the world exports of chemicals (excluding pharmaceutical products) and ranks 4th in the world imports of chemicals (excluding pharmaceutical products). India's exports of chemicals (excluding pharmaceutical products) was 49.18 US\$ billion in 2022, which is 2.3% share of World exports of chemicals (excluding pharmaceutical products). India's imports of chemicals (excluding pharmaceutical products) was 97.62 US\$ billion in 2022, which is 4.3% share of World imports of chemicals (excluding pharmaceutical products). (Reference: Table 32 of section III)

2.3 The top five Chemical Products (in terms of value) exported to different countries in the FY 2022-23 were Other Herbicides-anti Sprouting Products (₹15,540/- Cr.), Other

Insecticides (₹12,112/- Cr.), Other Fungicide NES (₹8,408/- Cr.), Pigment Emulsion (₹6,259/- Cr.), and Reactive Dyes (₹4,835/- Cr.). Other Herbicides-anti Sprouting Products mainly exported to U S A, Brazil, Australia, Argentina and France; Other Insecticides exported to Brazil, U S A, Japan, Bangladesh PR and Nigeria; Other Fungicide NES exported Brazil, Bangladesh PR, U S A, Costa Rica and Indonesia; Pigment Emulsion exported to China People's Republic, U S A, Netherland, Japan and Brazil; and Reactive Dyes exported Bangladesh PR, Turkey, Honduras, Brazil and Indonesia. (Reference: Table 16 and Table 19 of section III)

2.4 During FY 2022-23, top five Chemical products (in terms of value) imported from different countries were Methanol (₹ 7,524/- Cr), Acetic Acid (₹ 5,127/- Cr), Other Insecticides (₹ 3,857/- Cr), Other Herbicides-Anti Sprouting Products (₹ 3,117/- Cr) and Other Fungicide Nes (₹ 2574/- Cr). Methanol mainly imported from Saudi Arab, Iran, Qatar, Oman, Finland; Acetic Acid from China People's Republic, Malaysia, Singapore, Taiwan and Saudi Arab; Other Insecticides from China People's Republic, U S A, Japan, Taiwan and Israel; Other Herbicides-Anti Sprouting Products imported from China People's Republic, Israel, Japan, U S A and Taiwan: Other Fungicide Nes imported from China People's Republic, Thailand, Germany, U S A and Spain. (Reference: Table 17 and Table 20 of section III)

2.5 Export of top five Petrochemical Products (in terms of value) to different countries in the FY 2022-23 were Benzene (₹ 11,570/- Cr.), Paraxylene (₹ 8,522/- Cr.), Polyester Filament Yarn (₹ 6,660/- Cr.), Polypropylene (Inc. Co-Polymer) (₹ 3,242/- Cr.) and Polyester Staple Fibre (₹ 2,282/- Cr.). Benzene was mainly exported to Saudi Arab, Kuwait, Belgium, China People's Republic and Singapore; Paraxylene exported to Malaysia, China People's Republic, Indonesia, U S A and Portugal; Polyester Filament Yarn was exported to Turkey, Brazil, U S A, Morocco and Argentina; Polypropylene (Inc. Co-Polymer) was exported to China People's Republic, Turkey, Nepal, Vietnam SOC REP and Bangladesh PR; and Polyester Staple Fibre was exported to U S A, Nepal, Turkey, Belgium and Spain. (Reference: Table 24 and Table 27 of section III)

2.6 Top five Petrochemical products (in terms of value) imported from different countries in the FY 2022-23 were Polypropylene (Inc. Co-Polymer) (₹ 17,789/- Cr.), High Density Polyethylene (₹ 16,909/- Cr.), Purified Terephthalic Acid (₹ 11,684/- Cr.), Styrene (₹ 10,150/- Cr.) and Mono Ethylene Glycol (₹ 6,666/- Cr.). Polypropylene (Inc. Co-Polymer) mainly imported from Saudi Arab, U Arab EMTS, Singapore, China

People's Republic and Oman; High Density Polyethylene imported from U Arab EMTS, Saudi Arab, Qatar, USA and Oman; Purified Terephthalic Acid mainly imported from China People's Republic, Taiwan, Thailand, Malaysia and Indonesia; Styrene imported from Singapore, Kuwait, Saudi Arab, Korea RP and China People's Republic; and Mono Ethylene Glycol imported Kuwait, Saudi Arab, Singapore, Oman and United Arab Emirates. (Reference: Table 25 and Table 28 of section III)

Chapter 3

According to the National Accounts Statistics, brought out by the Central Statistics Office (CSO), Chemical and Chemical products sector, excluding pharmaceuticals (Industry Division 20 of NIC 2008), accounted for 1.4% of the GVA for All Economic Activity in the FY 2021-22. The share of Gross Value Added (GVA) of Chemicals in the Manufacturing Sector in the FY 2021-22 is about 9.2%. GVA of Chemical Sector has grown with CAGR of 8.3% from the FY 2016-17 to FY 2021-22. The average Indices of Industrial Production (IIP) for the Chemical and Chemical products (Industry Division 20 of NIC 2008) for the FY 2022-23 stood at 129.3, which is 6.9% more as compared to the previous year. The size of the Indian Chemical industry, excluding Pharmaceuticals (Industry Division 20 of NIC 2008), in terms of Value of Output in the FY 2021-22 was Rs. 12, 96,422/- cores and it was 8.2% of Value of Output of Manufacturing Sector. The size of Chemical industry, including Pharmaceuticals (i.e. Industry Division 20 and 21 of NIC 2008), in terms of Value of Output in the FY 2021-22 was Rs. 19,08,568/- cores and it was 12.1% of the Total Value of Output of Manufacturing sector. During last six years, i.e. within FY 2016-17 to FY 2021-22, real growth rate in output of Chemical Industry excluding Pharmaceuticals Industry (i.e. Industry Division 20) was 14.2%, which was 14.1% for Chemical Industry including Pharmaceutical Industry {i.e. Industry Division 20 & 21}. Growth in value of output for Manufacturing Sector during the same period was 11.9%.

3.1. The exports and imports data of FY 2022-23 shows that in the Chemical Sector, comprising of chapters 28, 29, 30, 31, 32, 38, 39, 4002, 54 and 55 of HS code, India was net importer in all categories except of four categories, namely, Pharmaceuticals Products (Chapter 30 HS code), Man-made staple fibres (Chapter 55 HS code), Man-Made Filaments (Chapter 54 HS code) and Tanning or Dyeing (Chapter 32 HS code). Pharmaceuticals products accounted Rs.1,38,621/- crore, Man-made staple fibres accounted Rs.4,461/- crore, Man-Made Filaments accounted Rs.1,444/- crore and Tanning or Dyeing accounted Rs.6,038/- crore in net Import. (Reference: Table 12A of section III)

3.2. As per Annual Survey of Industries (Factory Sector: 2021-22), top seven States, namely, Gujarat (36.0%), Maharashtra (16.9%), Uttar Pradesh (5.2%), Tamil Nadu (4.5%), Dadra & N Haveli & Daman & Diu (4.0%), Uttarakhand (3.5%) and Rajasthan (3.4%), contributed around 73.6% in the Gross Value Added (GVA) for the Chemical &

Chemical products Sector (Industry Division 20 of NIC 2008) and seven States, namely, Gujarat (34.9%), Maharashtra (16.0%), Uttar Pradesh (6.3%), Tamil Nadu (5.8%), Dadra & N Haveli & Daman & Diu (4.7%), Rajasthan (3.8%) and West Bengal (3.7%), contributed around 75.2% in the value of output. . (Reference: Table 50 of Section VII)

3.4. The exports of chemicals & petrochemicals (excluding pharmaceutical products and fertilizers) has increased from Rs. 1,81,374/- crores in the FY 2015-16 to Rs. 3,81,306/-crore in the FY 2022-23. The percentage share of the exports of chemicals & petrochemicals (excluding pharmaceutical products and fertilizers) in the total national exports slightly decreased from 10.6% to 10.5% during the same period. (Reference: Table 11 of Section III)

At the product level, the following products accounted more than Rs. One Thousand five hundred crores in the exports during 2022-23 (Reference: Table 16 & 24 of Section III):

Product (Chemical)	Export (Rs. Crore)	Product (Petro-Chemical)	Export (Rs. Crore)
Other Herbicides-Anti Sprouting Products	15540	Benzene	11570
Other Insecticides	12112	Paraxylene	8522
Other Fungicide Nes	8408	Polyester Filament Yarn	6660
Pigment Emulsion	6259	Polypropylene (Inc. Co-Polymer)	3242
Reactive Dyes	4835	Polyester Staple Fibre	2282
Carbon Black	2732	Polyester Chips/Pet Chips	1564
Caustic Soda	2429	Polytetrafluoroethylene(Ptfe)	1226
Azo Dyes	2231	Ortho-Xylene	1081
Menthol	1547	Low Density Polyethylene	1000
Food Colours	1488		
2, 4-D	1018		

3.5. The imports of Chemicals & Petrochemicals (excluding Pharmaceutical products and fertilizers) has increased from Rs. 2,61,880/- crores in the FY 2015-16 to Rs. 6,42,088/- crores in the FY 2022-23. The percentage share of the imports of Chemicals & Petrochemicals (excluding Pharmaceutical products and fertilizers) in the total

national imports increased from 10.52% to 11.17% during the same period. (Reference: Table 11 of Section III)

At the product level, the following products accounted for more than Rs. One Thousand crores in the imports in 2022-23 (Reference: Table 17 & 25 of Section III):

Product (Chemical)	Import (Rs. Crore)	Product (Petro-Chemical)	Import (Rs. Crore)
Methanol	7524	Polypropylene (Inc. Co-Polymer)	17789
Acetic Acid	5127	High Density Polyethylene	16909
Other Insecticides	3857	Purified Terephthalic Acid	11684
Other Herbicides-Anti Sprouting Products	3117	Styrene	10150
Other Fungicide Nes	2574	Mono Ethylene Glycol	6666
Phenol	2422	Paraxylene	5497
Soda Ash	1954	Polyester Filament Yarn	5409
Carbon Black	1652	Poly Vinyl Chloride	5347
Citric Acid	1407	Linear Alkyl Benzene	5219
Aniline	1375	Toluene	5148
Calcium Carbonate	1119	Polycarbonate	5030
		Linear Low Density Polyethylene	4395
		Vinyl Chloride Monomer	4107
		Ethyl Vinyl Acetate	4070
		Low Density Polyethylene	3318
		Acrylonitrile	3024
		Styrene Butadiene Rubber	2873
		Vinyl Acetate Monomer	2816
		Ethylene Dichloride	2623
		Poly Butadiene Rubber	2336
		Abs Resin	1960
		Polyestyrene	1781
		Butyl Rubber	1540
		Ethyl Propylene Dimers	1307
		Isopropanol	1229
		Polyacetal Resin	1214
		Epichlorhydrine	1212
		Unsaturated Polyster Resin	1145
		Nitrile Butadiene Rubber	1080
		Propylene Glycol	1055

3.6. The net imports of Chemicals & Petrochemicals (excluding Pharmaceutical products and fertilizers) has increased from Rs. 80,506/- crore in 2015-16 to Rs.

2,60,782/-crore in 2022-23. The percentage share of the net imports of Chemicals & Petrochemicals (excluding Pharmaceutical products and fertilizers) in the total national net imports increased from 10.4% to 12.3% during the same period. At the product level, the following products accounted more than Rupees One Thousand crores in the net imports in 2022-23. (Reference: Table 12(a), 18 & 26)

Product (Chemical)	Net Import (Rs. Crore)	Product (Petro-Chemical)	Net Import (Rs. Crore)
Methanol	7385	High Density Polyethylene	15955
Acetic Acid	4839	Polypropylene (Inc. Co-Polymer)	14547
Phenol	2142	Purified Terephthalic Acid	11606
Aniline	1373	Styrene	9765
Citric Acid	1350	Mono Ethylene Glycol	6294
Soda Ash	1260	Poly Vinyl Chloride	5333
		Linear Alkyl Benzene	5208
		Toluene	4995
		Polycarbonate	4968
		Vinyl Chloride Monomer	4106
		Linear Low Density Polyethylene	3986
		Ethyl Vinyl Acetate	3980
		Acrylonitrile	2868
		Vinyl Actate Monomer	2788
		Ethylene Dichloride	2620
		Styrene Butadiene Rubber	2448
		Low Density Polyethylene	2318
		Poly Butadiene Rubber	2298
		Abs Resin	1951
		Polystyrene	1314
		Ethyl Propylene Dimers	1274
		Butyl Rubber	1236
		Polyacetal Resin	1171
		Isopropanol	1116
		Epichlorhydrine	1107

The following products accounted more than Rs. One Thousand crore in the total net exports in 2022-23.

Product (Chemical)	Net Export (Rs. Crore)	Product (Petro-Chemical)	Net Export (Rs. Crore)
Other Herbicides-Anti Sprouting Products	12423	Benzene	11492
Other Insecticides	8255	Paraxylene	3025
Other Fungicide Nes	5834	Polyester Staple Fibre	1325

Pigment Emulsion	5560	Polyester Filament Yarn	1251
Reactive Dyes	4610		
Azo Dyes	2175		
Caustic Soda	1687		
Food Colours	1411		
Menthol	1119		
Carbon Black	1080		

3.7. Chemical Sector (including Pharmaceutical) in India {i.e. 99.5% GVA of Chemical Sector (including Pharmaceutical) comes from the organized Sector. The estimates of the Total Output (Factory Sector) of at 4-digit Industry class in the Chemicals and Chemical Products (Division 20-NIC 2008) from the FY 2020-21 and FY 2021-22 are given in the table below:

Class	Description	Total Output (Rs. Crore)	
		2020-21	2021-22
2011	Manufacture of basic chemicals	182061	288868
2012	Manufacture of fertilizers and nitrogen compounds	119603	182647
2013	Manufacture of plastics and synthetic rubber in primary forms	102426	169930
2021	Manufacture of pesticides and other agrochemical products	77289	85924
2022	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	55964	71956
2023	Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	109397	114937
2029	Manufacture of other chemical products n.e.c.	88904	103610
2030	Manufacture of man-made fibres	45839	80035
Total		781483	1097907

Source: Annual Survey of Industries, 2020-21 and 2021-22 (Factory sector), Ministry of Statistics & Programme Implementation.

Chapter 4

4.1 Harmonized System:

Harmonized System is an internationally standardized system of names and numbers for classifying traded products. It has been developed and maintained by World Customs Organization (WCO). It is used by customs authorities around the world to identify products when assessing duties and taxes and for gathering statistics.

The HS is organized into 21 Sections, which are subdivided into 96 Chapters (Chapters 1 to 97 with Chapter 77 reserved for potential future use by the HS). The 96 HS Chapters are further subdivided into 1,228 headings and 5,612 subheadings in the current 2022 edition of the HS.

The HS code consists of 6-digits. The first two digits designate the Chapter wherein headings and subheadings appear. The second two digits designate the position of the heading in the Chapter

Eg: HS code 1006.30 indicates Chapter 10 (Cereals), heading 10.06 (Rice), and subheading 1006.30 (Semi-milled or wholly milled rice, whether or not polished or glazed)

Most of countries use an 8-digit or 10-digit classification system, with the first 6-digit adopting the Harmonized System developed by the WCO and the last 2 or 4 digits representing a further breakdown in commodity classification to meet domestic needs.

4.2 Indian Trade Clarification based on Harmonized System (ITC-HS) 2017

Indian Trade Classification (Harmonized System), 2017 was compiled and notified by the Directorate General of Foreign Trade, Ministry of Commerce and Industry, Government of India in January 2017. ITC-HS codes are divided into two schedules. ITC (HS) Import Schedule I describe the rules and guidelines related to import policies. Schedule II describes the rules and regulation related to export policies. Schedule I of the ITC-HS code is divided into 21 sections and each section is further divided into chapters. The total number of chapters in the schedule I is 98. The chapters are further divided into sub- heading under which different HS codes are mentioned. Export Policy Schedule II of the ITC-HS code contains 97 chapters giving all the details about the guidelines related to the export policies.

The Chapters dealing with Chemicals and Petrochemical products are falling under Section VI, VII & XI as depicted below:

Chapter	Description	Section
Chapter 28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare- earth metals, of radioactive elements or of; isotopes	SECTION VI
Chapter 29	Organic chemicals	
Chapter 38	Miscellaneous chemical products	
Chapter 39	Plastics and articles thereof	SECTION VII
Chapter 40	Rubber and articles thereof	
EXIM Code 4002	Synthetic rubber and factice derived from oils, in primary Forms or in plates, sheets or strip; mixtures of any product of heading 4001 with any product of this heading, in primary forms or in plates, sheets or strip	
Chapter 54	Man-made filaments	SECTION XI
Chapter 55	Man-made staple Fibre	

Illustration of 8-digit Product Code:

Chapter	Exim Code	Item Description
28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of; isotopes	
	2801	Fluorine, Chlorine, Bromine and Iodine
	28011000	Chlorine
39	Plastics and articles thereof	
	3902	Polymers Of Propylene or Of Other Olefins, In Primary Forms
	39021000	Polypropylene

Source: Directorate General Foreign trade (DGFT), Ministry of Commerce and Industry, Government of India (<https://www.dgft.gov.in/CP/?opt=itchs-import-export>)

4.3 Group-wise bifurcation of HS code of 2334 Chemicals and Petrochemicals product

Department of Chemicals and Petrochemicals deals with the import and export of Chemicals that falls in the chapter 28,29,30,31,32,38,39,4002,54 and 55 of HS Code. There are total 2334 products that comes under these chapters which are currently imported in the country. Of these 2334 products there are certain product categories that fall under the purview of other Departments too. This identification of the products will help in avoiding duplicity at the time of monitoring imports of the products by the concerned departments.

The formulation of group wise bifurcation of available HS code list prepared by DCPC for chemicals and petrochemicals for 2334 products as under:

List of Abbreviations for Chemicals				
S. No	Abbreviations		Description	Nos.
	C		Chemicals	
1		AC	Alkali Chemicals	10
2		IC	In-Organic Chemicals	271
3		OC	Organic Chemicals	473
4		PI	Pesticides and Insecticides	43
5		DP	Dyes and Pigments	304
6		MISC	Miscellaneous	167
		Sub-Total		1268
		NA	Not Applicable	593
List of Abbreviations for Petro-Chemicals				
S. No	Abbreviations		Description	Nos.
	PC		Petro-Chemicals	
1		SF	Synthetic Fibres	38
2		P	Polymers	221
3		SR	Synthetic Rubber (Elastomers)	20
4		SDI	Synthetic Detergent Intermediates	3
5		PP	Performance Plastics	33
6		FI	Fibre Intermediates	5
7		O	Olefins	3
8		A	Aromatics	6
9		OP	Other Petro-based Chemicals	144
		Sub-Total		473
		Grand Total		2334

The Pharmaceutical Department stated that 191 out of the 2334 Chemicals and Petrochemicals products listed by HS codes are related to pharmaceuticals according to Pharma Principal Commodities (PCGs) in the BD/DI HSN codes

List of Chemical & Petrochemical products (HS- Code Wise) related to Pharma as per PCGs of BD/DI list of HSN code:

S. No	Abbreviations	Description	Nos.	Remarks
1.	C	Chemicals		All these HSN codes are also related to Pharma-Principal commodities group (PCGs) of Bulk Drug & Drug Intermediates list of 260 HSN codes.
2.	OC	Organic Chemicals	38	
3.	PI	Pesticides and Insecticides	1	
4.	DP	Dyes and Pigments	8	
5.	MISC	Miscellaneous	47	
6.	NA	Not Applicable	97	
	Total		191	

Details of 2334 Chemicals and Petrochemicals products is in attached in **Annexure**.

4.4 CAS Registry Number:

Chemical Abstract Service (CAS) is a division of American Chemical Society. It is the only organization in the world whose objective is to find, collect and organize all publicly disclosed chemical substance information.

The registry maintained by CAS is an authoritative collection of disclosed chemical substance information. It identifies more than 182 million unique organic and inorganic substances and 68 million protein and DNA sequences, plus additional information about each substance. It is updated with around 15,000 additional new substances daily

A CAS Registry Number has no inherent meaning, but is assigned in sequential, increasing order when the substance is identified by CAS scientists for inclusion in the CAS REGISTRY database.

A CAS RN is separated by hyphens into three parts, the first consisting from two up to seven digits, the second consisting of two digits, and the third consisting of a single

digit serving as a check digit. This format gives CAS a maximum capacity of 1,000,000,000 unique numbers. The check digit is found by taking the last digit times 1, the preceding digit times 2, the preceding digit times 3 etc., adding all these up and computing the sum modulo 10.

For example, the CAS number of water is 7732-18-5: the checksum 5 is calculated as $(8 \times 1 + 1 \times 2 + 2 \times 3 + 3 \times 4 + 7 \times 5 + 7 \times 6) = 105$; $105 \bmod 10 = 5$.

4.5 UN Codes:

UN Numbers or UN IDS are four-digit numbers that Identify hazardous substances, and articles such as explosives, flammable Liquids, toxic substances etc.

The UN numbers range from UN0001 to about UN3600 and are assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods.

For example, the UN Code for Nitrogen (compressed) is UN 1066

4.6 International Standard Industrial Classification

The International Standard Industrial Classification (ISIC) of All Economic Activities (ISIC) is the international reference classification of productive activities. Its main purpose is to provide a set of activity categories that can be utilized for the collection and reporting of statistics according to such activities.

Wide use has been made of ISIC, both nationally and internationally, in classifying data according to kind of economic activity in the fields of economic and social statistics, such as for statistics on national accounts, demography of enterprises, employment and others. In addition, ISIC is increasingly used for non-statistical purposes.

4.7 National Industrial Classification (NIC) - A Digest

The Central Statistics Office (CSO), Ministry of Statistics & Programme Implementation being nodal Statistical Authority in the Country is vested with the responsibility of setting up Standards for collection, compilation and dissemination of Statistical data. The Official statistics is required to be collected and presented according to classification designed to facilitate its use for National Economic Policies and conform to International comparison. The need for comparability of Statistics available from various sources, on different aspects of the economy and usability of

such data for economic analysis necessitated the need of standardization of a system of classification.

CSO being responsible for coordination of statistical activities in the country and with a view to evolve and maintain statistical standards, initiated task of bringing out Standard Industrial Classification as early as in 1960 and evolved a Standard Industrial Classification (SIC) in 1962. To take care of emerging changes in organizations and structure of Industries, the need for revision of this document was felt from time to time. With this objective, the CSO revised SIC 1962 in 1970 (NIC-70), NIC-1970 in 1987 (NIC-87) and NIC-87 in 1998 (NIC-98). It is during 1998 that 4-digit system of International Standard Industrial Classification (ISIC- 3) was followed and these 4 digits were extended up to 5 digits based on national needs. Consequent upon release of United Nations International Standard Industrial Classification (ISIC) – 2002 Rev. 3.1, NIC-1998 was updated to bring out NIC–2004. After adoption of ISIC Revision-4 by the United Nations Statistical Commission (UNSC) in the year 2008, an expert committee under the chairmanship of DG, CSO deliberated on the issues and approved the draft NIC-2008 incorporating revision in NIC-2004 consistent with ISIC revision 4.

Basic features of NIC-2008

All the activities are grouped into several “activity groups” or “tabulation categories” in a hierarchical manner. Activities are first grouped into ‘section’ alphabetically coded from A through U, every section is divided into ‘division’ with 2-digit numeric code, every division into ‘group’ with 3-digit numeric code, every group into ‘class’ with 4-digit numeric code and every 4-digit class into 5-digit ‘sub-class’. The structure is illustrated below.

Level		Description
Section		Manufacturing
Division 20		Manufacture of Chemicals and Chemical Products
Group	201	Manufacture of Basic Chemicals, Fertilizer and Nitrogen Compounds, Plastics and Synthetic Rubber in Primary Forms
	203	Manufacture of man-made Fibre
Class	2011	Manufacture of Basic Chemicals
	2030	Manufacture of man-made Fibre

Sub-Class	20111	Manufacture of liquefied or compressed inorganic industrial or medical gases (elemental gases, liquid or compressed air, refrigerant gases, mixed industrial gases etc.)
	20301	Manufacture of synthetic or artificial filament

The structure of NIC-2008 is identical to the structure of ISIC Revision up to 4-digit level 'class'. Classes were then divided into 5-digit 'sub classes' according to national requirements.

Salient features of NIC-2008

- The sections A to Q of NIC-2004 have been replaced by sections A to U in respect of NIC-2008. NIC-2008 has 21 sections, 88 divisions, 238 groups, 403 classes and 1304 sub-classes.
- NIC-2008 is comparable with ISIC Rev.4 till 4-digit classes in totality.
- The concept of shadow classes introduced in NIC-2004 has been done away with in NIC- 2008 as the emphasis has been given on activity rather than type of operation and scale of operation.
- In NIC-2008 some of the 5-digit sub-classes of NIC-2004 have been made separate 4- digit classes e.g. 'Growing of Sugarcane (01115)', 'Growing of tobacco (01114)', 'Growing of fibre crops (01113)' 'Growing of flowers (01122)'.
- Repair and installation of machinery and equipment has been classified as separate division (Division-33) in NIC-2008.
- Repair of Personal Household goods (5260 of NIC-2004) has been removed from Section-G (wholesale and retail trade; repair of motor vehicles and motor cycles) and now included in Section-S (other service activities).
- Publishing activity which was included in division-22 of manufacturing section in NIC-2004 is now included in division-58 (publishing activities) of NIC-2008 under Section-J (information and communication).
- Activity 'water supply' under division-41 (Electricity, Gas and Water Supply) of NIC-2004 is now included in Section-E (water supply; sewerage, waste management and remediation activities).
- Explanatory notes of ISIC Rev.4 at 1/2/3-digit level have been incorporated in NIC-2008 as Annexure for better understanding of the revised classification.

- Under 4-digit classes of NIC-2008, inclusion and exclusion statements have been included in the detailed structure itself to remove ambiguity in the scope of classification and to facilitate the classification of economic activity distinctly.

Division 20 and 21 of NIC-2008 relates to “Chemical and Chemical Products” and “Pharmaceutical, Medicinal and botanical products” respectively.

Source:

Website of Ministry of Statistics and Programme Implementation, Government of India

4.8 Important Definitions of Economic System

Gross Domestic Product (GDP):

The total market value of all final goods and services produced during a given time period within a nation’s domestic borders.

There are three primary approaches to calculating GDP:

1) Production Approach (GDP by Production):

This approach calculates GDP by summing up the value-added at each stage of production. It considers the value of all goods and services produced in various industries and sectors of the economy. The formula for GDP by production is:

$$\text{GDP} = \text{Value of Output} - \text{Value of Intermediate Consumption}$$

2) Expenditure Approach (GDP by Expenditure):

This approach calculates GDP by measuring the total spending on goods and services within the economy. It is represented by the equation:

$$\text{GDP} = C + I + G + (X - M)$$

C represents consumer spending.

I represent investment spending

(business investment in equipment, structures, etc.).

G represents government spending.

X represents exports of goods and services.

M represents imports of goods and services.

3) Income Approach (GDP by Income):

This approach calculates GDP by summing all the income generated within an economy. It includes wages, rents, interest, and profits. The formula for GDP by income is:

GDP = Compensation of Employees + Gross Operating Surplus + Gross Mixed Income + Taxes on Production and Imports - Subsidies on Production and Imports

There are 2 types of GDP,

Nominal GDP:

Nominal GDP measures the total market value of all finished good and service produced by a country at their current market price in single year. It includes all the changes in the prices of finished goods and services that took place in one year due to inflation or deflection.

Real GDP:

Real GDP is also known as inflation adjusted GDP, measure the value of finished goods and services at constant base year price. Real GDP considered as a true indicator of country economic growth. Real GDP includes change in quantity but not price.

GDP deflator:

The GDP price deflator measures the changes in prices for all goods and services produced in an economy. GDP deflator helps economists compare the level of real economic activity from one year to another. The formula for GDP deflator is:

$$GDP\ Deflator = \frac{Nominal\ GDP}{Real\ GDP} \times 100$$

GDP per capita:

Gross Domestic Product (GDP) per capita is a commonly used economic indicator that measures the average income or economic output per person in a given country or

region. It is calculated by dividing a country's total GDP by its population. The formula for GDP per capita is:

$$\text{GDP per capita} = \text{GDP} / \text{Population}$$

Net domestic product (NDP):

The net domestic product (NDP) equals the gross domestic product (GDP) minus depreciation on a country's capital goods.

Net domestic product accounts for capital that has been consumed over the year in the form of housing, vehicle, or machinery deterioration

$$\text{NDP} = \text{GDP} - \text{Depreciation}$$

Depreciation is the decrease in the value of assets due to usage of machinery

Gross National product (GNP):

Gross national product is the total value of all final goods and services produced by country's citizens in given financial year, irrespective of their location. The formula for GNP is:

$$\text{GNP} = \text{GDP} + \text{Net Factor Income from Abroad (NFIA)}$$

Where, Net Factor income from Abroad(NFIA) = Income of Indian residence working in Abroad – Income of Foreigners working in country

Net National product (NNP):

Net National product (NNP) in economy is the GNP after deducting the loss due to the depreciation.

Gross value added (GVA):

Gross value added (GVA) is the measure of the value of goods and services produced in an area, industry or sector of an economy. "Gross value added is the value of output minus the value of intermediate consumption"

Relation between GDP & GVA:

The relationship between GVA and GDP is defined as:

GVA= GDP + subsidies on products – taxes on products

4.9 Statistics:

- In the FY 2022-23, the estimated Nominal GDP, or GDP at Current Prices, is projected to reach ₹269.49 lakh crore, marking a significant increase from ₹235.97 lakh crore in the FY 2021-22, representing a growth rate of 14.2%
- In the FY 2022-23, Real GDP, or Gross Domestic Product (GDP) at Constant (2011-12) Prices, is projected to reach ₹160.71 lakh crore, in contrast to the First Revised Estimate of ₹150.21 lakh crore for FY 2021-22. The GDP growth for FY 2022-23 is estimated at 7.0%.
- In the FY 2022-23, the projected Nominal NDP, or NDP at Current Prices, is expected to reach Rs. 238.09 lakh crore, marking a substantial increase from Rs. 209.30 lakh crore in 2021-22, reflecting a growth rate of 13.8%.
- Real NDP or Net Domestic Product (NDP) at Constant (2011-12) Prices in the FY 2022-23 is estimated to attain a level of ₹139.86 lakh crore, as against the First Revised Estimate of GDP for the FY 2021-22 of ₹130.66 lakh crore. The growth in GDP in the FY 2022-23 is estimated at 7.0%.
- Nominal GVA or GVA at Current Prices in the FY 2022-23 is estimated to attain a level of ₹246.59 lakh crore, as against ₹216.35 lakh crore in the FY 2021-22, showing a growth rate of 14.0 %.
- Real GVA or Gross Value Added (GVA) at Constant (2011-12) Prices in the FY 2022-23 is estimated to attain a level of ₹148.04 lakh crore, as against the First Revised Estimate of GDP for the FY 2021-22 of ₹138.76 lakh crore. The growth in GDP during FY 2022-23 is estimated at 6.7 %.

Source:https://mospi.gov.in/sites/default/files/press_release/PressNote_onGDP_SAE_Q3_FRE_SRE_TRE01032024.pdf

Chapter 5

Chapter 5

Indices released by Government of India

Indices are important economic indicators to demonstrate the relative change in the parameters over a specified period of time. Some of the important indices compiled and released by different Departments under the Government of India along with their inception and uses in different sectors of economy are summarized below:

- A. Index of Industrial Production (IIP)
- B. Consumer Price Index (CPI)- Industrial Worker, Agricultural Labourer / Rural Labourer, Rural / Urban / Combined
- C. Wholesale Price Index (WPI)

5.1. Index of Industrial Production-(IIP)

1. The Central Statistics Office (CSO), Ministry of Statistics and Programme Implementation Compiles and brings out an index of Industrial Production. CSO revises the base year of the macroeconomic indicators, as a regular exercise, to capture structural changes in the economy and improve the quality and representativeness of the indices. In this direction, the base year of the all-India Index of Industrial Production (IIP) has also been revised from 2004-05 to 2011-12 to not only reflect the changes in the industrial sector but also to align it with the base year of other macroeconomic indicators like the Gross Domestic Product (GDP), Wholesale Price Index (WPI) etc.

2. IIP in the revised series is continued to represent the Mining, Manufacturing and Electricity sectors. The revised series uses the National Industrial Classification (NIC) 2008 for the purpose of classification of industrial production. 15 source agencies are providing production data for Index of Industrial Production (IIP) base year 2011-12.

Summary of Source Agencies of IIP in the new series with base year 2011-12.

Table 6.1

S. No	Source	Weights (%)
1	Department of Industrial Policy and Promotion (DIPP)	47.54
2	Indian Bureau of Mines	14.37

3	Ministry of Petroleum & Natural Gas	11.29
4	Joint Plant Committee	10.52
5	Central Electricity Authority	7.99
6	Department of Chemicals and Petrochemicals	2.54
7	Office of Textile Commissioner	1.94
8	Department of Fertilizers	1.06
9	Directorate Of Sugar and Vegetable Oils (for Edible Oils only)	0.97
10	Directorate Of Sugar and Vegetable Oils (for Sugar only)	0.76
11	Office of Coal Controller	0.49
12	Tea Board	0.29
13	Railway Board	0.13
14	Office of Jute Commissioner	0.07
15	Coffee Board	0.04
	GENERAL	100.00

3. Highlights of the changes in New Series of Index of Industrial Production are summarized below:

- a. The selection of items in the new series has been done at the 3-digit level of NIC for better representation as compared to selection at 2-digit level done in 2004-05 series.
- b. At the broad level, the new series has a total of 809 items occurring in the manufacturing sector in the item basket (405 item groups), where 149 new items like Steroids and hormonal preparations, Cement clinkers, Medical/ surgical accessories, pre-fabricated concrete blocks, refined Palm Oil have been added and 124 items such as Biaxially Oriented Polypropylene (BOPP) Films, Calculators, Colour TV picture tubes, Gutka have been deleted from the 2004-05 series in the manufacturing sector. The sectoral composition of the IIP is as follows:

Table: 6.2

Sector	Base year 2011-12		Base year 2004-05	
	Weights (%)	Item groups	Weights (%)	Item groups
Mining	14.373	1	14.157	1

Manufacturing	77.633	405	75.527	397
Electricity	7.994	1	10.316	1
Total	100	407	100	399

- c. To reflect the increasing significance of electricity generation from renewable sources, it was decided to include data on electricity generation figures from these sources in the new series. This inclusion was done from April, 2014 onwards as monthly data for electricity generation from renewable sources for earlier months were not available.
- d. For capital goods, data in the new series is captured in terms of 'work in progress' to better represent the growth of capital goods and to avoid reporting of production figures in bulk after the completion of production. Details on this methodology are available in the Report of the Working Group set up for the revision of base year, which may be accessed in the official website of Ministry of Statistics and Programme Implementation (www.mospi.gov.in).
- e. The number of source agencies reporting data for compilation of IIP in the new series is 14 as compared to 15 in its previous. This is on account of the fact that data on 'Iodised Salt' in the new series is being provided by the Department of Industrial Policy and Promotion (DIPP) as O/o Salt Commissioner was not in a position to supply Salt production data after abolition of Salt Cess Act, 1953 in Finance Bill 2016.
- f. In the Mining Sector the coverage was undergone a change on account of the MCDR Amendment Rules, 2016 resulting in 27 non-metallic minerals being designated as minor minerals and which were no longer monitored by Indian Bureau of Mines.

5.2. Consumer Price Index (CPI)

1. A Consumer Price Index (CPI) is designed to measure the changes over time in general level of retail prices of selected goods and services that households purchase for the purpose of consumption. Such changes affect the real purchasing power of consumer's income and their welfare. CPI numbers are widely used as macroeconomic indicator of inflation, and also as a tool by government and central banks for targeting inflation and monitoring price stability. CPI is also used as deflators in the National

Accounts. Therefore, CPI is considered as one of the most important economic indicators.

2. Different types of CPIs, namely, CPI (IW), CPI (AL/RL), CPI (UNME) and CPI (R/U/C) compiled by different agencies of Government of India, are available for users in our country. First three indices, including CPI (UNME), are specific to population segments. The price collection for CPI (UNME) was discontinued with effect from April 2008 and linked all India CPI (UNME) numbers were brought out from April 2008 to December 2010. The fourth one i.e. CPI (R/U/C) is for general population, sector-wise, to be explained in subsequent paragraphs.

3. Salient features of different types of CPIs:

Consumer Price Index for Industrial Workers - CPI (IW)

This index is compiled by the Labour Bureau, Ministry of Labour and Employment. The target population is working class family, defined as a family: (i) located within the centre for industrial worker, (ii) has at least one member working as manual worker in an establishment in any of the seven sectors of employment covered viz., factories, plantations, mining, ports and docks, public motor transport undertakings, electricity generating and distributing establishments, and railways; and (iii) derived 50 per cent or more of its income during the calendar month preceding the day of enquiry through any manual work.

The present series of CPI (IW) is on base 2016=100. The weighting diagrams for the purpose of compilation of index numbers had been derived on the basis of average monthly family expenditure of the working class obtained from the Working Class Family Income Expenditure Survey conducted during 1999-2000.

The CPI (IW) is released every month (on the last working day of succeeding month) for each of the selected 88 centres as well at all India level. It is mainly used for the determination of Dearness Allowance (DA) being paid to Central/State Government employees and also to the workers in the industrial sectors, besides fixation and revision of minimum wages in scheduled employments. It is also used in moving the base year poverty lines for urban areas to the subsequent years.

Consumer Price Index for Agricultural/ Rural Labourers - CPI (AL/RL)

These indices are compiled by the Labour Bureau, Ministry of Labour and Employment. The target populations are agricultural and rural labourers. A rural labour household is defined as one, which derives major income from manual employment (rural labour) during the last 365 days. From amongst the rural labour households, those households, which earn 50% or more of their total income from gainful employment as manual labour in agriculture during the last 365 days, are categorized as agricultural labour households. Agricultural labour households form a major subset of rural labour households. A person is considered engaged in agricultural labour if he/she follows one or more of the agricultural occupations in the capacity of wage paid manual labourer, whether paid in cash or kind (excluding exchange labour) or both. A person who does manual work in return for wages in cash or kind or partly in cash and partly in kind (excluding exchange labour) is a wage paid manual labourer. Persons who are self-employed doing manual work are not treated as wage paid manual labourers. People living in rural areas and engaged in manual labour by working in agricultural and/or non-agricultural occupations in return for wages paid either in cash or kind (excluding exchange labour) or both, are considered as rural labourers. Thus, rural labourers include both agricultural and other labourers.

The present series of CPI (AL/RL) is on base 1986-87=100. Estimates of average consumer expenditure per household generated from the results of the NSS 38th round (1983), CES formed the source of weights for different items of goods and services, used in compilation of CPI (AL) and CPI (RL).

For both the current series of CPI (AL) and CPI (RL), the retail prices in respect of goods and services are collected on monthly basis, from fixed markets in 600 sample villages in 20 states by the field workers of the Field Operations Division (FOD) of the National Sample Survey Office (NSSO). The various items (12) of goods and services are categorized into four main groups namely, (i) Food, (ii) Fuel and Light, (iii) Clothing, Bedding and Footwear; and (iv) Miscellaneous. The items of goods and services are common for the state as a whole but the varieties of most of the items differ from village to village. The collection of retail prices is staggered over four weeks of a month with one-fourth of the sample covered every week.

The CPI (AL/RL) is released every month (20th or preceding working day of the following month) for each of the selected states as well at all India level. It is mainly used for the determination/ fixation and revision of minimum wages in agricultural sector. CPI

(AL) is also used in moving the base year poverty lines for rural areas to the subsequent years.

Consumer Price Index for Rural, Urban and Combined - CPI (R/U/C)

The indices are compiled by the CSO on base 2010 = 100. The consumption patterns (weighting diagrams) for this series of CPI have been derived on the basis of average monthly consumer expenditure of an urban/rural household obtained from the results of the 61st Round of CES conducted by the National Sample Survey Office during 2004-05.

6. Wholesale Price Index (WPI)

WPI is an important measure to monitor the dynamic movement of prices at the wholesale level. In a dynamic world, prices keep on changing. WPI is used as a deflator of various nominal macroeconomic variables including Gross Domestic Product (GDP). The WPI based inflation estimates also serve as an important determinant, in formulation of trade, fiscal and other economic policies by the Government. WPI is also used for the purpose of escalation clauses in the supply of raw materials, machinery and construction work. Business firms in search of effective methods for coping with changes in prices often employ price adjustment (escalation) clauses in long-term sales and purchase contracts. WPI is widely recognized among business people, economists, statisticians and accountants as a useful objective indexing tool in price adjustment clauses.

The base year of All-India WPI has been revised from 2004-05 to 2011-12 by the Office of Economic Advisor (OEA), Department of Industrial Policy and Promotion, Ministry of Commerce and Industry to align it with the base year of other macroeconomic indicators like the Gross Domestic Product (GDP) and Index of Industrial Production (IIP). The Wholesale Price Index (WPI) series in India has undergone six revisions in 1952-53, 1961-62, 1970-71, 1981-82, 1993- 94 and 2004-05 so far. The current series (base year 2011-12) is the seventh revision.

Features of WPI

- In the current series of WPI, prices used for compilation do not include indirect taxes in order to remove impact of fiscal policy. This is in consonance with international practices and will make the current WPI conceptually closer to 'Producer Price Index'.

- A current “WPI Food Index” is compiled to capture the rate of inflation in food items.
- Seasonality of fruits and vegetables has been updated to account for more months as these are now available for longer duration.
- Item level aggregates for current WPI are compiled using Geometric Mean (GM) following international best practice and as is currently used for compilation of All India CPI.
- A high-level Technical Review Committee was set up for the first time to carry out dynamic review process in order to keep pace with the changing structure of the economy.

Chapter 6

Chapter 6

ChemIndia-Chemicals inventory of India

6.1. Objective:

ChemIndia, short for Chemicals Inventory of India, is a secure and adaptable web-based data collection and management system. This platform efficiently compiles and analyses real-time reports from Chemical and Petrochemical manufacturing units. It enhances data management, enabling users to generate swift visualizations and comprehensive reports tailored to the chemical sector's specific needs. The application's primary objective is to elevate the value of chemical industries by streamlining data supply, fostering efficiency, and providing access to the latest sector innovations and technological advancements.

6.2. Key Aspects

- Assessment of the current Data Management System in DCPC.
- Identification of requirements for a comprehensive web-based data management system (ChemIndia) for the chemical industry.
- Categorization of parameters, including Chemical & Petrochemical segments.
- Development of an integrated bilingual web platform (ChemIndia) following Guidelines for Government Websites (GIGW) guidelines.
- Expansion of data coverage by on-boarding chemical units/industries.
- Provision of automated reconciliation and diverse report generation for stakeholders.
- Integration of APIs to amalgamate sector data from various Departments/Ministries.
- Implementation of robust security measures.
- Establishment of Facilitator & Coordinator roles for user management.
- Inclusion of Security Login and user activity logs.
- Integration of Geographic Information System (GIS) mapping.
- Creation of user manuals and provision of user training.

- Migration of existing Production Monitoring System (PMS) data into ChemIndia.
- Pre-production security audit by Computer Emergency Response Team (CERT-In) empanelled bidders.
- Design of a graphical reporting dashboard for easy data visualization.

6.3. Features

- Paperless Data Collection: Reduces paper usage for documentation.
- Time Efficiency: Accelerates data collection and processing for prompt decision-making.
- Interactive User Interface: Ensures consistent visual experience with standardized design.
- Data Validation: Incorporates validations during data entry.
- Role Management: Implements roles for Company, Units, and DCPC.
- User Creation: Allows unlimited user creation for various tasks.
- Reminder Alerts: Sends auto reminders for non-compliance or irregular data submission.
- API Integration: Creates APIs for future external system integration.
- Insights and Charts: Provides data insights and graphical representations on the dashboard.
- User Activity Monitoring: Maintains secure user activity logs.
- Data Confidentiality: Ensures confidential and controlled data access.
- Administrative Controls: Enables industry administrators to validate data entry.
- GIS Dashboard: Displays location-based analytics using interactive visualizations.
- Dynamic Application: Adapts database and entry fields as needed.

6.4. Benefits

- Provides comprehensive sector performance and trend insights.
- Offers geographically based information.
- Facilitates quick decision-making based on real-time market data.
- Enhances data accuracy and efficiency.
- Promotes knowledge generation and innovation in the chemical industry.
- Supports informed policymaking at national and regional levels.

- Encourages collaboration and partnerships within the chemical sector ecosystem.
- Implements cutting-edge technologies for data management.
- Enables remote data entry, monitoring, and analysis.
- Supports researchers and stakeholders in conducting analysis and research activities.

Chapter 7

7.1. Regulations in Europe

European Union has European Chemicals Agency (ECHA), which aims at effective implementation of chemical regulations under framework of the Registration, Evaluation, Authorization, and Restriction of Chemicals regulation abbreviated as REACH and the Classification, Labelling, and Packaging regulation abbreviated as CLP. These regulations are instrumental in ensuring the safe handling of chemicals, safeguarding of human health and protecting the environment and promoting regulatory consistency across the European Union member states.

Key Features of REACH:

1. Manufacturers and importers producing or importing chemicals with quantities exceeding one ton per annum must register their chemical substances with ECHA, including properties and safe utilization of the substance
2. ECHA evaluates the submitted data meticulously, and may request for additional information, if required. If registered substance is found to pose risks to human health or environment, regulatory actions may be taken
3. Entities registering for substances with Very High Concern (SVHCs) require authorization for their continued use and are supposed to submit applications along with safer alternatives, if available
4. Substances deemed to poses an unacceptable risk to human health or the environment, may be restricted or prohibited across the EU

Key Features of CLP:

1. CLP Aligns the European system with UN's Globally Harmonized System (GHS), ensuring chemical substances and mixtures are classified and labelled to communicate the hazards effectively to the user. Chemicals are classified based on their properties such as toxicity, flammability, reactivity and environmental impact
2. CLP empowers individuals to take appropriate safety measures when working with or in proximity to hazardous chemicals and promotes safer practices in the handling and storage of chemicals

3. Globally recognized hazard communication under CLP facilitates the seamless import and export of chemicals there by streamlining international trade of chemicals

7.2. Regulations in United States:

Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA) are the federal agencies for regulation of chemicals in United States.

Acts Administered by EPA:

1. Toxic Substances Control Act (TSCA) main federal law that regulates the production, importation, use, and disposal of chemicals in the U.S., it enhances the EPA's authority to assess and regulate chemicals for their potential health and environmental risks
2. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) regulates the registration, distribution, sale, and use of pesticides in the U.S., evaluation and registration of pesticides is responsibility of EPA

EPA also administers Clean Air Act (CAA) controls emissions of volatile organic compounds (VOCs), hazardous air pollutants (HAPs), and other chemicals that can contribute to air pollution and health issues and Clean Water Act (CWA) for controlling the release of hazardous substances and chemicals into water bodies

Acts Administered by OSHA:

1. Hazard Communication Standard (HCS) requires employers to communicate chemical hazards to workers through labels, safety data sheets (SDSs), and conduct trainings, it's also aligned with the GHS
2. Occupational Safety and Health Act (OSH Act) sets standards for workplace safety and health, similar as HCS mentioned previously

7.3. Regulations in Japan:

Japan has a framework for regulating chemicals to ensure the safety of human health and the environment administered by Ministry of the Environment (MOE) and the Ministry of Health, Labour and Welfare (MHLW). Major laws and acts are as follows:

1. Chemical Substance Control Law (CSCL) governs manufacture and import of chemical substances in Japan and is similar to the EU's REACH regulation, as

per law companies make submission related to new and existing chemical substances.

2. Industrial Safety and Health Act (ISHA) is administered by the Ministry of Health, Labour and Welfare (MHLW), regulates workplace safety and health, also includes the handling of hazardous chemicals, enforces employers to mandatorily provide training to workers, and maintain safety data sheets.
3. Chemical Assessment and Regulation Law regulates the manufacture, import, and handling of chemical substances that may pose risks to human health and the environment.
4. Poisonous and Deleterious Substances Control Act: This law regulates the manufacture, import, storage, and use of poisonous and deleterious substances in Japan. It categorizes chemicals into three classes and imposes various requirements on their handling, including labelling, safety data sheets, and reporting.

MHLW also administers Pollution Control Act, which governs the prevention of pollution and environmental conservation including regulations on release of hazardous substances into the environment, including air and water.

7.4. Regulations in Australia:

Australia has two regulations to manage the safety of chemicals and their impact on human health and the environment. Some key regulations and acts in Australia include:

1. Industrial Chemicals Act 2019: This act establishes the Australian Industrial Chemicals Introduction Scheme (AICIS) and regulates the importation and manufacture of industrial chemicals. AICIS assesses and categorizes chemicals based on risk and imposes regulatory requirements accordingly.
2. Globally Harmonized System (GHS): Australia has adopted the GHS for classification and labelling of chemicals. The GHS provides a standardized approach to hazard communication, ensuring that labels and safety data sheets convey consistent information about chemical hazards.

7.5. Regulations in China:

China has enacted several laws and regulations related to hazardous chemicals to ensure the safe handling, storage, transportation, and disposal of such substances. Some of the key laws and regulations include:

1. China REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals): China implemented its own version of REACH, which is similar to the European Union's REACH regulation. China REACH requires the registration of new and existing chemicals, including hazardous chemicals, and imposes obligations on manufacturers and importers to ensure the safe use of these substances.
2. Hazardous Chemicals Control Ordinance (China GHS): This regulation implements the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) in China. It standardizes the classification and labelling of hazardous chemicals.
3. Hazardous Chemicals Regulations (Decree No. 591): These regulations lay out the classification and labelling requirements for hazardous chemicals. They also provide guidelines for the safe production, storage, transportation, and use of hazardous chemicals.

7.6. International regulations for control of Chemicals

Sr No	Acts and Rules	Purpose of Legislation	Ministry/ Authority
1	National Chemical Policy, 2014 (DRAFT)	To create an enabling framework to foster innovation, catalyse manufacturing, addressing environmental concerns, encourage research and expansion of the industry	Ministry of Chemicals and Fertilizers (Dept. of Chemicals and Petro-Chemicals)
2	The Petroleum Act, 1934	Regulate the import, transport, storage, production, refining and blending of petroleum	Ministry of Petroleum and Natural Gas
3	The Petroleum Rules, 2002	Regulate the import, transport, storage, production, refining and blending of petroleum	Ministry of Petroleum and Natural Gas, and Ministry of Environment & Forests (MoEF),
4	The Calcium Carbide Rules, 1987	To regulate the import, production, storage, transportation, sale, use and handling and disposal of Calcium Carbide with a view to prevent accidents	Ministry of Petroleum and Natural Gas,

5	The Explosives Act,	To regulate the manufacture, possession, use, sale, transport, export and import of explosives with a view to prevent misuse	Ministry of Commerce and Industry (Department of Explosives)
6	The Explosives Rules, 1983	To regulate the manufacture, possession, use, sale, transport, export and import of explosives with a view to prevent accidents	Ministry of Commerce and Industry and Ministry of Environment & Forests (MoEF),
7	The Insecticides Act, 1968	Regulate the import, manufacture, sale, transport, distribution and use of insecticides with a view to prevent risk to human beings or animals	Ministry of Agriculture, Central Insecticides Board, and Registration Committee
8	The Insecticides Rules, 1971	Regulate the import, manufacture, sale, transport, distribution and use of insecticides with a view to prevent risk to human beings or animals	Ministry of Agriculture,
9	The Fertiliser (Control) Order, 1985 under the Essential Commodities Act, 1955	Regulate the import, manufacture, sale, transport, distribution and	Ministry of Agriculture (Department of Agriculture and Cooperation)
10	The Drugs and Cosmetics Act, 1940	To regulate import, manufacture, distribution and sale of drugs	Ministry of Health and Family Welfare
11	EIA Notification, 1994	Requirement of environmental clearance before establishment/ expansion of certain type of industries having bearing on Environment.	Ministry of Environment & Forests (MoEF), and Central/ State Pollution Control Board and Pollution Control Committees Union Territories
12	Batteries (Management and Handling) Rules, 2001.	To control the hazardous waste generation (lead waste) from used lead acid batteries	Ministry of Environment & Forests (MoEF), and Central/ State Pollution Control Board and Pollution Control Committees Union Territories

13	Hazardous Waste (Management and Handling) Rules, 1989	Management & handling of hazardous wastes in line with the Basel Convention (Trans-boundary movement of hazardous waste)	Ministry of Environment & Forests (MoEF), and Central/ State Pollution Control Board and Pollution Control Committees Union Territories.
14	Ozone Depleting Substances (Regulation and Control) Rules, 2000	Regulate the production, import, use, sale, purchase and phase-out of the Ozone Depleting Substances	Ministry of Environment & Forests
15	Manufacture, Storage and Import of Hazardous Chemical Rules, 1989	Regulate the manufacture, storage and import of hazardous chemicals	Ministry of Environment & Forests (MoEF), and Central/ State Pollution Control Board and Pollution Control Committees Union Territories
16	Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996	Emergency planning preparedness and response to chemical accidents	Ministry of Environment & Forests (MoEF), and Central/ State Pollution Control Board and Pollution Control Committees Union Territories
17	The Air (Prevention and Control of Pollution) Act, 1981 amended 1987	Prevention, control and abatement of air pollution	Central/ State Pollution Control Board and Pollution Control Committees Union Territories
18	The Air (Prevention and Control of Pollution) (Union Territories) Rules,	Prevention, control and abatement of air pollution	Central/ State Pollution Control Board and Pollution Control Committees Union Territories
19	The Water (Prevention and Control of Pollution) Act, 1974 amended 1988	Prevention and control of water pollution and also maintaining or restoring the wholesomeness of water bodies	Central/ State Pollution Control Board and Pollution Control Committees Union Territories
20	The Water (Prevention and Control of Pollution) Rules, 1975	The prevention and control of water pollution and also maintaining or restoring the wholesomeness of water	Central/ State Pollution Control Board and Pollution Control Committees Union Territories

21	The Environment (Protection) Act, 1986,	Protection and Improvement of the Environment	Ministry of Environment & Forests (MoEF), and Central/ State Pollution Control Board and Pollution Control Committees Union Territories
22	Environmental (Protection) Rules, 1986	Protection and Improvement of the Environment	Ministry of Environment & Forests (MoEF), and Central/ State Pollution Control Board and Pollution Control Committees Union Territories
23	National Disaster Management Act, 2005	Disaster prevention, mitigation, capacity building, improving preparedness to deal with disaster, response capability and provision of evacuation, rescue, relief and rehabilitation	Ministry of Home Affairs and Disaster Management Authority

Chapter 8

Chapter 8

Glimpses of Important Trends from the FY 2018-19 to FY 2022-23

This Chapter has been included in this publication to highlight important trends of chemicals and petrochemicals sector during the last five years i.e. 2018-19 to 2022-23, through graphical presentation with concise analysis. The graphical presentation contains tables alongside trends during the considered period in respect of Production, Installed Capacity, Export, Import and Net Export / Net Import relating to various groups of Major Chemicals and Major Petrochemicals with Compound Annual Growth Rate (CAGR) from the FY 2018-19 to FY 2022-23. The Chapter also contains pie charts depicting share of Major Groups under Major Chemicals and Major Petrochemicals in respect of Production, Installed Capacity, Export and Import along with Net Import / Net Export in the FY 2022-23.

8.2. This Publication has also contained detailed tables in Appendices Section showing group-wise, product-wise, year-wise information of selected Major Chemicals and Major Petrochemicals along with top five import and export destinations. The information relating to exchange rates of Indian Rupees' vis-a-vis US\$, World export of Chemicals by top ten countries-2022, sector-wise FDI inflows etc. are also included in the Appendices Section.

8.3. Many of statistical tables appended in the Publication present temporal data from the FY 2015-16 to FY 2022-23. CAGR in these tables has also been reflected over the period of 8 years.

8.4. Hope trends indicated in this chapter and data contained in the publication would help users in understanding the emerging scenario in the sector with clarity and ease.

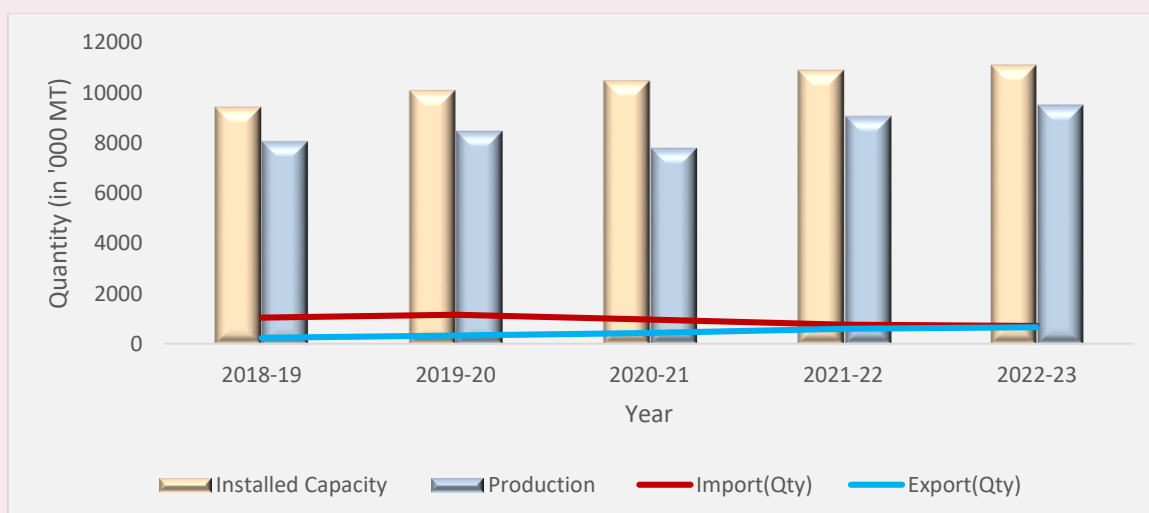
Alkali Chemicals

Table 8.1: - Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	9422	8043	1049	239
2019-20	10089	8457	1157	329
2020-21	10473	7776	968	429
2021-22	10889	9041	767	598
2022-23	11100	9493	713	668
CAGR (%)	4.2	4.2	-9.2	29.3

Source: DCPC

Graph 8.1: - Installed Capacity, Production, Import & Export



From 2018–19 to 2022–23, Installed Capacity and Production both grew steadily at a 4.2% CAGR, indicating consistent industry expansion. Imports showed a declining trend with a –9.2% CAGR, suggesting reduced dependence on external supply. In contrast, Exports increased significantly with a 29.3% CAGR, reflecting improving competitiveness and stronger presence in external markets. Overall, the sector demonstrates stable growth, increasing self-reliance, and rising export orientation.

Alkali Chemicals

Table 8.2: Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Import
2018-19	2255	878	1377
2019-20	2408	828	1580
2020-21	1705	853	852
2021-22	1747	1872	-124
2022-23	2700	3143	-443
CAGR (%)	4.6	37.6	NA

Source: DCPC

Graph 8.2:- Value of Import, Value of Export and Net Import



The import value of Alkali Chemicals remained relatively stable from the FY 2018-19 to FY 2022-23, with minor fluctuations. However, the export value showed a steady increase, and in the FY 2022-23, it significantly exceeded the import value. This decrease in net import value suggests a decreasing reliance on imported Alkali Chemicals, indicating positive progress for the country.

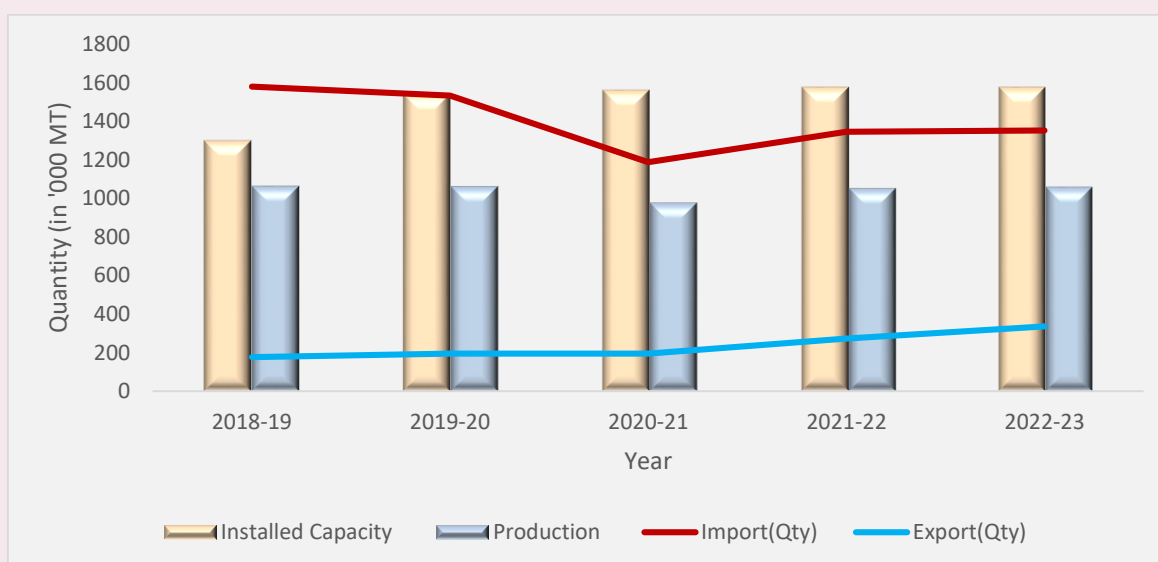
Inorganic Chemicals

Table 8.3:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	1300	1064	1580	177
2019-20	1538	1063	1532	196
2020-21	1560	978	1188	195
2021-22	1575	1052	1345	273
2022-23	1575	1058	1351	337
CAGR (%)	4.9	-0.3	-3.8	11.4

Source: DCPC

Graph 8.3: - Installed Capacity, Production, Import & Export



The installed capacity of inorganic chemicals has been increasing gradually. The chart displays a stable production trend for Inorganic Chemicals from the FY 2018-19 to FY 2022-23, indicating a consistent market output. However, during the same period, there was a significant rise in exports of inorganic chemicals, but the chart also reveals a relatively high import rate, suggesting a reliance on foreign markets for supply.

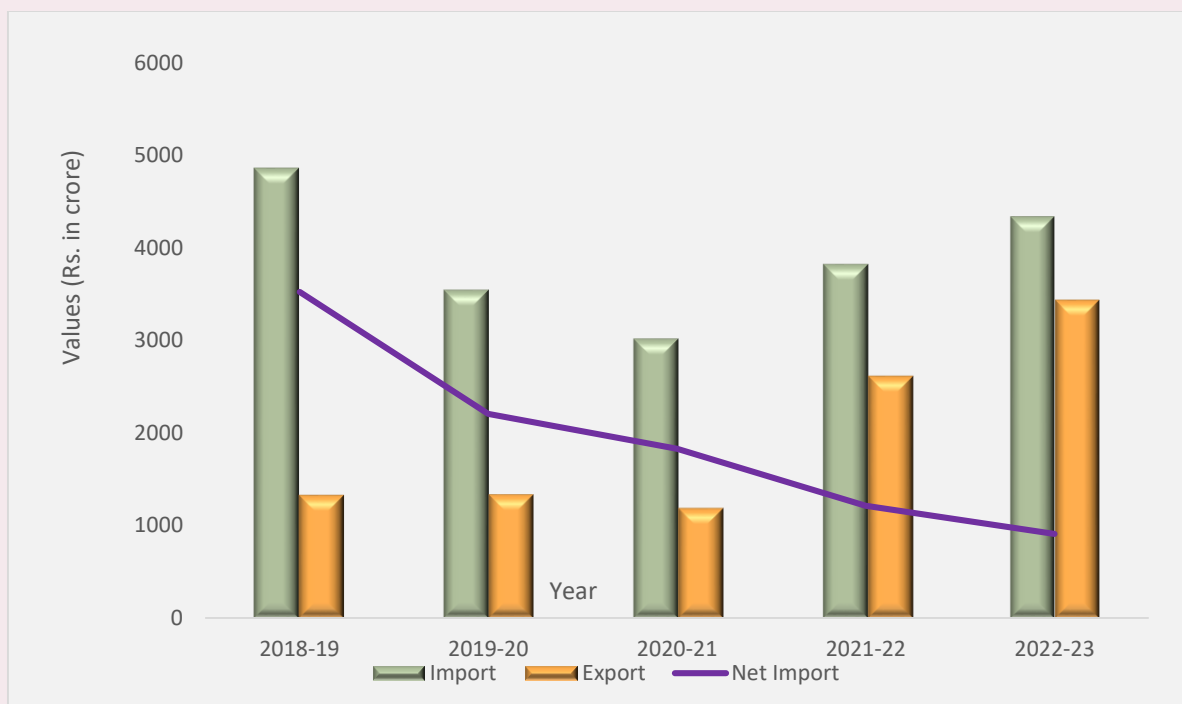
Inorganic Chemicals

Table 8.4: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Import
2018-19	4858	1332	3525
2019-20	3546	1341	2205
2020-21	3021	1192	1829
2021-22	3824	2612	1212
2022-23	4336	3428	908
CAGR (%)	-5.8	18.3	-23.4

Source: DCPC

Graph 8.4: - Value of Import, Value of Export and Net Import



The graph shows that the import value of Inorganic Chemicals had varied trends over the years, while the export value remained stable from the FY 2018-19 to FY 2020-21 and saw a significant increase from the FY 2021-22. Additionally, the net import value consistently decreased from the FY 2018-19 to FY 2021-22 and experienced a sharp decline in FY 2022-23. These trends suggest an improved domestic production capacity and reduced reliance on imports.

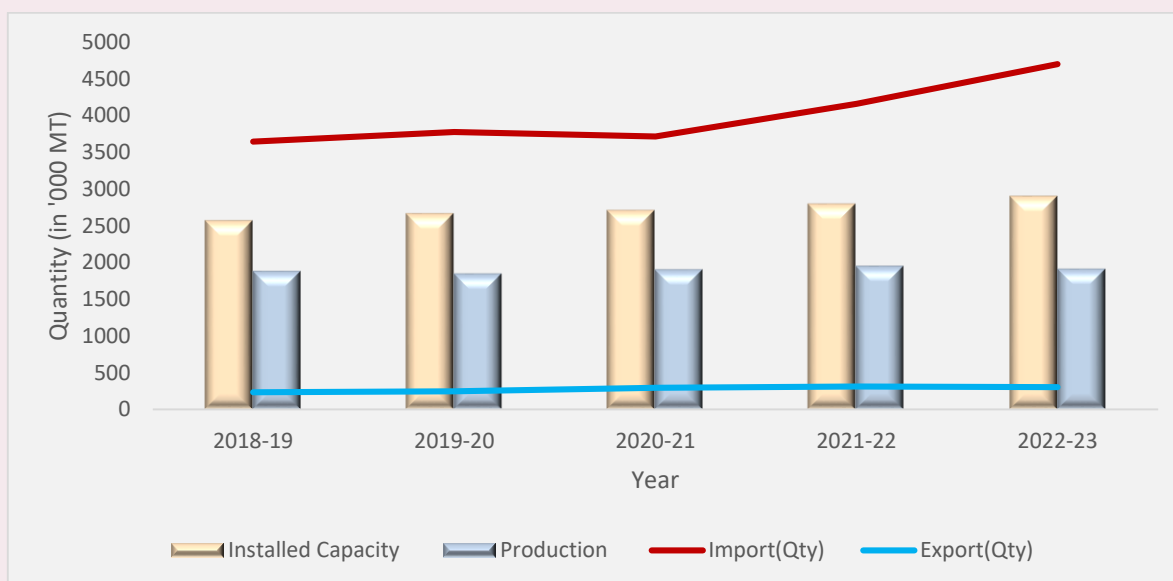
Organic Chemicals

Table 8.5:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	2575	1884	3645	233
2019-20	2671	1847	3775	245
2020-21	2716	1906	3716	296
2021-22	2800	1953	4160	310
2022-23	2905	1912	4701	304
CAGR (%)	3.1	0.4	6.6	6.9

Source: DCPC

Graph 8.5:- Installed Capacity, Production, Import & Export



The chart depicting Organic Chemicals illustrates a consistent and gradual rise in installed capacity from the FY 2018-19 to FY 2022-23, indicating a sustained increase in the demand for these chemicals. Concurrently, the chart displays a stable production trend for Organic Chemicals during this period, suggesting a steady and balanced market for the industry. However, the chart also highlights a widening disparity between import and export, signifying a growing dependence on foreign markets for the supply of Organic Chemicals.

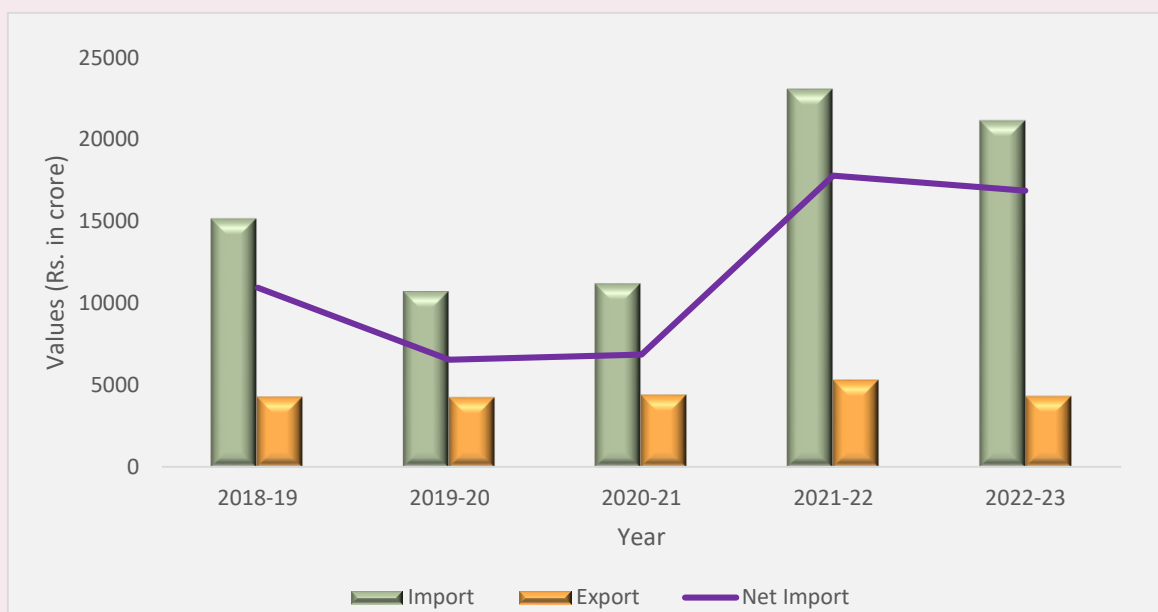
Organic Chemicals

Table 8.6: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Import
2018-19	15203	4257	10945
2019-20	10781	4227	6553
2020-21	11247	4380	6867
2021-22	23082	5283	17799
2022-23	21176	4297	16879
CAGR (%)	8.6	0.2	11.4

Source: DCPC

Graph 7.6:- Value of Import, Value of Export and Net Import



The data shows that imports increased significantly from 2018-19 to 2022-23, while exports stayed almost flat. As a result, net imports grew steadily and the trade gap widened, with imports and net imports both peaking in 2021-22. CAGR values confirm this trend: imports grew at 8.6%, exports at only 0.2%, and net imports at 11.4%.

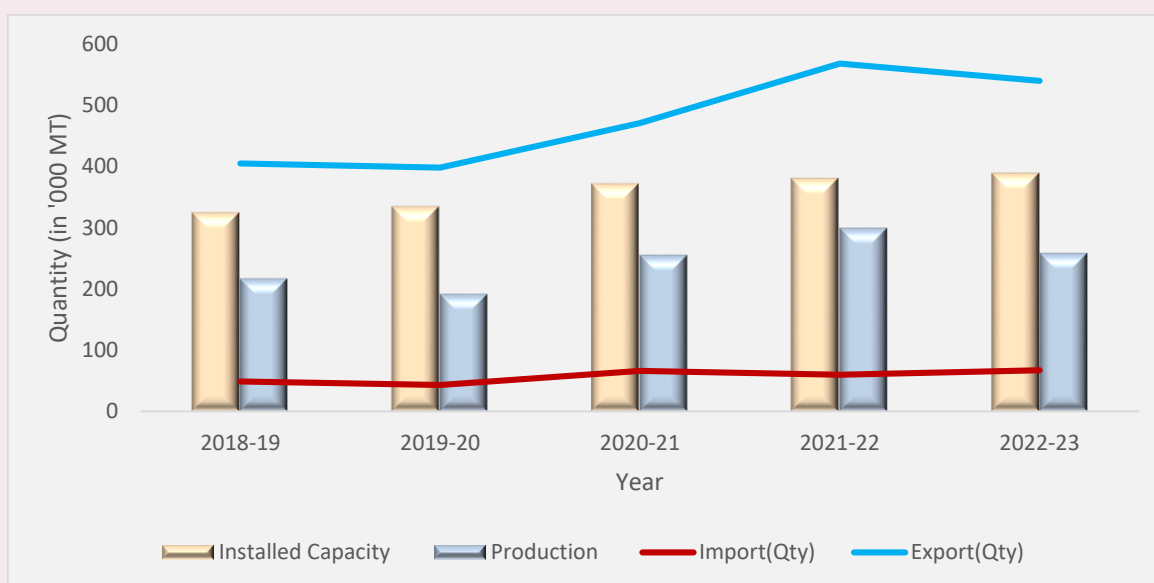
Pesticides

Table 8.7: -Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	324	217	49	405
2019-20	334	192	43	398
2020-21	371	255	66	471
2021-22	380	299	60	568
2022-23	389	258	67	540
CAGR (%)	4.7	4.4	8.3	7.4

Source: DCPC

Graph 8.7: - Installed Capacity, Production, Import & Export



The Pesticides chart exhibits a consistent increase in installed capacity from the FY 2018-19 to FY 2022-23, reflecting a growing demand for these chemicals in various industries. Over the same period, the chart shows a notable increase in Pesticides production with a Compound Annual Growth Rate (CAGR) of 4.4%, indicating a positive trend for the market. Additionally, the Pesticides chart highlights a significantly higher rate of export compared to import, indicating a strong domestic production capability and a competitive presence in the global market.

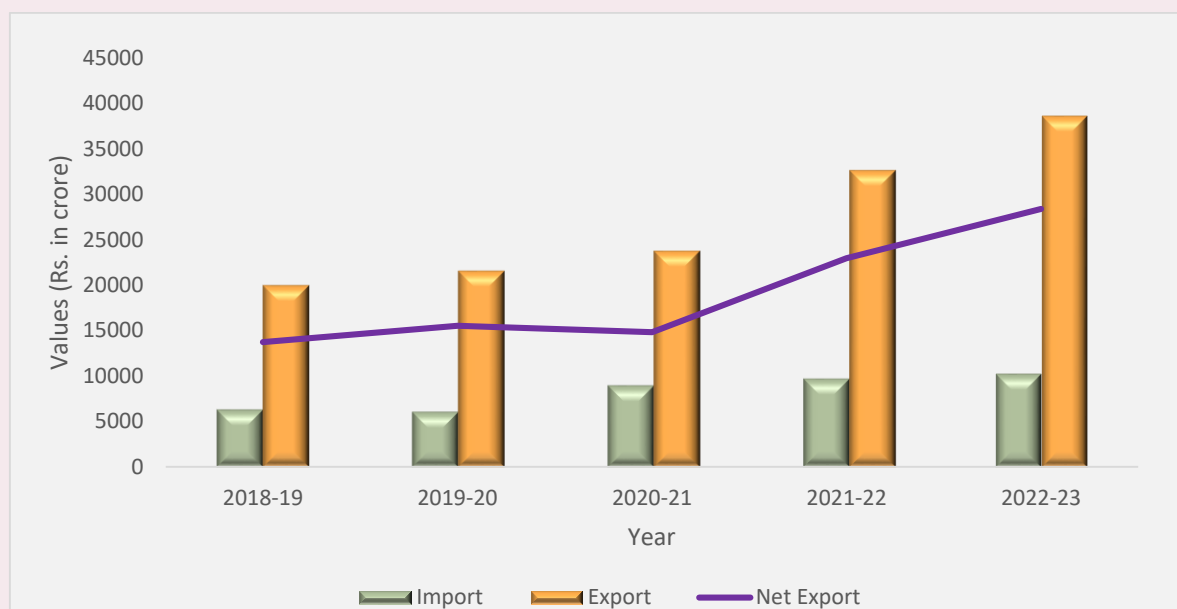
Pesticides

Table 8.8: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Export
2018-19	6326	20041	13715
2019-20	6111	21633	15522
2020-21	8991	23806	14815
2021-22	9726	32664	22938
2022-23	10252	38617	28365
CAGR (%)	12.8	17.8	19.9

Source: DCPC

Graph 8.8: - Value of Import, Value of Export and Net Import



The Pesticides chart depicts a sharp increase in the export value of Pesticides, reflecting a growing global demand from the FY 2018-19 to FY 2022-23. Simultaneously, the import value of Pesticides shows a consistent upward trend, suggesting a potential reliance on foreign markets to meet domestic needs. Moreover, the chart exhibits a significant rise in the net export value of Pesticides, indicating a potential expansion in domestic production capacity and a subsequent increase in exports.

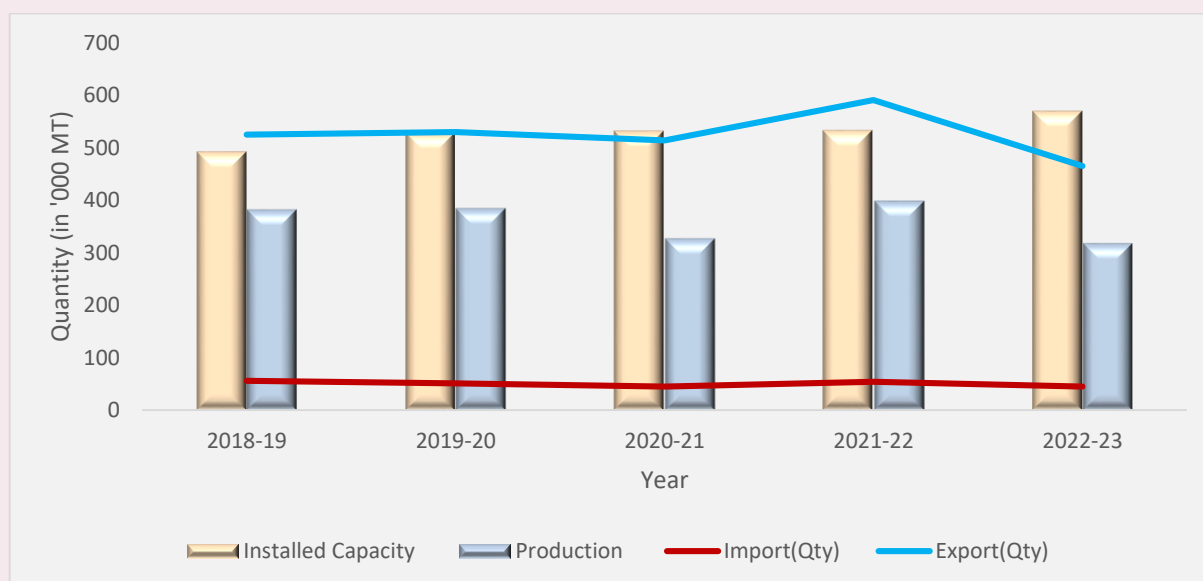
Dyes and Pigments

Table 8.9:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	492	382	56	525
2019-20	528	384	51	530
2020-21	532	327	45	514
2021-22	533	398	54	591
2022-23	570	318	45	465
CAGR (%)	3.7	-4.5	-5.5	-3.0

Source: DCPC

Graph 8.9:- Installed Capacity, Production, Import & Export



The chart for Dyes and Pigments demonstrates a consistent growth in installed capacity from the FY 2018-19 to FY 2022-23, indicating a rising demand for these chemicals in various industries. Similarly, the chart indicates stable production with minor fluctuations, reflecting a steady market for the industry. Moreover, there is a notable gap between export and import rates, suggesting a strong domestic production capability and a competitive presence in the global market.

Dyes and Pigments

Table 8.10: -Value of Import, Value of Export and Net Export (Rs. in Crore)

Year	Import	Export	Net Export
2018-19	2784	18007	15223
2019-20	2814	19284	16470
2020-21	2527	17704	15177
2021-22	3267	23365	20098
2022-23	2904	19844	16940
CAGR (%)	1.1	2.5	2.7

Source: DCPC

Graph 8.10:- Value of Import, Value of Export and Net Export



Imports remained fairly stable from 2018-19 to 2022-23, growing only slightly with a CAGR of 1.1%. Exports showed moderate growth over the period, with a higher CAGR of 2.5%, reaching their peak in 2021-22. Net exports increased consistently as well, reflected by a CAGR of 2.7%, indicating a steadily improving trade surplus throughout the five years.

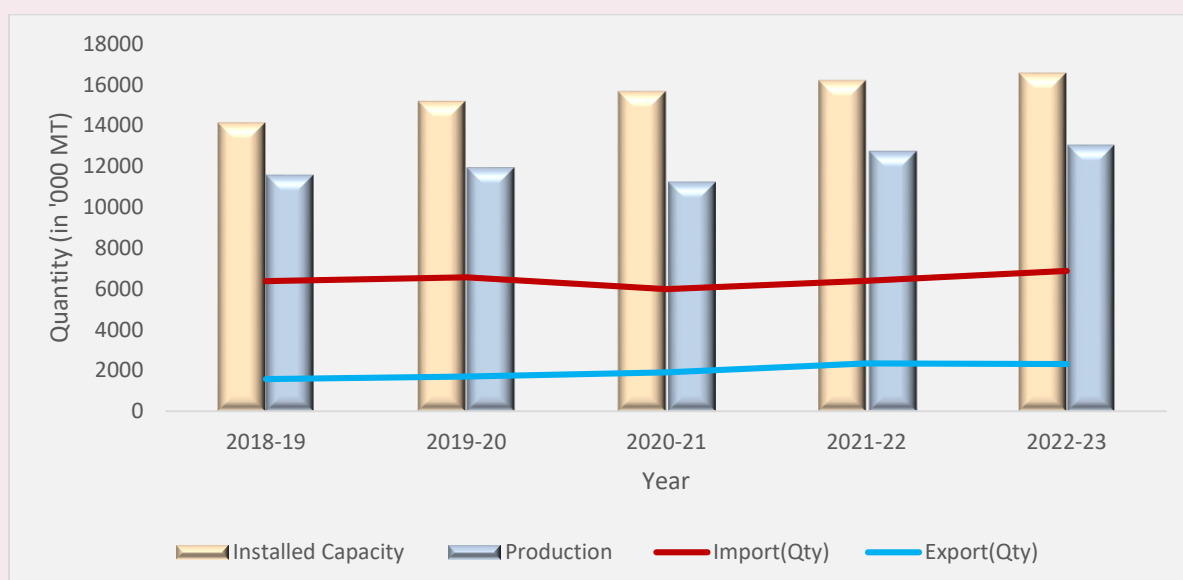
Total Major Chemicals

Table 8.11: -Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	14112	11589	6379	1579
2019-20	15160	11943	6557	1698
2020-21	15652	11243	5983	1905
2021-22	16178	12743	6385	2339
2022-23	16538	13039	6878	2313
CAGR (%)	4.0	3.0	1.9	10.0

Source: DCPC

Graph 8.11: - Installed Capacity, Production, Import & Export



The Total Major Chemicals chart exhibits a gradual increase in installed capacity from the FY 2018-19 to 2022-23. Over the same period, the chart shows a consistent increase in Major Chemicals production with a Compound Annual Growth Rate (CAGR) of 2.9%, except for a minor dip in the FY 2020-21. This suggests a stable market for the industry, despite the disruptions caused by the pandemic. Although the Total Major Chemicals chart displays a higher rate of import compared to export, there is a slow but steady reduction in the gap between them over the years, indicating an improving domestic production capability and potentially reducing the reliance on foreign markets.

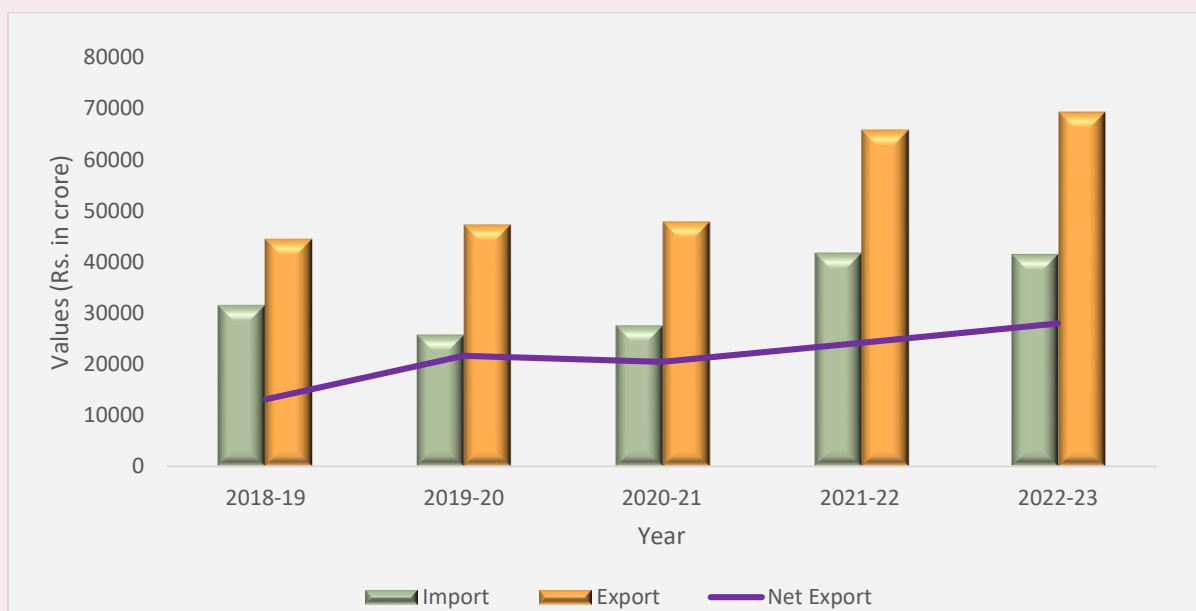
Total Major Chemicals

Table 8.12: -Value of Import, Value of Export and Net Export (Rs. in Crore)

Year	Import	Export	Net Export
2018-19	31426	44516	13091
2019-20	25659	47313	21653
2020-21	27490	47935	20445
2021-22	41646	65796	24150
2022-23	41368	69330	27962
CAGR (%)	7.1	11.7	20.9

Source: DCPC

Graph 8.12: - Value of Import, Value of Export and Net Export



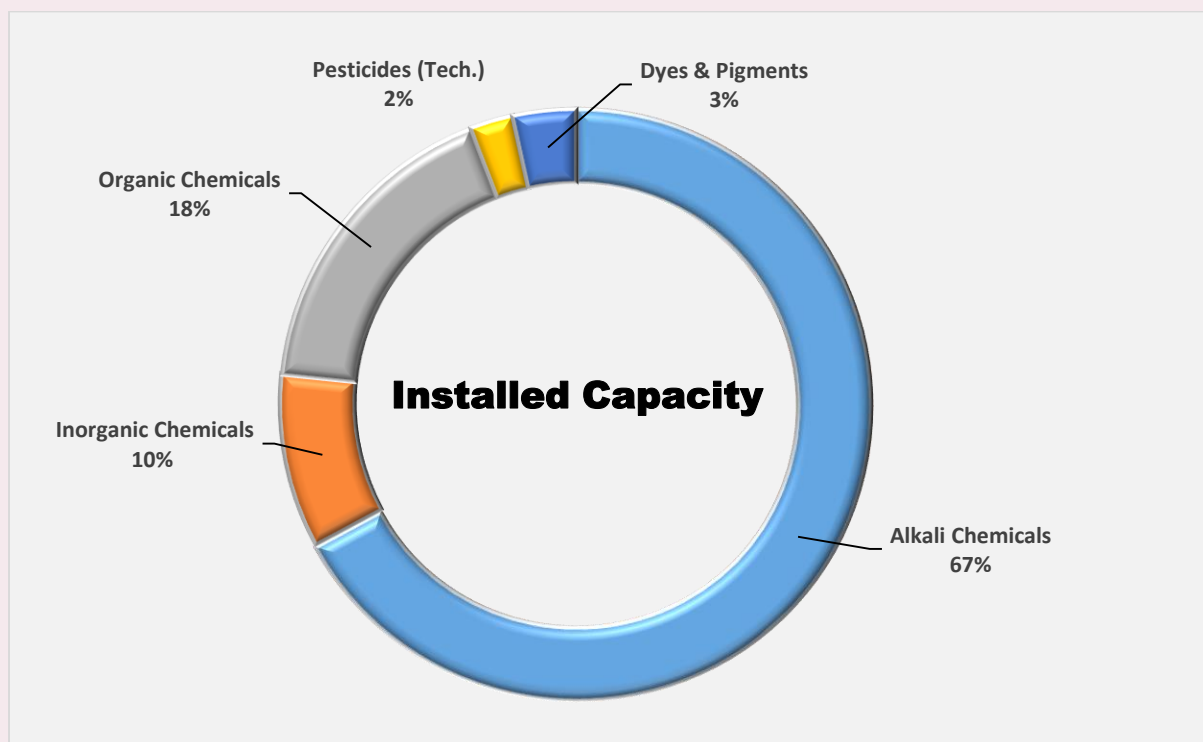
The chart related to value of Import and Export for Total Major Chemicals displays a sharp increase in the value of export from the FY 2020-21 to FY 2022-23. Over the same period, the chart also shows quite an increase in the value of the import of Major Chemicals, suggesting a stable market for the industry. In FY 2022-23, the net export of Total Major chemicals demonstrates a rapid and substantial increase, highlighting a significant growth in the country's capability to export these chemicals.

Table 8.13: - Installed capacity of Major Chemical (Group wise) in the FY 2022-23

Group	Installed Capacity (in '000 MT)
Alkali Chemicals	11100
Inorganic Chemicals	1575
Organic Chemicals	2905
Pesticides (Tech.)	389
Dyes & Pigments	570

Source: DCPC

Pie Chart 8.1: -Share of different groups of Major Chemicals in Installed Capacity in the FY 2022-23



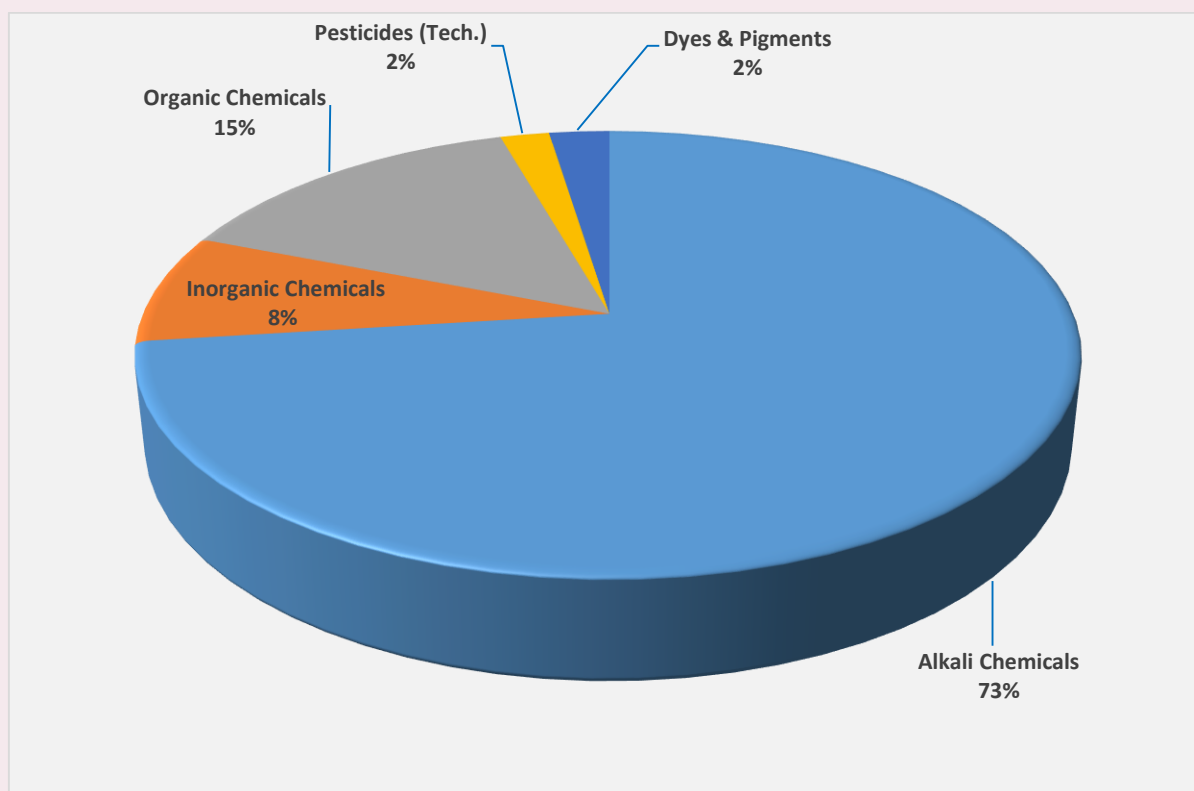
The charts above visually represent the installed capacity distribution among major chemical groups for the FY 2022-23. Alkali Chemicals dominate with the highest share, accounting for 67% of the installed capacity, followed by Organic Chemicals at 18%, Inorganic Chemicals at 10%, Dyes & Pigments at 3%, and Pesticides at 2%

Table 8.14: - Production of Major Chemical (Group wise) in the FY 2022-23

Group	Production (in '000 MT)
Alkali Chemicals	9493
Inorganic Chemicals	1058
Organic Chemicals	1912
Pesticides (Tech.)	258
Dyes & Pigments	318

Source: DCPC

Pie Chart 8.2: -Share of different groups of Major Chemicals in production in the FY 2022-23



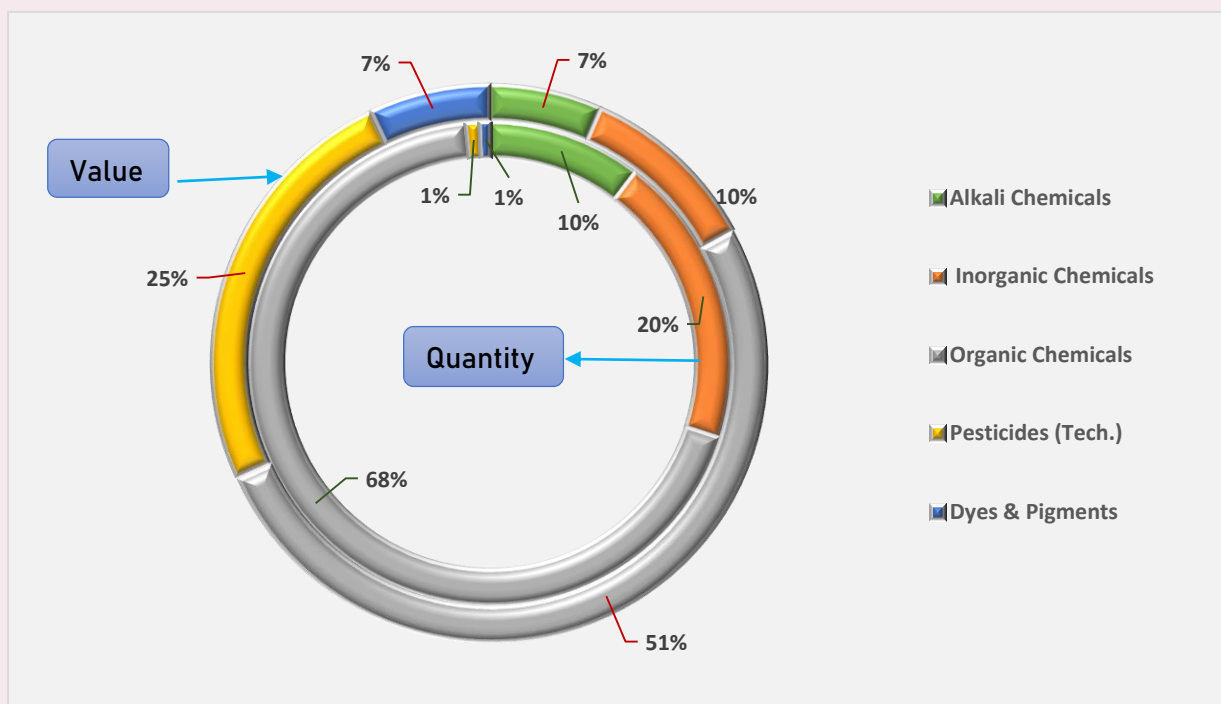
The charts illustrate the production figures for major chemical groups in the FY 2022-23. Notably, Alkali chemicals lead with the largest share, representing 73% of the production. Following closely, Organic chemicals account for the second-highest share at 15%, while Inorganic chemicals contribute 8%. Pesticides and Dyes and pigments both make up 2% of the production.

Table 8.15: - Import quantity and value of Major Chemical (Group wise) in the FY 2022-23

Group	Qty (in MT)	Values (Rs. Lakh)
Alkali Chemicals	713367	269998
Inorganic Chemicals	1351450	433595
Organic Chemicals	4700910	2117580
Pesticides (Tech.)	67445	1025202
Dyes & Pigments	44637	290398

Source: DCPC

Pie Chart 8.3: - Share of different Groups of Major Chemicals in Import quantity and value in the FY 2022-23



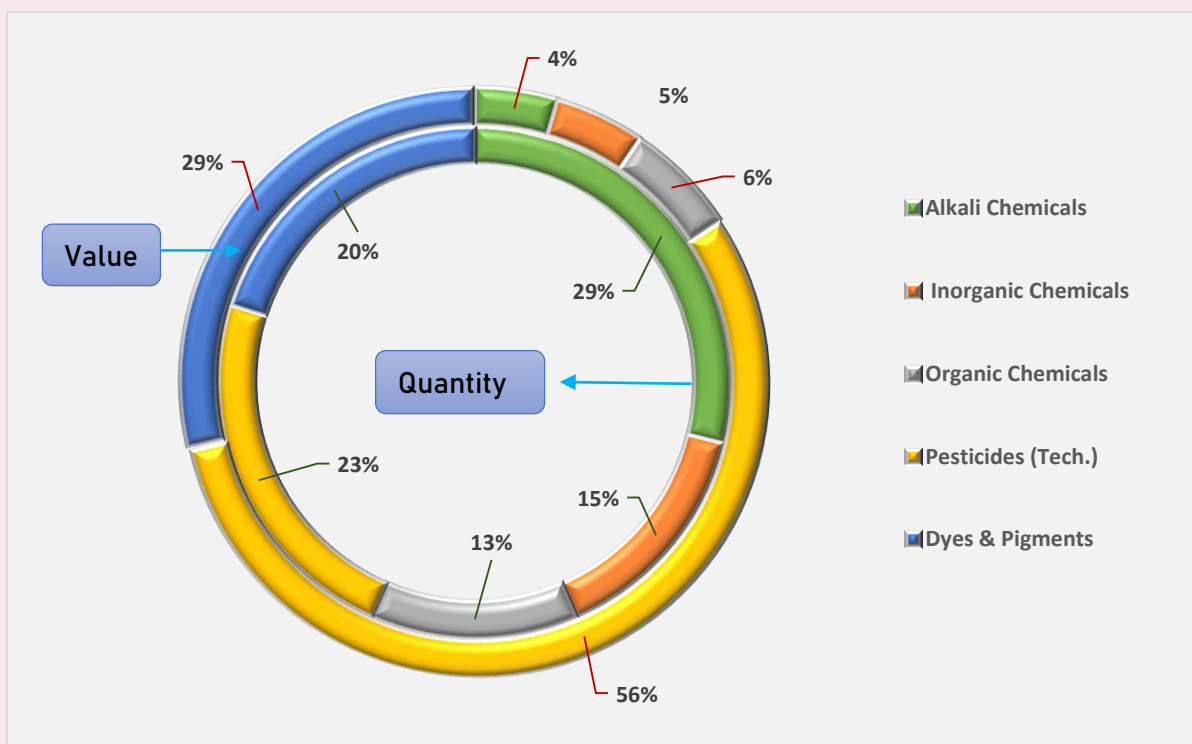
The above graph illustrates bivariate analysis of two key attributes, Import Quantity & Value, for the major chemical groups for the FY 2022–23. Alkali Chemicals quantity import accounts for 68% of total imports and value represents 51% of total value. Following, Inorganic Chemicals quantity import amounts to 20% and value represents 10% of total value. As we can see from the graph, Pesticides quantity import accounts for only 1% of total imports but its value percentage from total is 25%.

Table 8.16: - Export quantity and value of Major Chemical (Group wise) in the FY 2022-23

Group	Qty (in MT)	Values (Rs. Lakh)
Alkali Chemicals	667778	314334
Inorganic Chemicals	337109	342807
Organic Chemicals	303810	429707
Pesticides (Tech.)	539783	3861697
Dyes & Pigments	464906	1984431

Source: DCPC

Pie Chart 8.4: - Share of different Groups of Major Chemicals in Export quantity and value in the FY 2022-23



The graph presented above depicts a bivariate analysis of two critical metrics, Export Quantity and Value, for major chemical groups in the FY 2022–23. Alkali Chemicals export quantity comprises 29% of the total exports, while its value represents a only 4% of the total export value. In the case of Inorganic Chemicals, the exported quantity accounts for 20%, contributing to 10% of the total value. Remarkably, Pesticides' import quantity constitutes 23% of the total exports, but its value as a percentage of the total stands significantly higher at 56%, as visually depicted in the graph.

Petro-chemicals

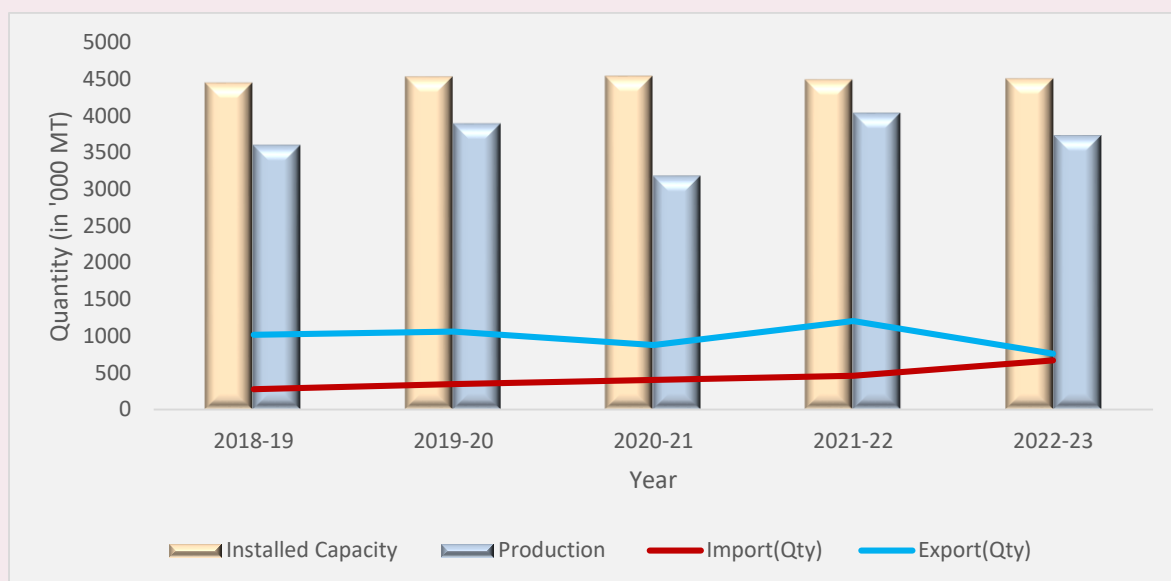
Synthetic Fibre

Table 8.17:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	4440	3601	276	1016
2019-20	4521	3893	347	1059
2020-21	4529	3185	403	879
2021-22	4483	4040	460	1202
2022-23	4496	3973	670	759
CAGR (%)	0.3	0.9	24.8	-7.0

Source: DCPC

Graph 8.13: - Installed Capacity, Production, Import & Export



The chart for Synthetic Fibres exhibits a slight increase in installed capacity from the FY 2018-19 to FY 2022-23, reflecting a slow but steady growth in demand for fibre related products across various industries. Over the same period, the trend of production of Alkali Chemicals was stable from FY 2018-19 and FY 2022-23 with only minor fluctuations, except for a minor dip in the FY 2020-21. This suggests a stable market for the industry, despite the disruptions caused by the pandemic. As with the chart on Major Chemicals, the Synthetic Fibres chart also displays a higher rate of export compared to import quantity of synthetic fibres.

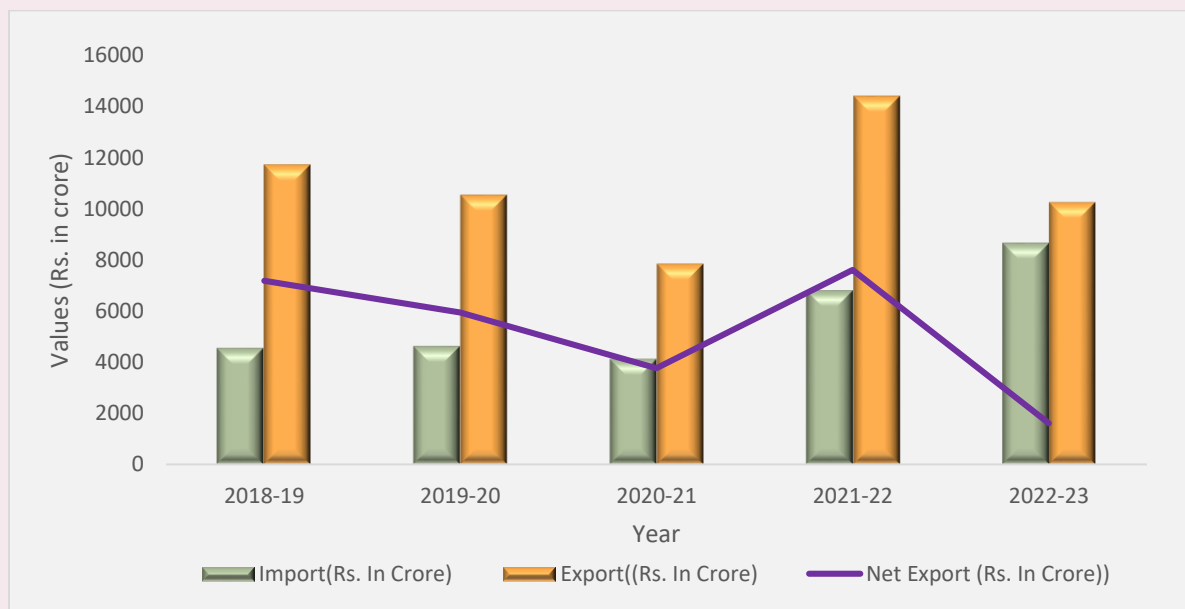
Synthetic Fibre

Table 8.18: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Export
2018-19	4534	11720	7187
2019-20	4609	10550	5941
2020-21	4107	7870	3763
2021-22	6785	14389	7604
2022-23	8647	10261	1614
CAGR (%)	17.5	-3.3	-31.2

Source: DCPC

Graph 8.14: - Value of Import, Value of Export and Net Import



Imports increased sharply over the five-year period, growing at a strong CAGR of 17.5%. Exports, however, declined overall, with a negative CAGR of –3.3%. As a result, net exports fell significantly, reflected by a steep negative CAGR of –31.2%. Although net exports peaked again in 2021-22, they dropped sharply in 2022-23, indicating a rapid narrowing of the trade surplus.

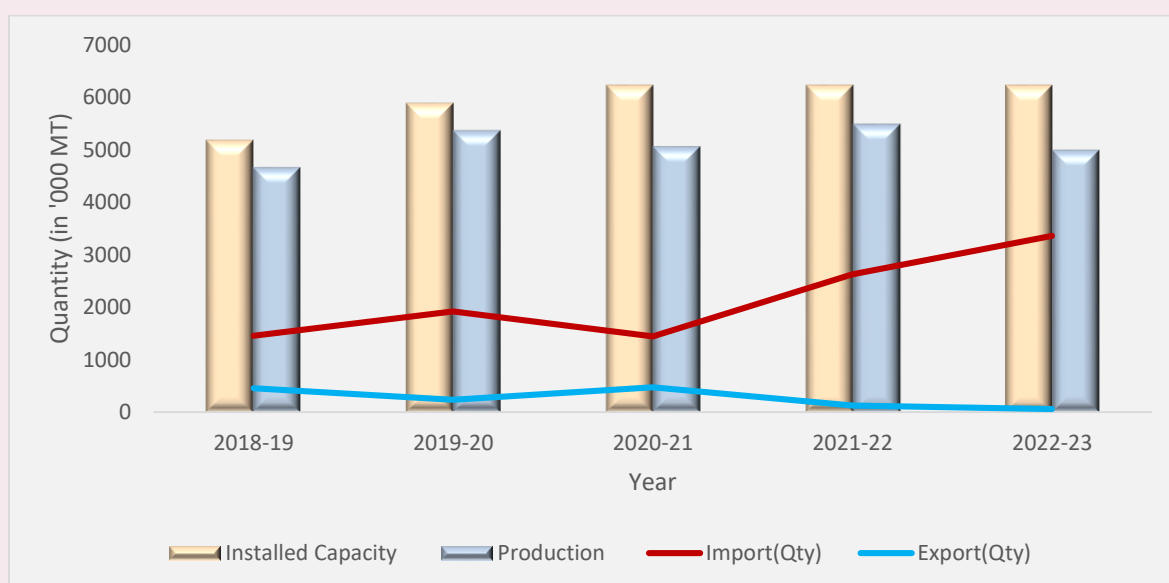
Fibre Intermediate

Table 8.19:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	5187	4657	1455	457
2019-20	5885	5359	1920	234
2020-21	6228	5059	1441	475
2021-22	6228	5482	2627	128
2022-23	6228	4988	3356	56
CAGR (%)	4.7	1.7	23.2	-40.8

Source: DCPC

Graph 8.15: - Installed Capacity, Production, Import & Export



The Fibre Intermediate chart displays a consistent rise in installed capacity from the FY 2018-19 to FY 2020-21 and remain constant from the FY 2021-22. Over the same period the chart shows gradual increase in production with a CAGR of 1.7% indicating positive trend in the market. Furthermore the gap between Import and Export widening showing strong demand in domestic market as well as increasing reliance on foreign market.

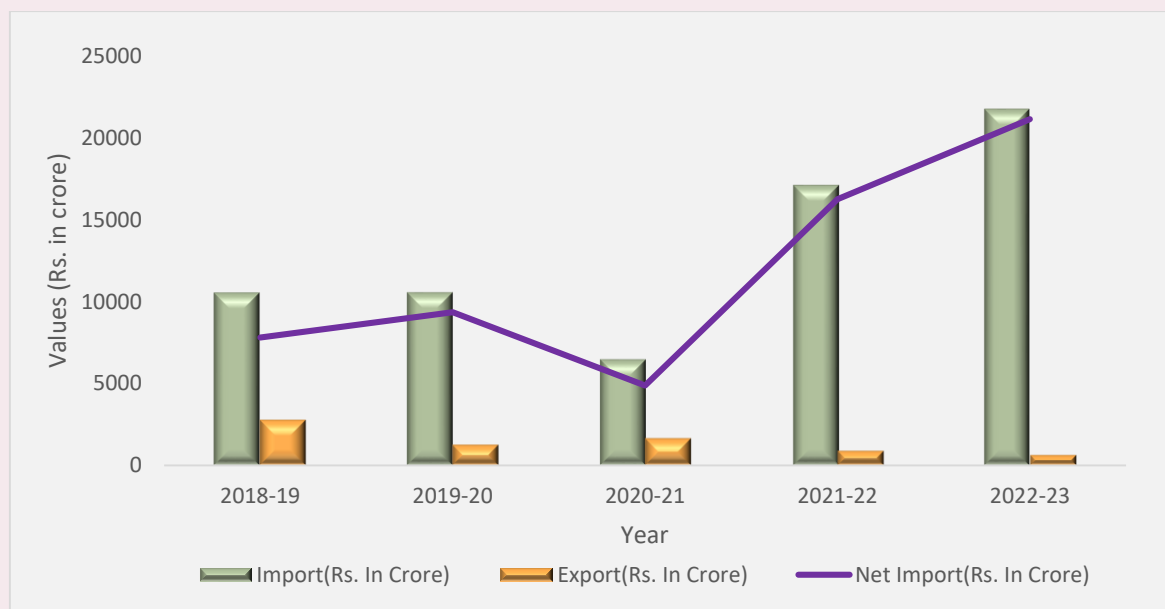
Fibre Intermediate

Table 8.20: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Import
2018-19	10569	2759	7810
2019-20	10595	1236	9359
2020-21	6495	1629	4866
2021-22	17133	865	16267
2022-23	21762	608	21154
CAGR (%)	19.8	-31.5	28.3

Source: DCPC

Graph 8.16:- Value of Import, Value of Export and Net Import



The Fibre Intermediates chart demonstrates a gradual decline in the value of exports from the FY 2018-19 to FY 2022-23. In addition, it shows an increase in the value of imports during the same period, with the exception of a slight dip in the FY 2020-21.

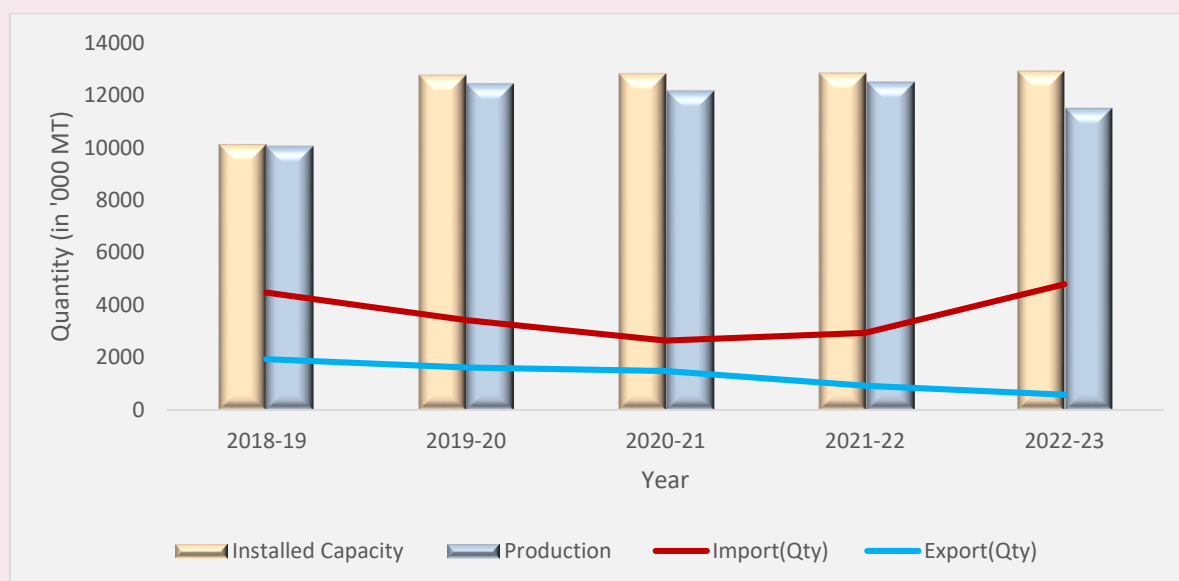
Polymers

Table 8.21:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	10115	10040	4479	1934
2019-20	12754	12404	3430	1615
2020-21	12799	12144	2641	1489
2021-22	12820	12471	2941	921
2022-23	12894	11487	4789	586
CAGR (%)	6.3	3.4	1.7	-25.8

Source: DCPC

Graph 8.17: - Installed Capacity, Production, Import & Export



The chart for Polymers exhibits a steady increase in the installed capacity from the FY 2018-19 to FY 2022-23. Over the same period, the trend of production of Polymers was stable between FY 2019-20 and FY 2022-23 with only minor fluctuations. Furthermore, the gap between quantity of Import and Export widening showing strong demand in domestic market as well as increasing dependence on foreign market.

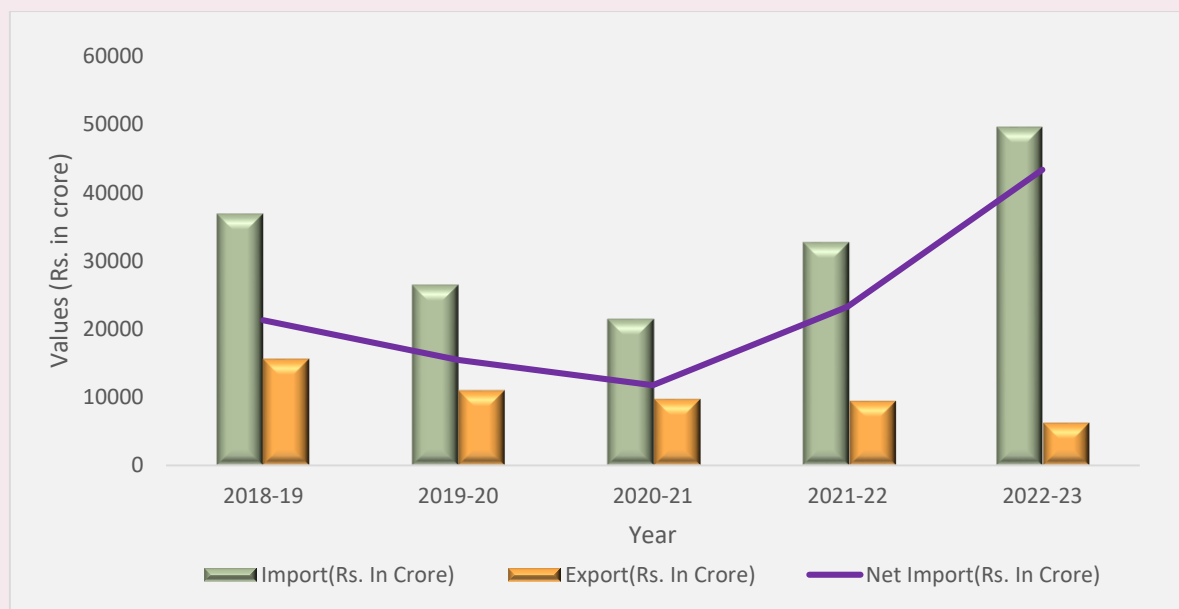
Polymers

Table 8.22: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Import
2018-19	36848	15584	21264
2019-20	26394	10953	15440
2020-21	21423	9681	11742
2021-22	32672	9425	23247
2022-23	49567	6225	43341
CAGR (%)	7.7	-20.5	19.5

Source: DCPC

Graph 8.18:- Value of Import, Value of Export and Net Import



The chart illustrates a significant rise in import values for Polymers from FY 2020-21 to FY 2022-23. Export values remained declined over the period. Initially, net import values decreased, but later on, they increased, suggesting a continued reliance on imports for Polymers in India.

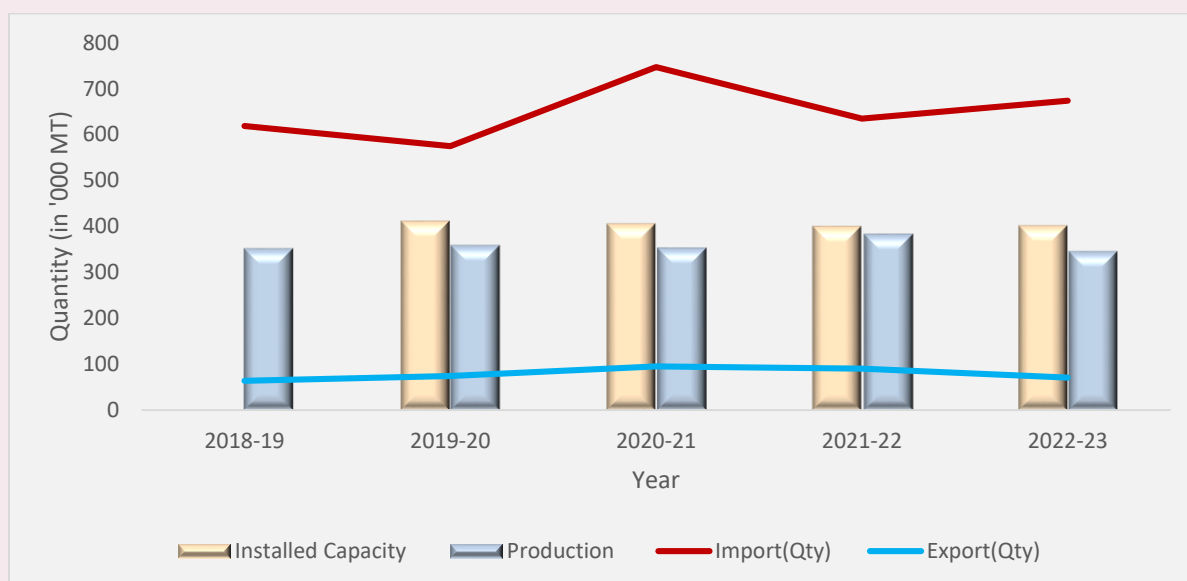
Synthetic Rubber

Table 8.23:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	425	351	619	64
2019-20	411	358	575	74
2020-21	406	353	747	95
2021-22	400	383	635	90
2022-23	402	345	673	70
CAGR (%)	-1.4	-0.4	2.1	2.4

Source: DCPC

Graph 8.19: - Installed Capacity, Production, Import & Export



The chart shows a consistent installed capacity for Synthetic Rubber from the FY 2018-19 to FY 2022-23. However, despite this constant capacity, the production of Synthetic Rubber experienced a decrease at a Compound Annual Growth Rate (CAGR) of 0.4% during the same period, indicating a reduction in capacity utilization. On the other hand, the import value of Synthetic Rubber is significantly higher than its export value during the same period, indicating a higher demand for the product domestically than abroad.

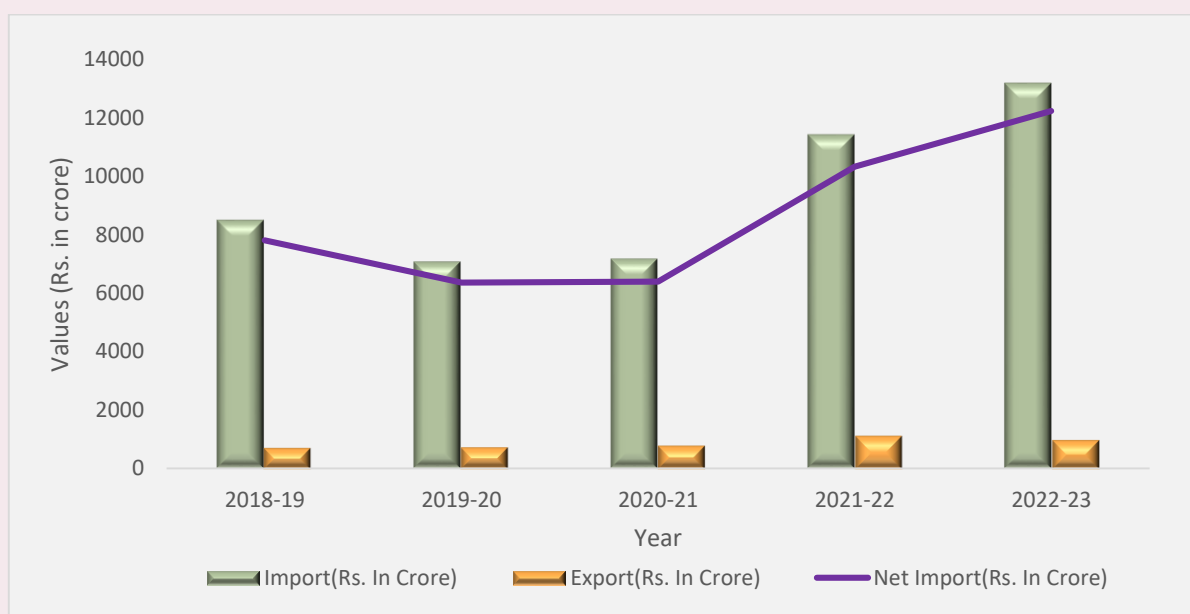
Synthetic Rubber

Table 8.24: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Import
2018-19	8514	707	7807
2019-20	7095	731	6365
2020-21	7189	794	6394
2021-22	11441	1118	10323
2022-23	13206	975	12231
CAGR (%)	11.6	8.4	11.9

Source: DCPC

Graph 8.20: - Value of Import, Value of Export and Net Import



According to the Synthetic Rubber chart, import values exhibited a consistent upward trend from the FY 2018-2019 to FY 2022-2023, with the highest value recorded in the latest year. Imports rose steadily from 2018-19 to 2022-23, growing at a strong CAGR of 11.6%. Exports also increased but at a slower pace, with an 8.4% CAGR. Because imports grew faster than exports, net imports widened over the period, reflected in an 11.9% CAGR. The gap between imports and exports is largest in 2022-23, indicating a consistently increasing import dependence.

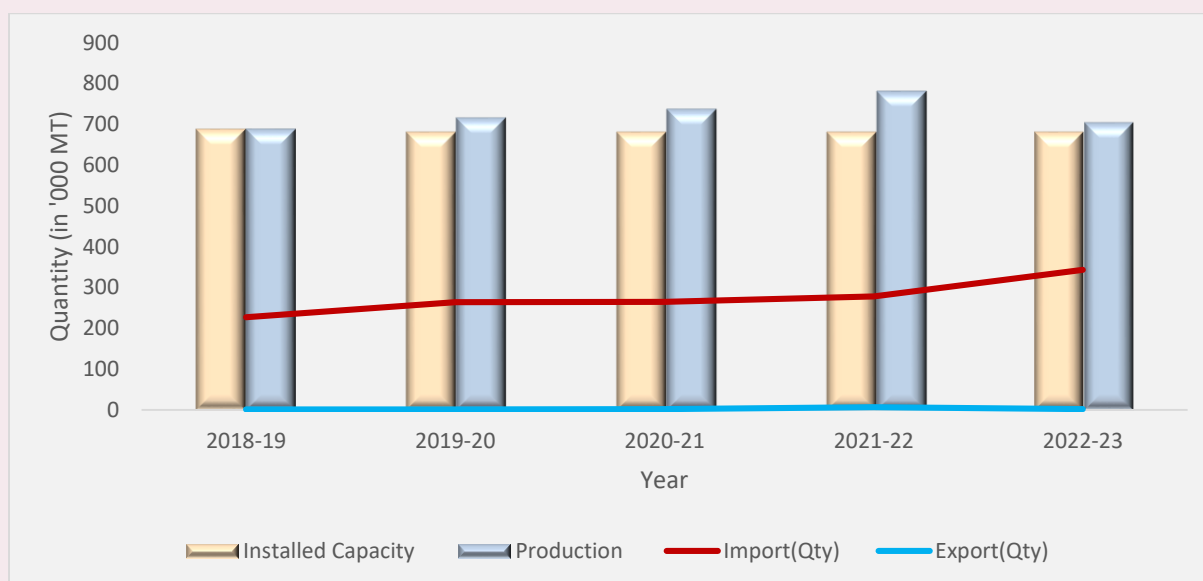
Synthetic Detergent Intermediates

Table 8.25:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	687	687	227	1
2019-20	680	715	264	1
2020-21	680	736	265	2
2021-22	680	780	278	7
2022-23	680	703	343	3
CAGR (%)	-0.3	0.6	10.9	26.0

Source: DCPC

Graph 8.21: - Installed Capacity, Production, Import & Export



The chart reveals that the installed capacity for Synthetic Detergent Intermediates remained constant from the FY 2018-19 to FY 2022-23. However, the production of Synthetic Detergent Intermediates showed an increasing trend from the FY 2018-19 to FY 2022-23, indicating an improvement in production efficiency during this period. Moreover, the import value of Synthetic Detergent Intermediates was higher than its export value during the same period, suggesting a higher demand for the product domestically than abroad.

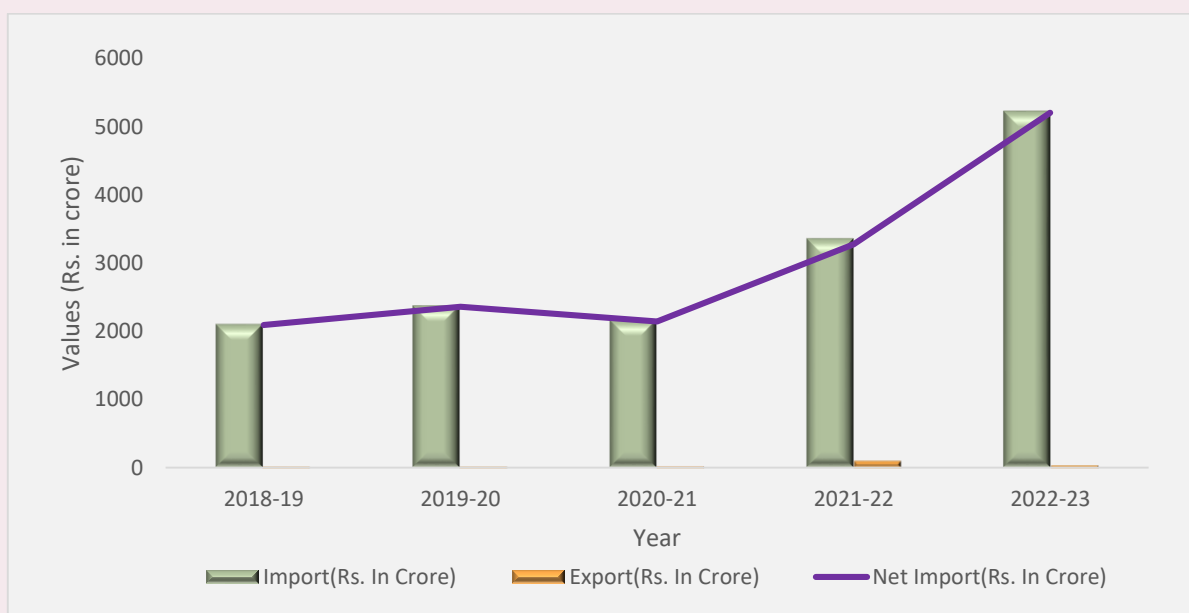
Synthetic Detergent Intermediates

Table 8.26: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Import
2018-19	2104	15	2089
2019-20	2374	15	2359
2020-21	2163	19	2143
2021-22	3362	87	3275
2022-23	5236	31	5204
CAGR (%)	25.6	20.0	25.6

Source: DCPC

Graph 8.22: - Value of Import, Value of Export and Net Import



The chart for Synthetic Detergent Intermediates displays a steady increase in import values over the five-year period, with the highest value in the FY 2022-2023. Export values remained consistently low throughout the period. Net import values showed a similar trend to import values, increasing steadily over the period. The CAGR for import values indicated a significant increase in demand, while the CAGR for export values showed a large increase but from a low base. The CAGR for net import values also indicated a significant increase in net imports, suggesting a growing dependence on imports for this product in India.

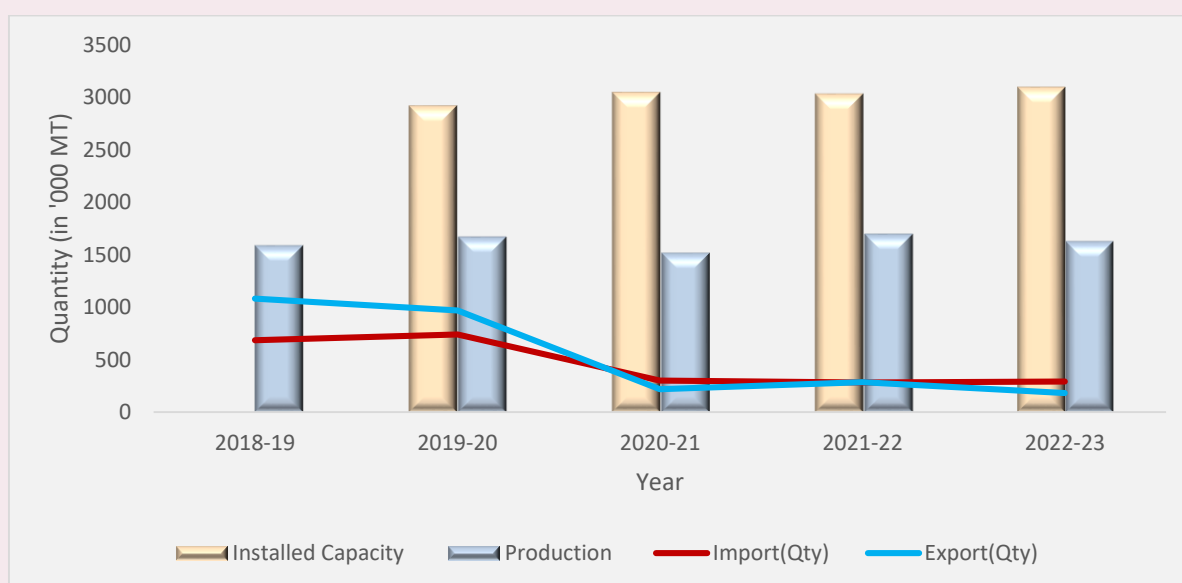
Performance Plastics

Table 8.27:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	2963	1589	684	1080
2019-20	2919	1672	741	969
2020-21	3046	1520	299	217
2021-22	3032	1698	283	284
2022-23	3096	1628	292	182
CAGR (%)	1.1	0.6	-19.2	-35.9

Source: DCPC

Graph 8.23: - Installed Capacity, Production, Import & Export



The chart suggests that the installed capacity for Performance Plastics is very high compared to its production during the FY 2018-19 to FY 2022-23. This indicates that the installed capacity is not being fully utilized, which could be due to various reasons such as lack of demand or operational issues. On the other hand, the export value of Performance Plastics was lower than its import value during the period of 2020-21 to 2022-23. However, the values were approximately the same in 2021-22, suggesting a shift in the trade balance for Performance Plastics during those years.

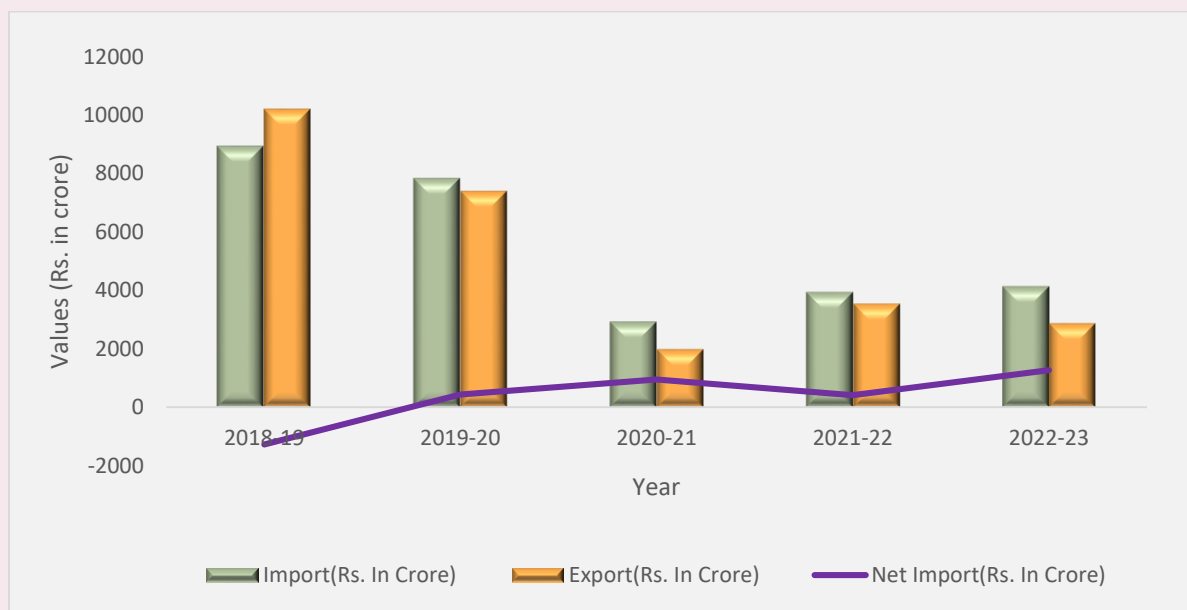
Performance Plastics

Table 8.28: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Import
2018-19	8917	10188	-1271
2019-20	7825	7390	435
2020-21	2938	1987	951
2021-22	3949	3537	412
2022-23	4143	2876	1268
CAGR (%)	-17.4	-27.1	NA

Source: DCPC

Graph 8.24: - Value of Import, Value of Export and Net Import



Imports and exports both declined sharply over the five-year period, with imports showing a CAGR of –17.4% and exports an even steeper decline at –27.1%. Net import values fluctuated, shifting from a net export position in 2018-19 (–1,271) to positive net imports from 2019-20 onward. Because the net import values change signs across the period, a meaningful CAGR cannot be calculated. Overall, the data reflects a contracting trade activity with decreasing volumes on both import and export sides.

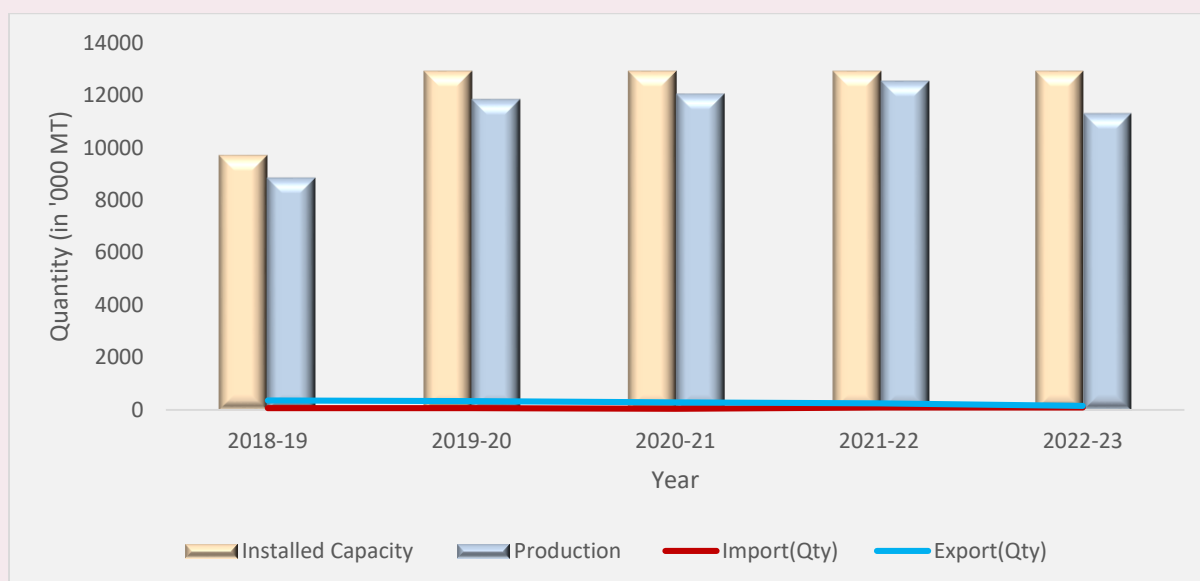
Olefins

Table 8.29:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	9683	8857	70	369
2019-20	12890	11835	76	336
2020-21	12890	12039	44	285
2021-22	12890	12527	92	256
2022-23	12890	11296	94	162
CAGR (%)	7.4	6.3	7.6	-18.6

Source: DCPC

Graph 8.25:- Installed Capacity, Production, Import & Export



The Olefins chart illustrates a rise in installed capacity from the FY 2018-2019 to FY 2019-2020, which then remained constant in the subsequent years. Production exhibited an upward trend from the FY 2018-19 to FY 2021-22, but experienced a decline in the FY 2022-23. The quantity of exports and imports followed a similar pattern, with exports slightly greater than imports in quantity.

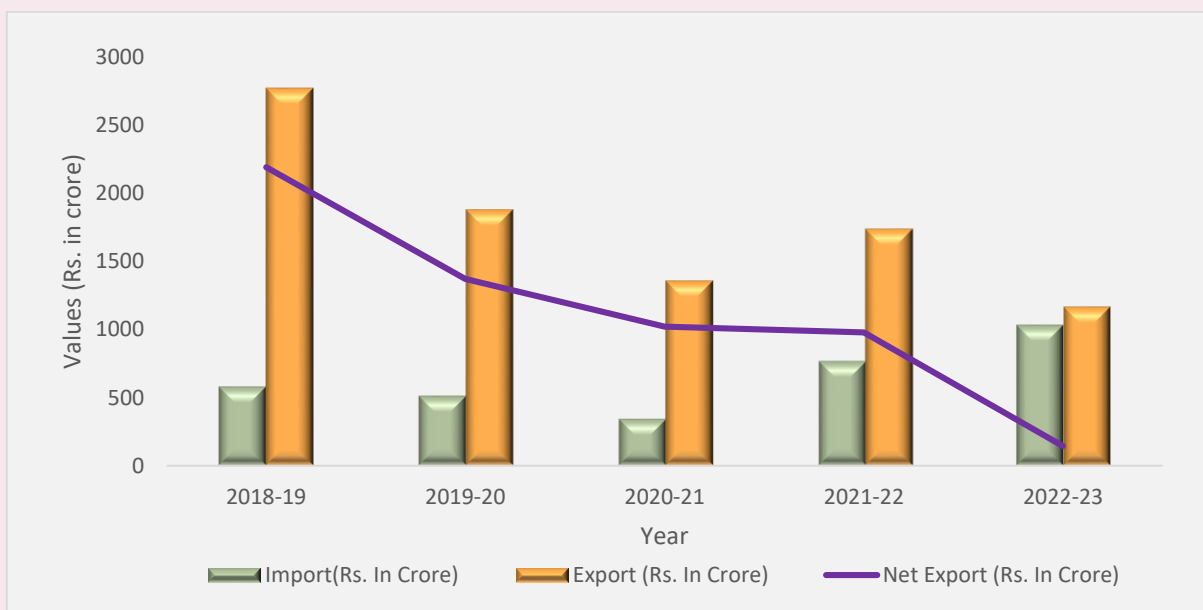
Olefins

Table 8.30: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Export
2018-19	578	2767	2189
2019-20	510	1881	1371
2020-21	340	1361	1021
2021-22	762	1739	977
2022-23	1028	1173	144
CAGR (%)	15.5	-19.3	-49.3

Source: DCPC

Graph 8.26: - Value of Import, Value of Export and Net Import



The Olefins chart exhibits fluctuations in import values, peaking in the FY 2018-2019 before decreasing in subsequent years and then experiencing a rise again from the FY 2021-2022. On the other hand, export values for Olefins demonstrate a consistent decline from the FY 2018-2019 to FY 2020-2021, followed by increase in FY 2021-2022 and then decline again in FY 2022-23. The Compound Annual Growth Rate (CAGR) for import values indicates an increasing demand, whereas for export values, it suggests a slight decline over the same period.

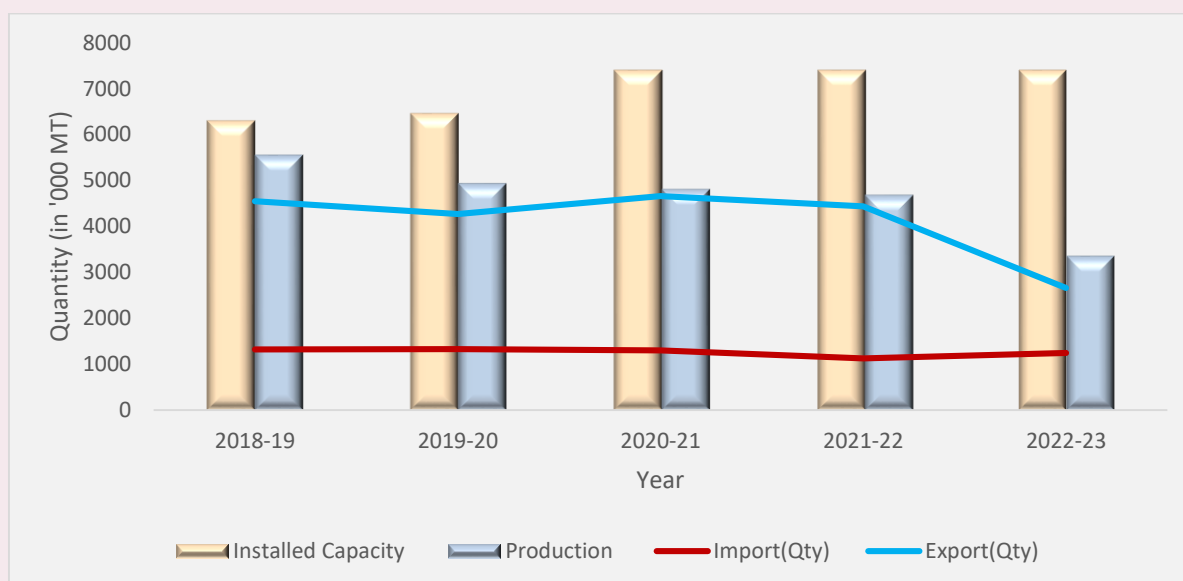
Aromatics

Table 8.31:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	6305	5543	1320	4551
2019-20	6460	4925	1328	4271
2020-21	7404	4805	1300	4661
2021-22	7404	4677	1124	4435
2022-23	7404	3362	1246	2660
CAGR (%)	4.1	-11.8	-1.4	-12.6

Source: DCPC

Graph 8.27: - Installed Capacity, Production, Import & Export



The Aromatics industry experienced a slight rise in installed capacity from the FY 2018-19 to FY 2020-21, which remained consistent in the following years. However, there was a notable decline in production values from the FY 2018-19 to FY 2022-23. Import values remained steady throughout this period. Conversely, export values displayed fluctuations but overall demonstrated a downward trend, with a Compound Annual Growth Rate (CAGR) of -12.6%.

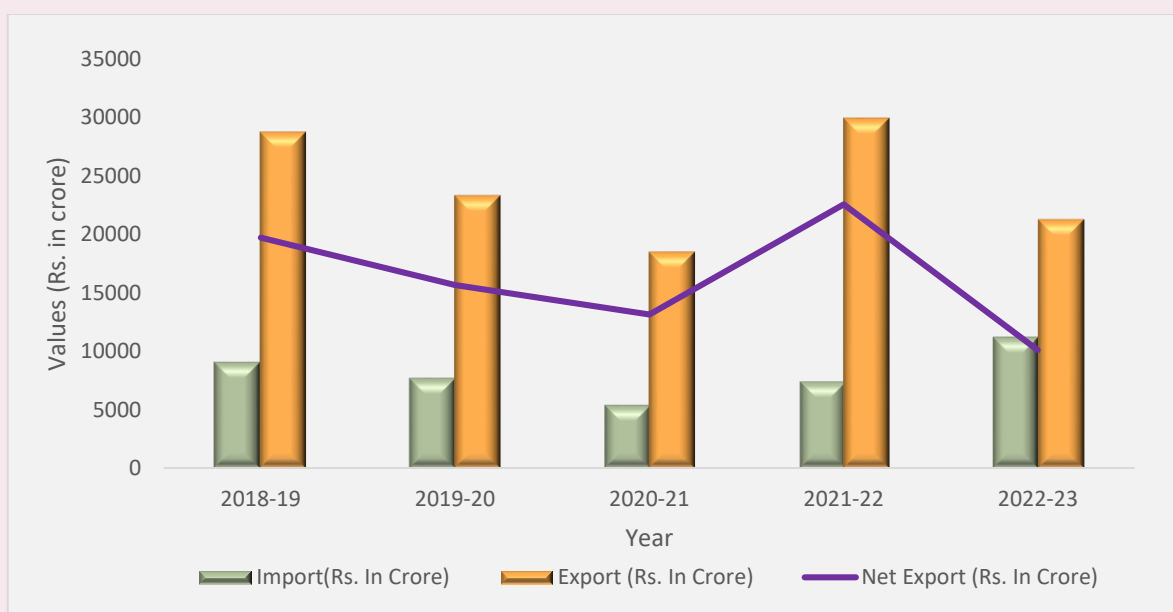
Aromatics

Table 8.32: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Export
2018-19	9102	28803	19701
2019-20	7728	23374	15646
2020-21	5421	18547	13126
2021-22	7425	29980	22555
2022-23	11237	21327	10090
CAGR (%)	5.4	-7.2	-15.4

Source: DCPC

Graph 8.28: - Value of Import, Value of Export and Net Import



Exports declined overall from 2018-19 to 2022-23, with a negative CAGR of – 7.2%, while imports showed moderate growth at a CAGR of 5.4%. As a result, net exports dropped significantly over the period, reflected in a steep negative CAGR of – 15.4%. Although net exports peaked again in 2021-22, they fell sharply in 2022-23, indicating a substantial weakening of the trade surplus.

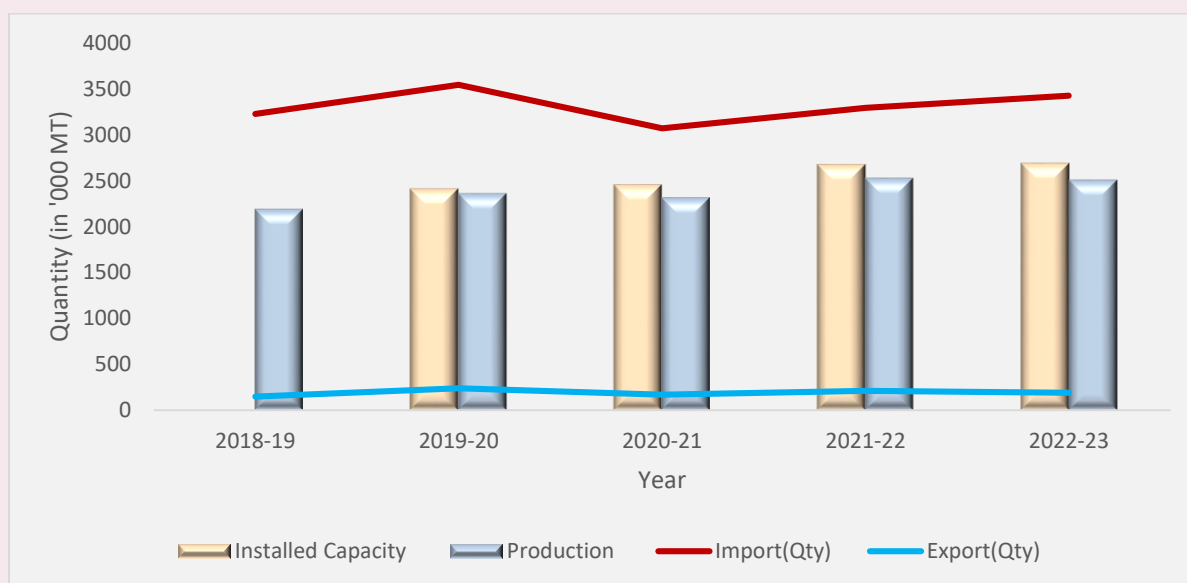
Other Petrochemicals

Table 8.34:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	2271	2192	3227	147
2019-20	2413	2364	3543	238
2020-21	2458	2318	3069	171
2021-22	2677	2531	3291	212
2022-23	2691	2511	3426	189
CAGR (%)	4.3	3.5	1.5	6.5

Source: DCPC

Graph 8.29: - Installed Capacity, Production, Import & Export



Other Petrochemicals industry showed a slight increase in installed capacity from the FY 2018-2019 to FY 2022-2023. Production also increased during this period. Import values were consistently higher than export values, indicating a heavy reliance on imports. The CAGR for import quantity showed a moderate increase in demand, while the CAGR for export quantity indicated a slight increase.

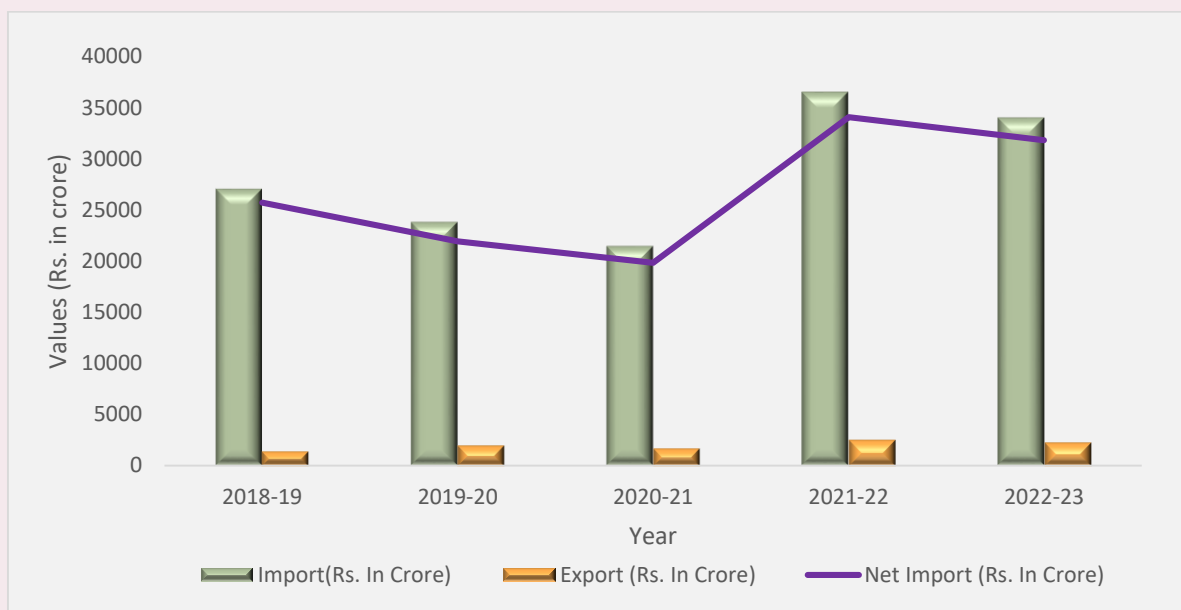
Other Petrochemicals

Table 8.35: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Import
2018-19	27092	1398	25694
2019-20	23883	1949	21934
2020-21	21521	1691	19829
2021-22	36564	2498	34066
2022-23	34043	2242	31802
CAGR (%)	5.9	12.5	5.5

Source: DCPC

Graph 8.30:- Value of Import, Value of Export and Net Import



The chart for Other Petrochemicals depicts a declining trend in import values from the FY 2018-2019 to FY 2021-2022, with the highest import level observed in the FY 2021-22. Import values were consistently higher than export values, indicating a heavy reliance on imports. The net import values consistently remained high, indicating a substantial dependency on imports for Other Petrochemicals.

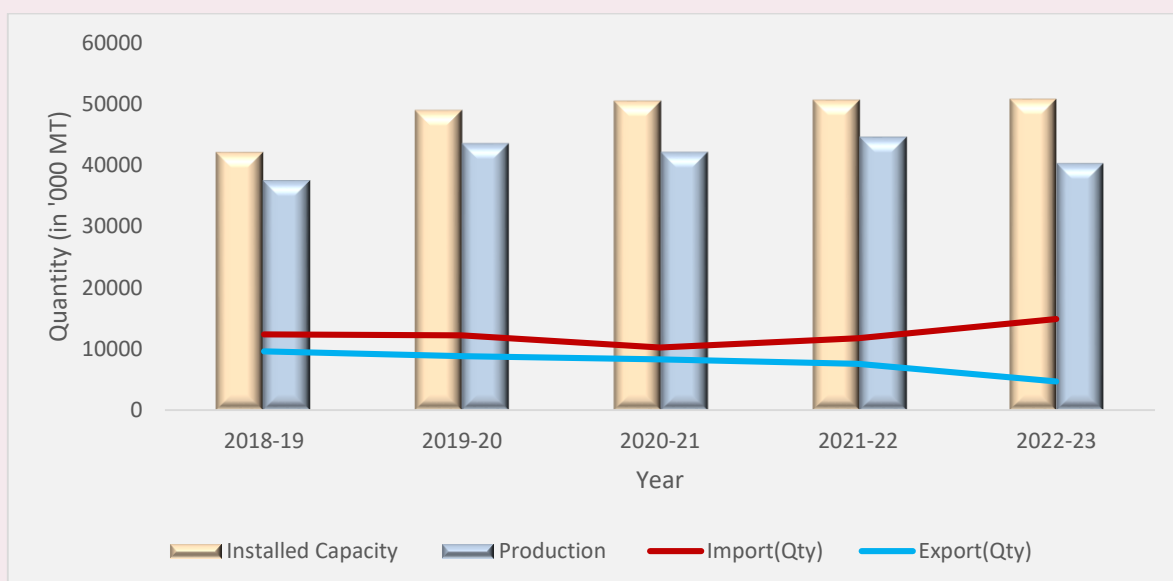
Total Major Petrochemicals

Table 8.36:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	42077	37519	12356	9619
2019-20	48933	43524	12222	8798
2020-21	50439	42159	10211	8274
2021-22	50612	44589	11732	7535
2022-23	50779	40292	14890	4667
CAGR (%)	4.8	1.8	4.8	-16.5

Source: DCPC

Graph 8.31: - Installed Capacity, Production, Import & Export



Installed capacity increased steadily over the five-year period, growing at a CAGR of 4.8%, while production rose more modestly with a 1.8% CAGR. Imports also grew at a similar pace to capacity (4.8%), indicating rising dependence on external supply. Exports, on the other hand, declined sharply, reflected in a significant negative CAGR of –16.5%. Overall, the sector shows increasing capacity and imports but weakening production consistency and a steep fall in export volumes.

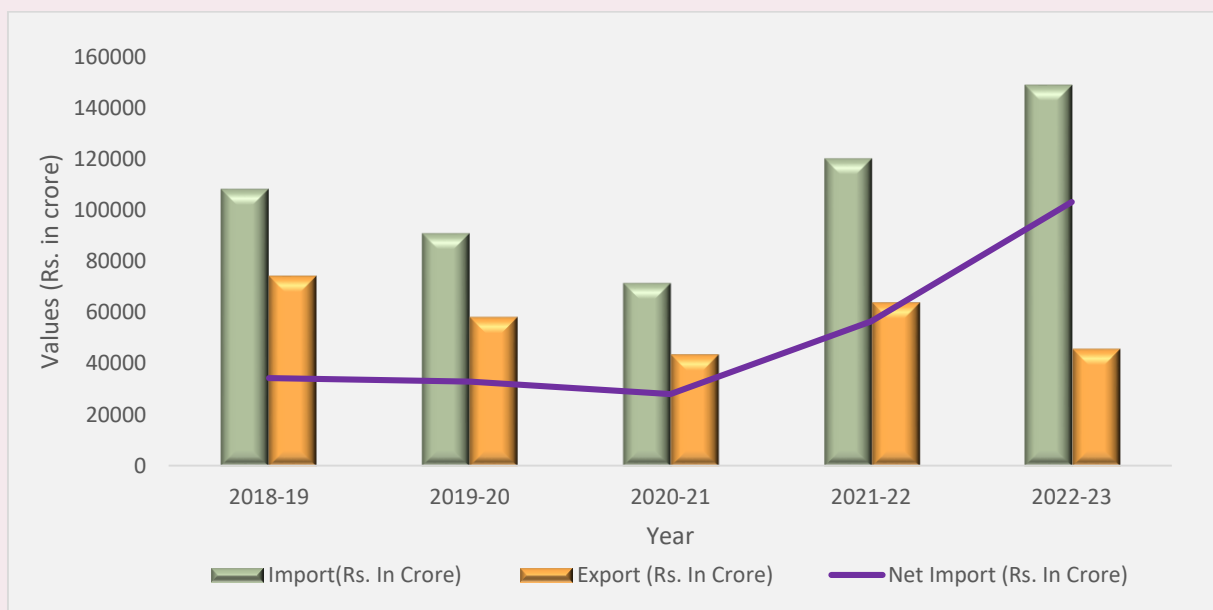
Total Major Petrochemicals

Table 8.38: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Import	Export	Net Import (Rs. In Crore)
2018-19	108259	73941	34318
2019-20	91013	58079	32934
2020-21	71596	43581	28015
2021-22	120093	63639	56455
2022-23	148869	45717	103152
CAGR (%)	8.3	-11.3	31.7

Source: DCPC

Graph 8.32:- Value of Import, Value of Export and Net Import



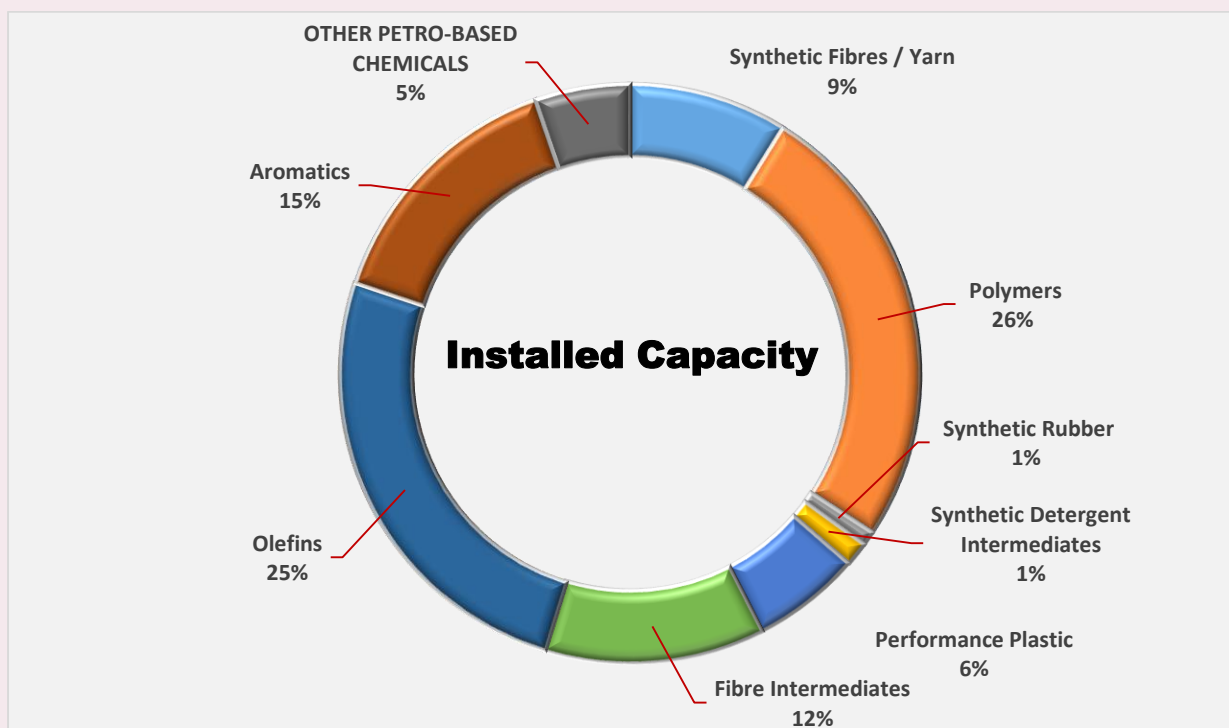
Imports increased steadily over the period, with a CAGR of 8.3%, while exports declined sharply, showing a negative CAGR of –11.3%. As a result, net imports rose dramatically, reflected in a very high CAGR of 31.7%. The trade deficit widened significantly, peaking in 2022-23, indicating growing import dependence and weakening export performance.

Table 8.39: -Installed capacity of different groups of Major Petrochemicals

Groups	Installed Capacity (In 000'MT)
Synthetic Fibres / Yarn	4496
Polymers	12894
Synthetic Rubber	402
Synthetic Detergent Intermediates	680
Performance Plastic	3096
Fibre Intermediates	6228
Olefins	12890
Aromatics	7404
Other petro-based chemicals	2691

Source: DCPC

Pie Chart 8.7: - Share of different groups of Major Petrochemicals in installed capacity during 2022-23



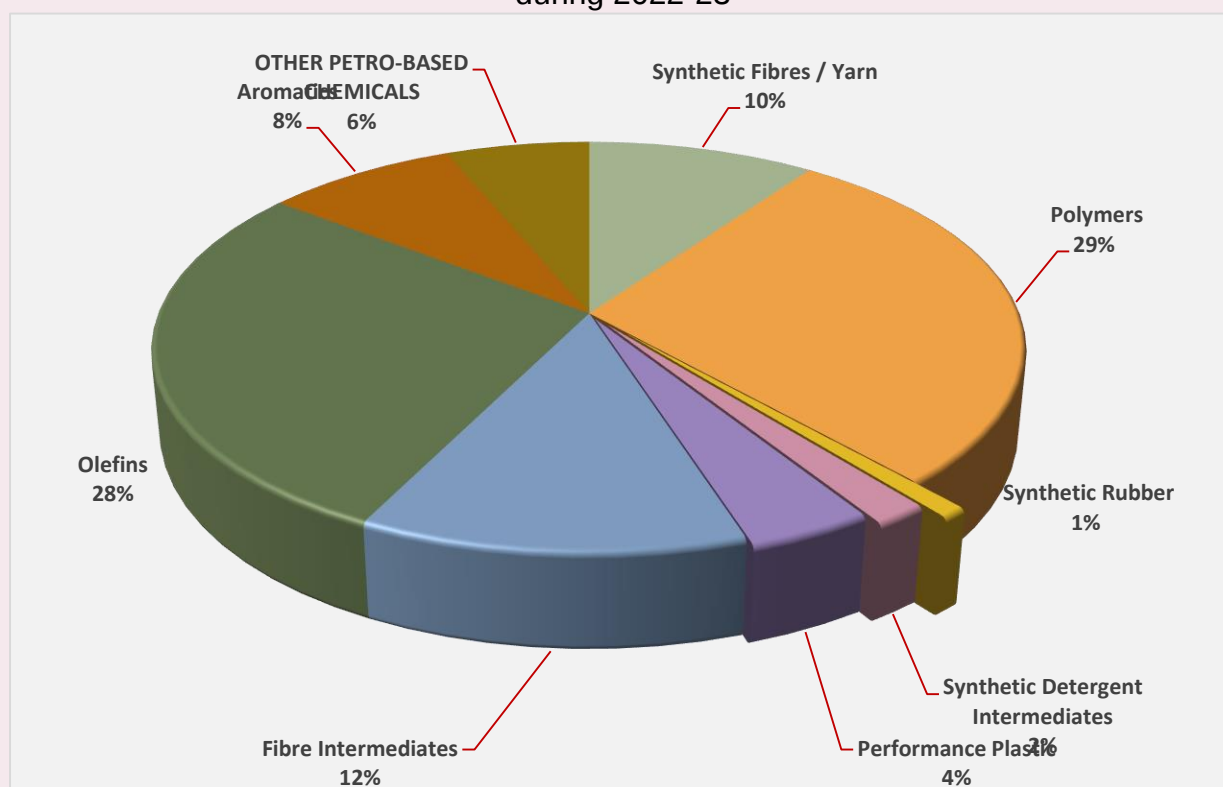
The above graph presents a visual representation of the installed capacity among major petrochemical groups for FY 2022–23. Polymers take the lead with the highest percentage, holding 26% of the total installed capacity, closely trailed by Olefins at 25%. Aromatics comprise 15%, Fiber Intermediates represent 12%, Synthetic Yarn stands at 9%, Performance Plastic at 6%, Other Petro-Based Chemicals at 5%, while both Synthetic Rubber and Synthetic Detergent Intermediates contribute 1% each to the overall capacity.

Table 8.40: - Production of different groups of Major Petrochemicals

Groups	Production (In 000'MT)
Synthetic Fibres / Yarn	3973
Polymers	11487
Synthetic Rubber	345
Synthetic Detergent Intermediates	703
Performance Plastic	1628
Fibre Intermediates	4988
Olefins	11296
Aromatics	3362
Other petro-based chemicals	2510

Source: DCPC

Pie Chart 8.8: - Share of different groups of Major Petrochemicals in production during 2022-23



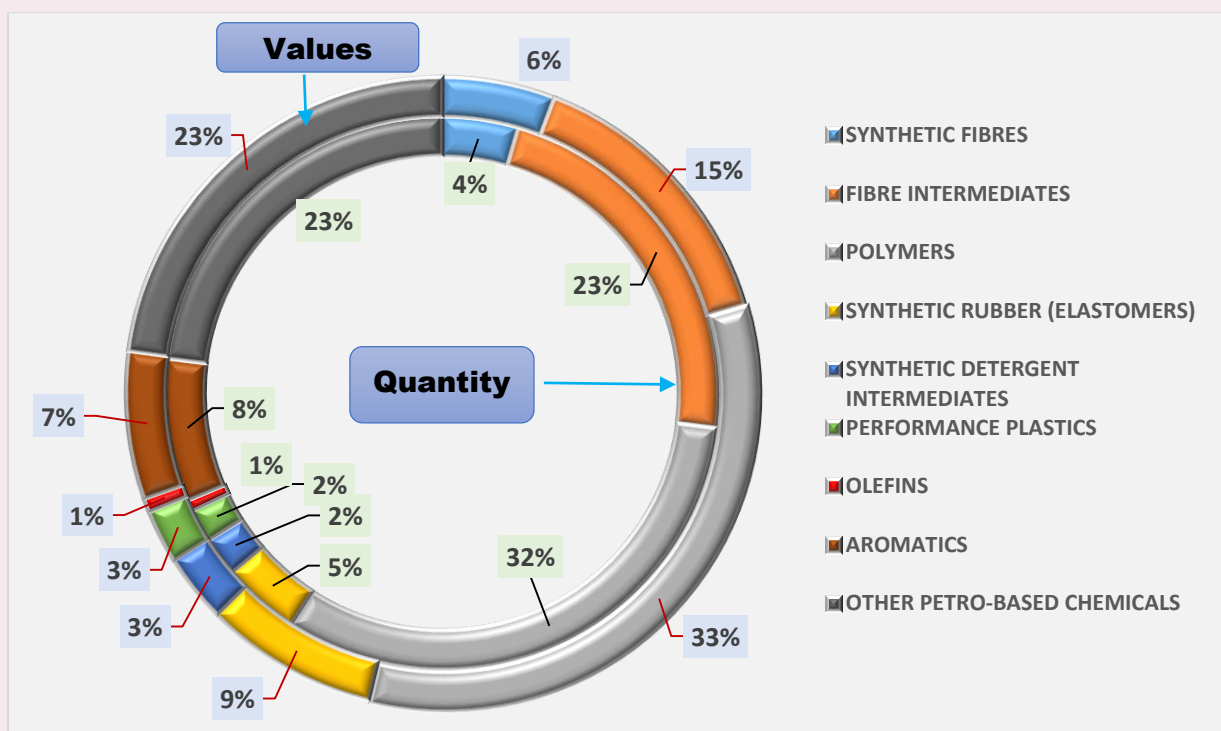
The graph presented above illustrates the production figures for major petrochemical groups in the FY 2022–23. Aromatics take the lead with the highest percentage, representing 35% of the total production, followed by Olefins at 20%. Polymers contribute 15%, Synthetic Yarn stands at 7%, Other Petro-Based Chemicals make up 4%, Performance Plastic at 3%, and both Synthetic Rubber and Synthetic Detergent Intermediates each account for 1% of the overall production.

Table 8.41: - Import quantity and value of different groups of Major Petrochemicals in the FY 2022-23

Groups	Qty (in MT)	Values (in Rs. Lakh)
Synthetic fibers	670250	864661
Fibre intermediates	3355729	2176204
Polymers	4789378	4956650
Synthetic rubber (elastomers)	673480	1320567
Synthetic detergent intermediates	342892	523554
Performance plastics	292316	414336
Olefins	94231	102839
Aromatics	1245729	1123727
Other petro-based chemicals	3425800	3404342

Source: DCPC

Pie Chart 8.9: - Share of different Groups of Major chemicals in import quantity and value during 2022-23



The graph above provides a visual representation of bivariate analysis, focusing on two crucial attributes: Import Quantity and Value, for major chemical groups during FY 2022-23. Polymer leads the way with the highest percentage, making up 32% of the total import quantity. Following closely, both Fiber Intermediates and Other Petro-based Chemicals each contribute 23% to the total import quantity. Regarding import value,

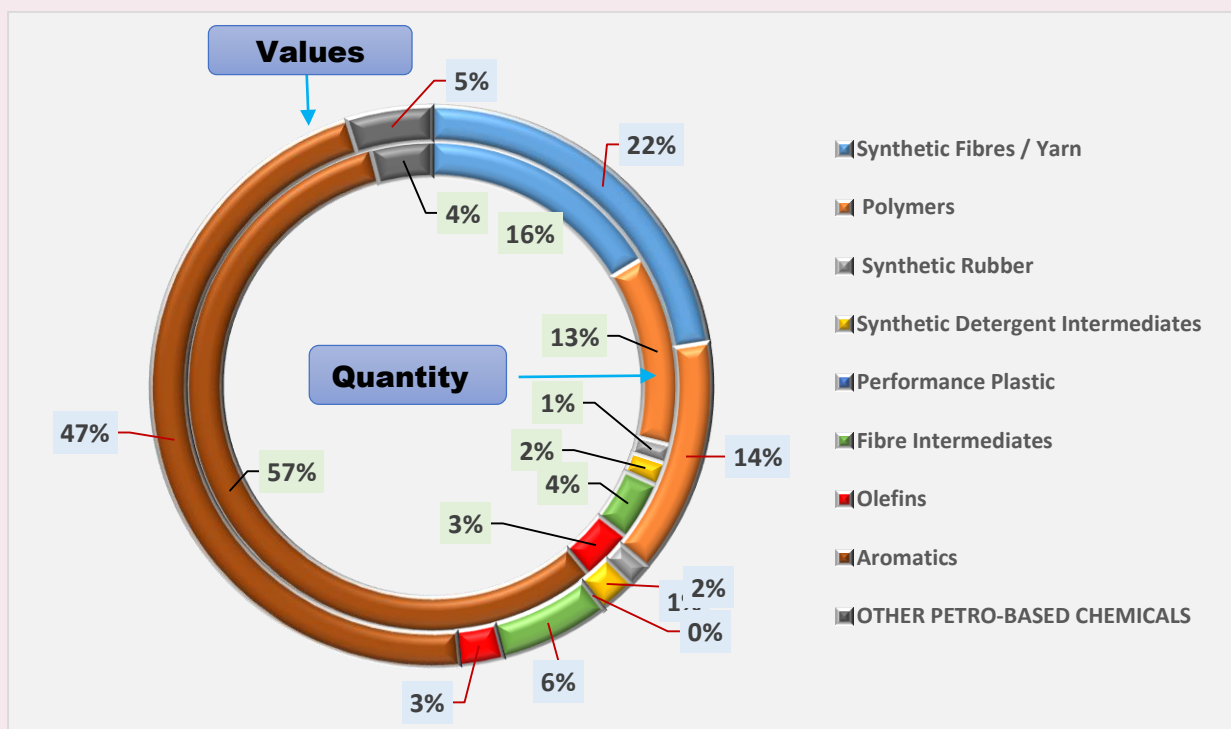
Polymer makes the most substantial contribution, representing 33% of the total import value. Following Polymer, Other Petro-based Chemicals account for 23%, Fiber Intermediates for 15%, and Synthetic Rubber for 9% of the total import value.

Table 8.42: - Export quantity and value of different groups of Major Petrochemicals in the FY 2022-23

Groups	Qty (in MT)	Values (in Rs. Lakh)
Synthetic fibers	759004	1026104
Fiber intermediates	56213	60804
Polymers	586351	622514
Synthetic rubber (elastomers)	70431	97450
Synthetic detergent intermediates	2523	3107
Performance plastics	181928	287567
Olefins	161748	117262
Aromatics	2660009	2132705
Other petro-based chemicals	189073	224161

Source: DCPC

Pie Chart 8.11: - Share of different groups of Major Petrochemicals in export Quantity and value during 2022-23



The graph depicted above provides a bivariate analysis of two crucial attributes: Import Quantity and Value, for major chemical groups during FY 2022–23. Aromatics play a substantial role, contributing 57% to the total import quantity and 47% to the import value. In the case of Synthetic Fibres/Yarn, the import quantity amounts to 22%, representing 16% of the total import value. Meanwhile, Synthetic Rubber constitutes 14% of the import quantity, contributing 13% to the total import value.

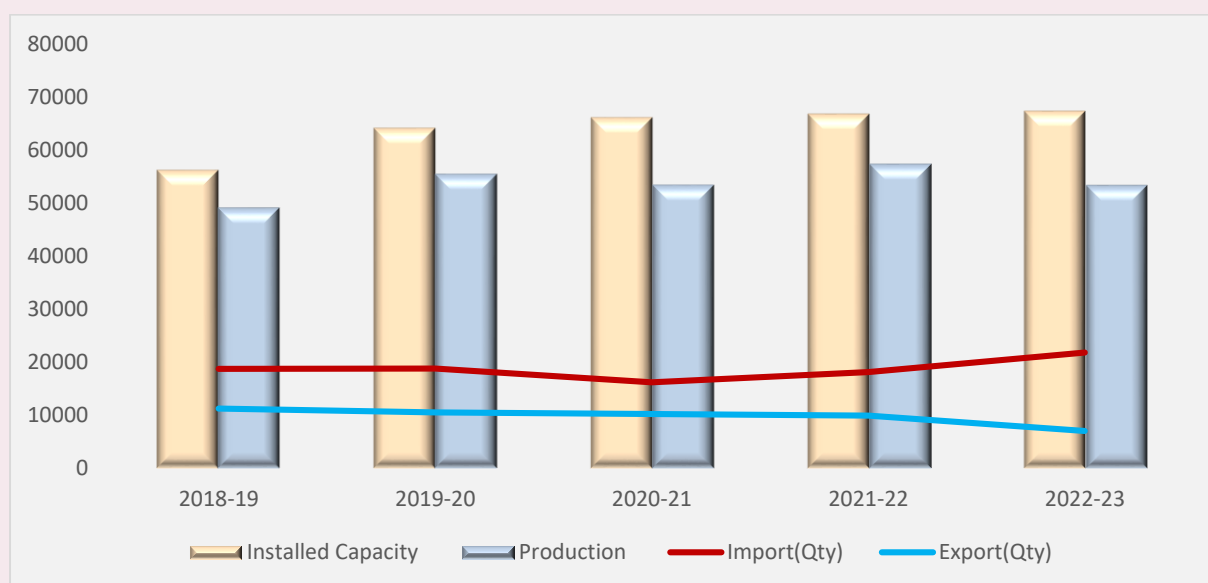
Total Major Chemicals and Petrochemicals

Table 8.43:-Installed Capacity, Production, Import & Export (in '000 MT)

Year	Installed Capacity	Production	Import(Qty)	Export(Qty)
2018-19	56189	49108	18735	11198
2019-20	64093	55467	18780	10497
2020-21	66091	53402	16194	10179
2021-22	66790	57332	18117	9874
2022-23	67317	53331	21768	6981
CAGR (%)	4.6	2.1	3.8	-11.1

Source: DCPC

Graph 8.33: - Installed Capacity, Production, Import & Export



Installed capacity increased steadily from 2018-19 to 2022-23, growing at a CAGR of 4.6%, while production showed modest growth with a CAGR of 2.1%. Imports grew moderately at a 3.8% CAGR, indicating rising reliance on external supply. Exports declined over the period, with a negative CAGR of –11.1%, reflecting a weakening export performance. Overall, the sector exhibits expanding capacity and imports but stagnant production and declining exports.

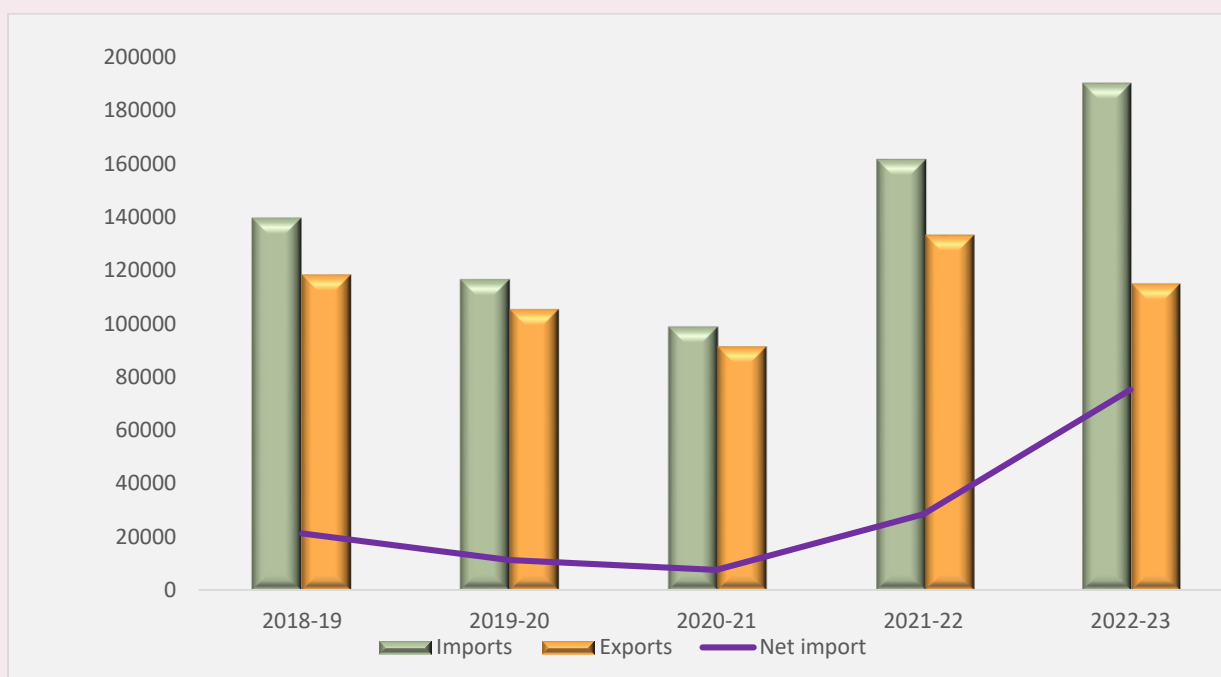
Total Major Chemicals and Petrochemicals

Table 8.44: -Value of Import, Value of Export and Net Import (Rs. in Crore)

Year	Imports	Exports	Net import
2018-19	139685	118457	21228
2019-20	116673	105392	11281
2020-21	99086	91516	7570
2021-22	161740	129435	32304
2022-23	190237	115047	75190
CAGR (%)	8.0	-0.7	NA

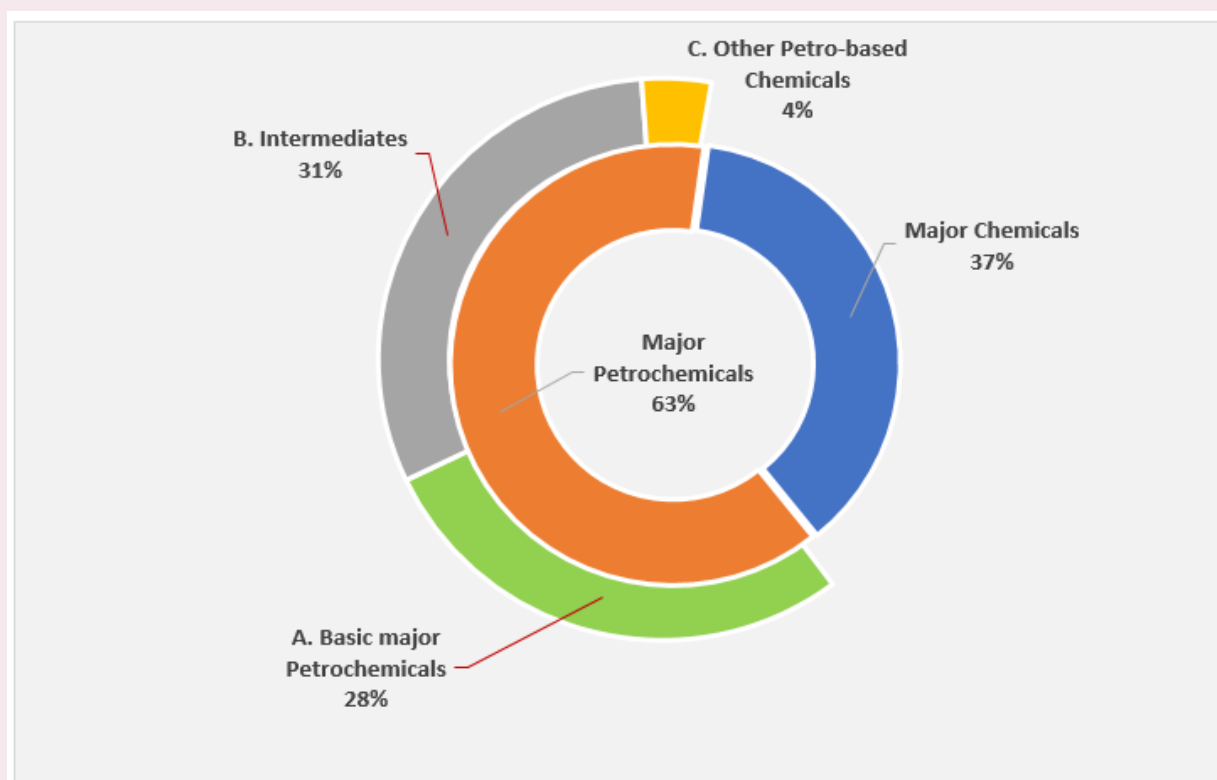
Source: DCPC

Graph 8.34:- Value of Import, Value of Export and Net Import



Imports showed a steady upward trend, reflecting strong demand and growth in domestic consumption, with a CAGR of 8.0%. Exports remained relatively stable, demonstrating resilience despite global challenges, with only a minor decline of –0.7% CAGR. The increase in net imports highlights expanding trade activity and opportunities for domestic industries to meet rising demand through imports while maintaining a solid export base. Overall, the data reflects a growing and dynamic trade sector.

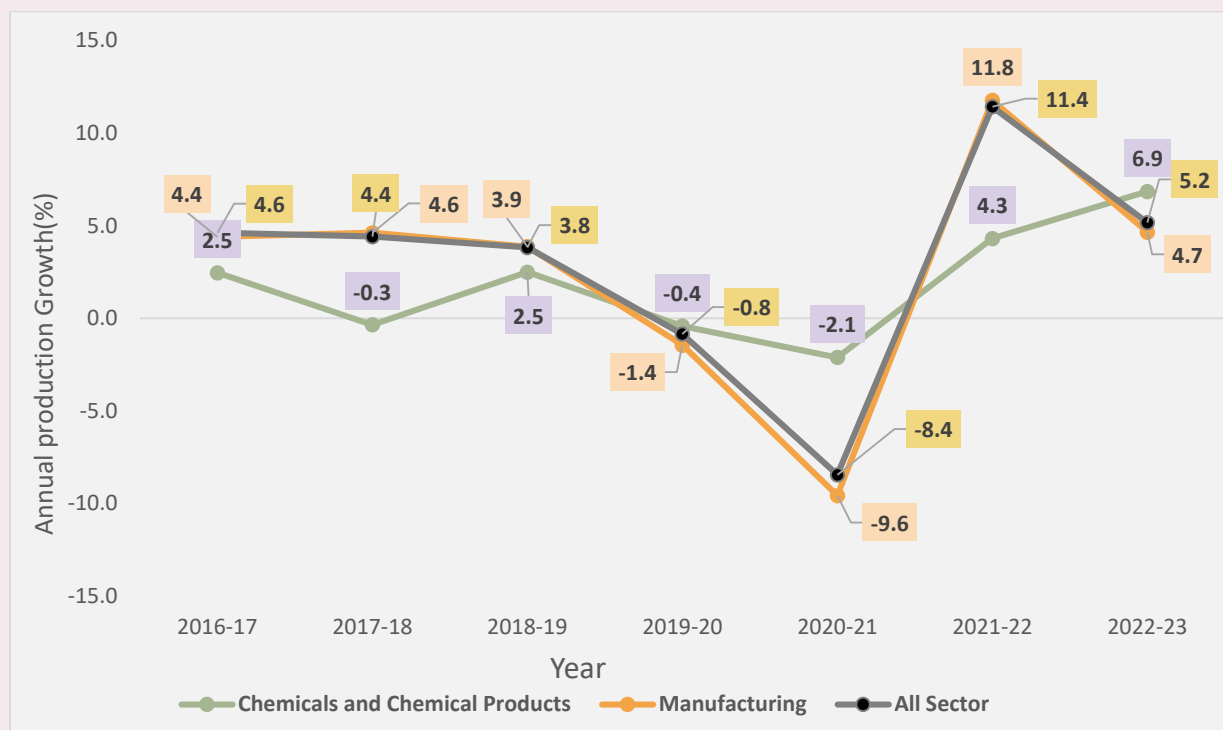
Production share of Chemicals and petrochemicals form the FY 2022 to FY 23



Source: DCPC

In the fiscal year 2022-23, the production breakdown is depicted in the graph above, with Major Chemicals comprising 37% and Major Petrochemicals constituting the remaining 63%. Furthermore, Major Petrochemicals can be divided into three subcategories: Basic Petrochemicals at 28%, Intermediates at 31%, and Other Petro-based Chemicals at 4%.

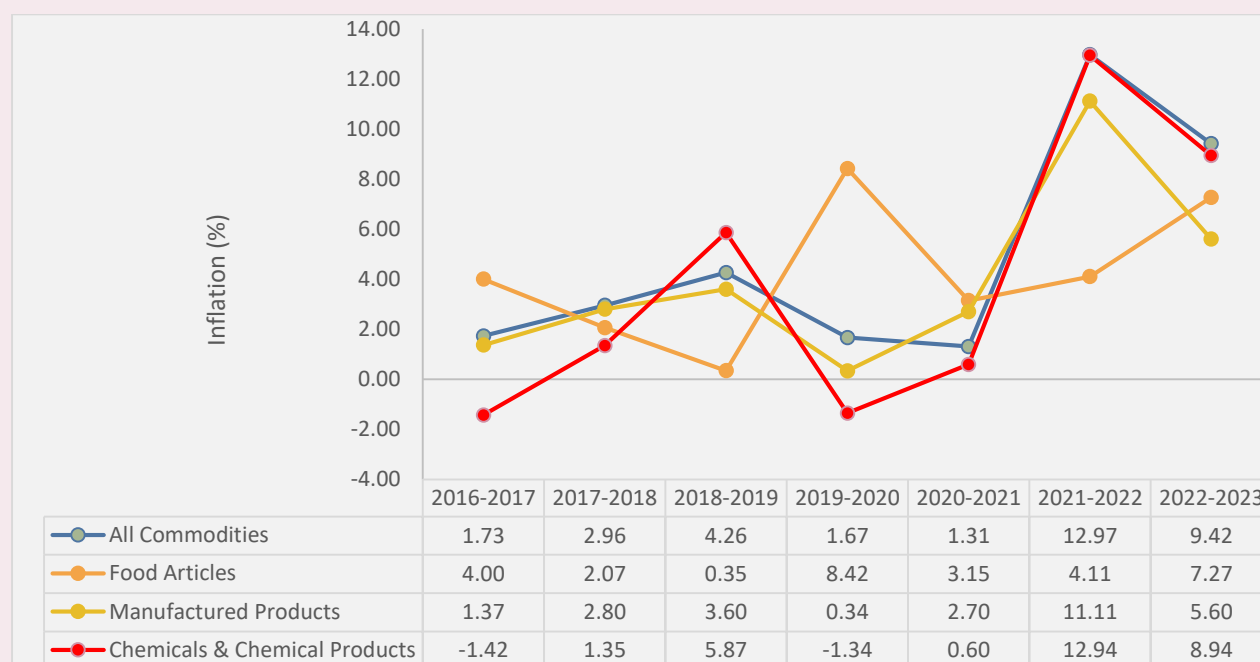
Annual Production Growth (%) (Based on Index on Industrial Production with Base year: 2011-12)



Source: Ministry of Statistics and Programme Implementation

In the fiscal year 2022-23, the Index of Industrial Production (IIP) suggests an estimated annual growth rate of 6.9% in the manufacturing of Chemicals and Chemical Products, surpassing both the overall manufacturing sector and the growth rate of all other sectors

Annual Inflation (%) (Based on Wholesale Price Index with base year: 2011-12)

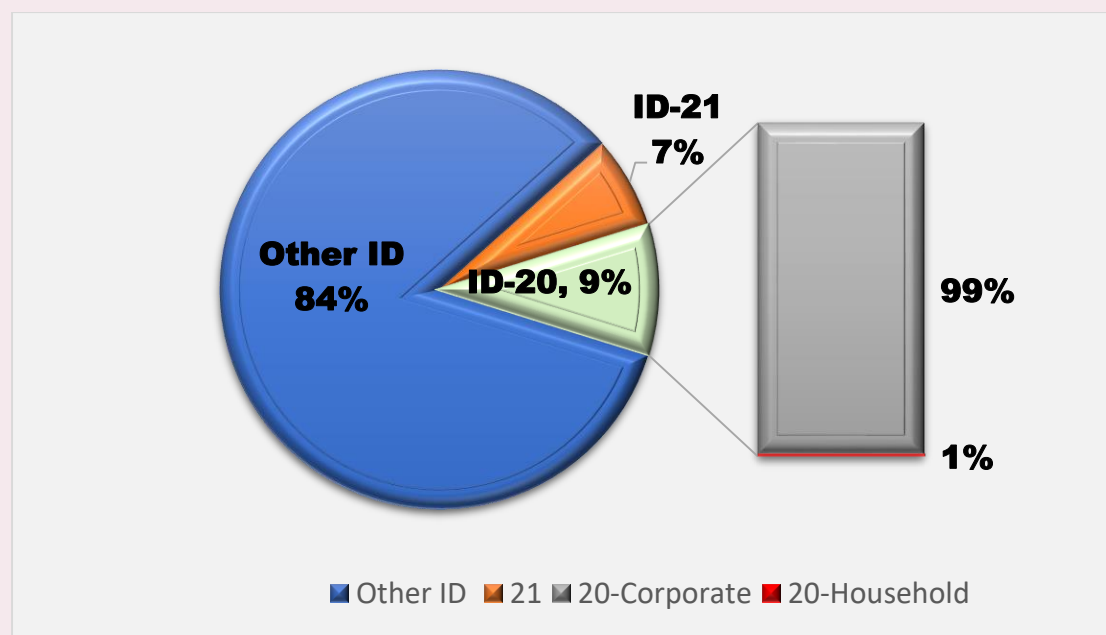


Source: Office of the Economic Advisor (<http://eaindstry.nic.in>)

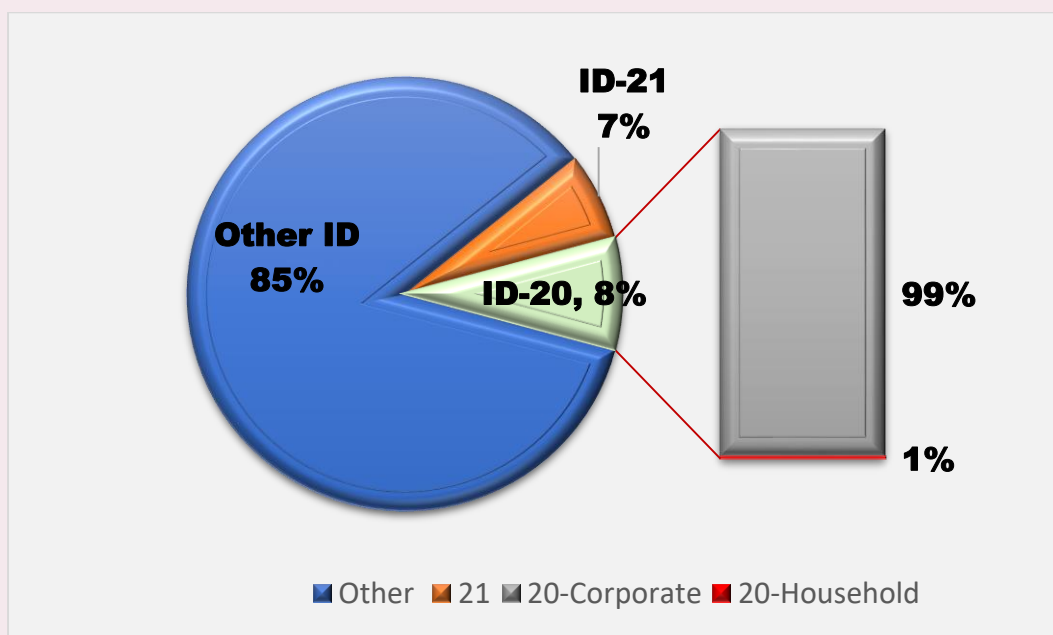
Annual Inflation for Chemicals and Chemical Products in the FY 2022-23 is 8.94%

GVA of manufacturing sector

A) FY 2021-22 (At current prices)



B) FY 2021-22 At constant prices (Base year: 2011-12)



Source: Ministry of Statistics & Programme Implementation.

Note: Industry Division (ID) 20 (NIC-2008): Chemical and Chemical products

Industry Division (ID) 21 (NIC-2008): Pharmaceutical; medicinal chemicals and botanical products.

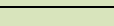
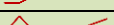
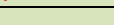
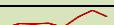
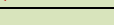
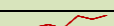
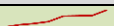
Graph A illustrates the distribution of GVA (Gross Value Added) within the manufacturing sector at current prices for Industry divisions 21 and 20. Notably, Industry division 20, which encompasses Chemical and Chemical products, accounts for 9% of the total GVA in the manufacturing sector. Within Industry division 20, the corporate sector contributes a substantial 99% of the GVA

Graph B displays the distribution of Industry divisions 21 and 20 within the manufacturing sector at constant prices. Notably, Industry division 20 contributes 8% to the total GVA of the manufacturing sector. Within Industry division 20, the corporate sector accounts for a substantial 99% of the GVA.

Section - I

Chemical Sector

Table 1: Performance of Selected Major Chemicals (Group-Wise) during 2015-16 to 2022-23 at a Glance

										(Figures in 000'MT)
Group	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	Trend line	CAGR (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. Alkali Chemicals										
Capacity	8422	8822	9274	9422	10089	10473	10889	11100		4.02
Production	6802	7009	7631	8043	8457	7776	9041	9493		4.88
Capacity Utilisation (%)	80.8	79.4	82.3	85.4	83.8	74.2	83.0	85.5		
Imports	1118	1121	1194	1049	1157	968	767	713		-6.22
Exports	107	154	273	239	329	429	598	668		29.94
2. Inorganic Chemicals										
Capacity	1316	1313	1315	1300	1538	1560	1575	1575		2.59
Production	1002	1053	1058	1064	1063	978	1052	1058		0.79
Capacity Utilisation (%)	76.1	80.2	80.5	81.8	69.2	62.7	66.8	67.2		
Imports	1010	1010	1229	1580	1532	1188	1345	1351		4.25
Exports	157	378	173	177	196	195	273	337		11.57
3. Organic Chemicals										
Capacity	2580	2529	2535	2575	2671	2716	2800	2905		1.71
Production	1589	1638	1799	1884	1847	1906	1953	1912		2.68
Capacity Utilisation (%)	61.6	64.8	71.0	73.2	69.1	70.2	69.7	65.8		
Imports	3143	3170	3407	3645	3775	3716	4160	4701		5.92
Exports	232	190	205	233	245	296	310	304		3.94
4. Pesticides (Tech.)										
Capacity	307	322	325	324	334	371	380	389		3.41
Production	188	214	213	217	192	255	299	258		4.67
Capacity Utilisation (%)	61.0	66.5	65.4	66.9	57.6	68.7	78.8	66.4		
Imports	34	43	44	49	43	66	60	67		10.34
Exports	267	342	358	405	398	471	568	540		10.58
5. Dyes & Pigments										
Capacity	456	471	478	492	528	532	533	570		3.24
Production	304	320	367	382	384	327	398	318		0.63
Capacity Utilisation (%)	66.7	68.1	76.8	77.6	72.8	61.6	74.7	55.8		
Imports	55	56	63	56	51	45	54	45		-2.86
Exports	376	419	486	525	530	514	591	465		3.08
Total Major Chemicals (1 to 5)										
Capacity	13082	13456	13927	14112	15160	15652	16178	16538		3.41
Production	9884	10234	11069	11589	11943	11243	12743	13039		4.04
Capacity Utilisation (%)	75.6	76.1	79.5	82.1	78.8	71.8	78.8	78.8		
Imports	5360	5400	5937	6379	6557	5983	6385	6878		3.63
Exports	1138	1484	1496	1579	1698	1905	2339	2313		10.66

Note: 1. Production and Installed Capacity data based on MPRs received from manufacturer of chemicals under large and medium scale units only monitored by S&M Division of DCPC.

2. Data Source in respect of imports and exports is DGCIS, Kolkata, M/o Commerce and Industry.

3. Import and Export includes both technical and formulations.

Table 1A: Projection of Production, Installed Capacity, Export and Import of Selected Major Chemical (Group-wise) from the year 2023-24 to 2028-29

(Figures in 000'MT)

	Actual Values						Forecast Values					
Group	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. Alkali Chemicals												
Capacity	9274	9422	10089	10473	10889	11100	11599	12029	12359	12743	13134	13554
Production	7631	8043	8457	7776	9041	9493	9569	9930	10364	10930	11130	11506
Capacity Utilisation (%)	82.3	85.4	83.8	74.2	83.0	85.5	82.5	82.6	83.9	85.8	84.7	84.9
Imports	1194	1049	1157	968	767	713	631	518	366	277	185	63
Exports	273	239	329	429	598	668	738	868	974	1072	1161	1271
2. Inorganic Chemicals												
Capacity	1315	1300	1538	1560	1575	1575	1692	1749	1760	1815	1875	1933
Production	1058	1064	1063	978	1052	1058	1033	1032	1038	1054	1039	1039
Capacity Utilisation (%)	80.5	81.8	69.2	62.7	66.8	67.2	61.1	59.0	59.0	58.0	55.4	53.8
Imports	1229	1580	1532	1188	1345	1351	1327	1223	1216	1250	1187	1152
Exports	173	177	196	195	273	337	336	382	428	474	504	540
3. Organic Chemicals												
Capacity	2535	2575	2671	2716	2800	2905	2958	3041	3117	3201	3275	3348
Production	1799	1884	1847	1906	1953	1912	1966	1976	2005	2015	2032	2062
Capacity Utilisation (%)	71.0	73.2	69.1	70.2	69.7	65.8	66.5	65.0	64.3	63.0	62.0	61.6
Imports	3407	3645	3775	3716	4160	4701	4696	4963	5277	5607	5824	6044
Exports	205	233	245	296	310	304	343	363	383	396	418	443
4. Pesticides (Tech.)												
Capacity	325	324	334	371	380	389	406	426	442	453	470	487
Production	213	217	192	255	299	258	293	315	337	342	355	382
Capacity Utilisation (%)	65.4	66.9	57.6	68.7	78.8	66.4	72.1	73.9	76.4	75.5	75.4	78.4
Imports	44	49	43	66	60	67	72	78	84	86	94	98
Exports	358	405	398	471	568	540	603	649	701	734	768	825
5. Dyes & Pigments												
Capacity	478	492	528	532	533	570	581	596	609	629	648	660
Production	367	382	384	327	398	318	337	323	312	308	285	287
Capacity Utilisation (%)	76.8	77.6	72.8	61.6	74.7	55.8	58.1	54.2	51.3	49.0	43.9	43.5
Imports	63	56	51	45	54	45	42	40	39	37	32	31
Exports	486	525	530	514	591	465	526	514	506	498	481	498
Total Major Chemicals (1 to 5)												
Capacity	13927	14112	15160	15652	16178	16538	17236	17841	18285	18840	19402	19982
Production	11069	11589	11943	11243	12743	13039	13199	13576	14057	14649	14840	15277
Capacity Utilisation (%)	79.5	82.1	78.8	71.8	78.8	78.8	76.6	76.1	76.9	77.8	76.5	76.5
Imports	5937	6379	6557	5983	6385	6878	6768	6823	6983	7257	7322	7390
Exports	1496	1579	1698	1905	2339	2313	2546	2775	2991	3175	3334	3576

Note: 1. Production and Installed Capacity data based on MPRs received from manufacturer under large and medium scale units only monitored by S&M Division of DCPC.

2. Data Source in respect of imports and exports is DGCIS, Kolkata, M/o Commerce and Industry.

3. \$ Imports and Exports includes both technical and formulations.

4. Projected figures have been calculated by using Linear regression in MS Excel. ($Y=aX+b$)

Table 2: Production, Installed Capacity & Growth of Selected Major Chemicals (Group-wise) during 2015-16 to 2022-23

(Figures in 000'MT)

Groups	Installed Capacity			Production / Growth Rate	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
	2020-21	2021-22	2022-23									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Alkali Chemicals	10473	10889	11100	Production	6802	7009	7631	8043	8457	7776	9041	9493
				Growth Rate (%)	2.7	3.0	8.9	5.4	5.1	-8.0	16.3	5.0
Inorganic Chemicals	1560	1575	1575	Production	1002	1053	1058	1064	1063	978	1052	1058
				Growth Rate (%)	6.1	5.1	0.5	0.5	0.0	-8.1	7.6	0.6
Organic Chemicals	2716	2800	2905	Production	1589	1638	1799	1884	1847	1906	1953	1912
				Growth Rate (%)	-1.9	3.1	9.8	4.8	-2.0	3.2	2.5	-2.1
Pesticides	371	380	389	Production	188	214	213	217	192	255	299	258
				Growth Rate (%)	0.6	14.0	-0.5	1.9	-11.3	32.8	17.3	-13.8
Dyes & Pigments	532	533	570	Production	304	320	367	382	384	327	398	318
				Growth Rate (%)	6.7	5.3	14.7	3.9	0.7	-14.8	21.5	-20.1

Note: Production and Installed Capacity data based on MPRs received from manufacturer of chemicals under large and medium scale units only monitored by S&M Division of DCPC.

Table 3: Production, Capacity Utilization & Growth of Major Chemicals (Product-wise) during 2015-16 to 2022-23

(Figures in 000'MT)													
Major Groups / Products	Installed Capacity			Production								CAGR (%)	Capacity Utilization in 2022-23 (%)
	2020-21	2021-22	2022-23	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1. Alkali Chemicals													
SODA ASH	3614	3614	3714	2583	2613	2990	3048	3069	2638	3079	3219	⬆️ 3.2	86.7
CAUSTIC SODA	3898	4151	4227	2504	2594	2742	2925	3137	2964	3463	3604	⬆️ 5.3	85.3
LIQUID CHLORINE	2961	3124	3158	1715	1801	1899	2069	2250	2174	2499	2669	⬆️ 6.5	84.5
Total	10473	10889	11100	6802	7009	7631	8043	8457	7776	9041	9493	⬆️ 4.9	85.5
2. Inorganic Chemicals													
ALUMINIUM FLOURIDE	25.6	25.6	25.6	9.5	8.1	7.5	5.7	5.1	3.7	8.9	5.3	⬇️ -8.0	20.7
CALCIUM CARBIDE	112.0	112.0	112.0	83.5	85.0	87.3	83.2	81.3	86.8	98.6	83.4	⬇️ 0.0	74.5
CARBON BLACK	696.0	696.0	696.0	469.6	535.3	530.4	546.4	500.1	384.8	456.5	447.0	⬇️ -0.7	64.2
POTASSIUM CHLORATE	28.6	28.6	28.6	0.4	0.0	0.3	0.7	16.2	17.1	17.7	14.2	⬆️ 66.2	49.8
SODIUM CHLORATE	22.3	22.3	22.3	0.0	0.0	0.0	0.0	0.0	17.9	21.1	23.2		104.0
TITANIUM DIOXIDE	82.5	82.5	82.5	58.5	58.5	57.8	57.1	49.5	51.2	57.0	46.8	⬇️ -3.1	56.7
RED PHOSPHORUS	1.7	1.7	1.7	0.8	0.8	0.9	1.0	1.0	1.1	1.1	1.2	⬆️ 4.9	69.6
HYDROXEN PEROXIDE	218.6	221.8	221.3	153.1	148.9	157.0	156.5	122.8	139.9	143.5	184.4	⬆️ 2.7	83.3
POTASSIUM IODATE	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.6	0.5	0.6	0.5		42.3
CALCIUM CARBONATE	371.5	383.5	383.5	226.1	216.3	217.2	213.3	286.8	274.8	246.8	252.4	⬆️ 1.6	65.8
Total	1560.1	1575.2	1574.7	1001.5	1052.9	1058.5	1063.8	1063.5	977.8	1051.8	1058.4	⬆️ 0.8	67.2
3. Organic Chemicals													
ACETIC ACID	142.0	142.0	165.5	157.9	158.5	157.1	153.8	167.9	154.8	166.6	165.5	⬆️ 0.7	100.0
ACETIC ANHYDRIDE	119.2	119.2	124.7	93.0	94.8	97.1	95.5	74.1	75.1	78.4	97.9	⬆️ 0.7	78.5
ACETONE	47.1	47.1	47.1	25.0	26.8	32.9	40.7	36.3	39.0	36.1	34.0	⬆️ 4.5	72.1
PHENOL	76.8	76.8	76.8	40.4	43.6	53.4	65.4	57.9	61.3	58.2	55.0	⬆️ 4.5	71.6
METHANOL	474.3	474.3	474.3	162.6	177.0	260.5	271.9	176.0	234.0	167.7	69.3	⬇️ -11.5	14.6
FORMALDEHYDE	397.8	451.8	435.3	242.1	244.2	248.2	226.6	260.4	244.7	293.1	301.1	⬆️ 3.2	69.2
NITROBENZENE	126.5	126.5	126.5	68.4	69.7	71.4	68.8	61.1	76.1	82.8	64.5	⬇️ -0.8	51.0
MALEIC ANHYDRIDE	7.7	7.7	7.7	3.5	3.5	3.3	4.6	5.0	5.4	6.3	6.9	⬆️ 10.0	90.1
PENTAERYTHRITOL	15.8	17.4	17.4	14.0	14.0	14.1	15.0	15.2	11.7	16.3	15.6	⬆️ 1.6	89.6
ANILINE	54.1	54.1	54.1	39.4	41.5	41.9	37.9	25.4	33.5	39.7	22.2	⬇️ -7.9	41.0
CHLORO METHANES	331.0	346.0	438.5	220.2	221.5	222.4	285.5	296.9	327.0	340.8	411.6	⬆️ 9.3	93.9
ISOBUTYLBENZENE	16.8	16.8	16.8	7.2	6.9	9.0	9.7	9.4	12.7	8.5	9.6	⬆️ 4.1	57.2
ONCB	30.0	30.0	30.0	19.3	22.6	24.9	23.7	19.8	23.3	26.7	27.1	⬆️ 5.0	90.3
PNCB	48.4	48.4	48.4	31.3	34.2	37.8	36.1	31.9	38.9	43.7	46.2	⬆️ 5.7	95.4
MEK	10.0	10.0	10.0	5.8	6.5	6.4	7.0	9.8	8.0	8.9	8.3	⬆️ 5.5	83.5
ACETALDEHYDE	151.0	152.0	152.0	59.0	60.5	65.7	61.9	77.1	56.0	72.5	77.7	⬆️ 4.0	51.1
ETHANOLAMINES	27.0	27.0	27.0	13.2	13.1	13.2	16.7	15.4	16.7	21.0	19.7	⬆️ 5.8	72.9
ETHYL ACETATE	562.1	575.1	575.1	360.4	371.3	411.5	440.6	473.4	453.1	445.4	438.3	⬆️ 2.8	76.2
MENTHOL	33.7	33.7	33.7	14.7	14.5	13.7	6.2	7.4	7.5	10.3	6.4	⬇️ -11.3	18.9
ORTHO NITRO TOLUENE	44.8	44.8	44.8	11.5	13.8	14.4	16.9	26.0	27.7	29.9	34.9	⬆️ 17.1	77.9
Total	2715.9	2800.5	2905.4	1588.8	1638.4	1798.9	1884.4	1846.6	1906.3	1953.0	1911.5	⬆️ 2.7	65.8
4. Pesticides and Insecticides													
D.D.T.	6.3	6.3	6.3	2.1	2.3	1.3	1.4	1.1	0.6	0.7	0.3	⬇️ -25.0	4.4
MALATHION	3.8	3.8	3.8	2.0	2.3	3.3	4.4	3.8	3.8	3.3	2.8	⬆️ 4.8	74.7
DIMETHOATE	1.5	1.5	1.5	1.4	1.4	1.2	1.3	1.4	1.5	1.4	1.0	⬇️ -4.9	69.9

Major Groups / Products	Installed Capacity			Production								CAGR (%)	Capacity Utilization in 2022-23 (%)
	2020-21	2021-22	2022-23	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
D.D.V.P.	33.6	33.6	33.6	7.2	8.1	8.1	9.1	0.0	0.9	0.4	0.0	↓ -52.1	0.1
QUINALPHOS	3.4	3.4	3.4	0.8	1.3	1.2	0.9	0.9	1.1	2.5	0.6	↓ -4.7	17.7
MONOCROTOPHOS	13.9	13.9	13.9	5.5	6.6	5.5	5.3	5.8	7.9	7.5	5.1	↓ -1.0	36.6
PHOSPHAMIDON	2.0	2.0	2.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	↓ -100.0	0.0
PHORATE	12.4	6.6	6.6	5.9	5.9	7.0	5.8	0.0	0.0	0.0	0.0	↓ -100.0	0.0
ETHION	2.8	2.8	2.8	1.7	2.1	2.4	1.3	2.1	2.2	2.8	2.3	↑ 4.5	83.3
FENVALERATE	5.0	5.0	5.0	0.6	0.5	0.7	0.7	0.7	0.5	0.7	0.5	↓ -1.5	10.1
CYPERMETHRIN	23.8	24.7	26.8	8.5	7.9	8.2	11.0	10.9	12.3	16.5	10.9	↑ 3.5	40.6
ACEPHATE	20.5	20.5	20.5	16.6	16.3	18.3	19.6	21.1	29.6	29.6	33.4	↑ 10.5	162.9
CHLORPYRIPHOS	13.8	13.4	13.4	6.9	5.9	8.0	7.1	6.5	8.5	7.6	8.5	↑ 3.0	63.1
TRIAZOPHOS	3.4	3.4	3.4	1.7	2.4	1.5	0.9	0.0	0.0	0.0	0.0	↓ -100.0	0.0
TEMEPHOS	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	↓ -3.0	25.6
DELTAMETHRIN	0.8	0.9	1.0	0.4	0.4	0.6	0.7	0.7	0.6	0.7	0.7	↑ 9.9	72.5
ALPHAMETHRIN	0.5	0.6	0.6	0.2	0.1	0.3	0.3	0.4	0.5	0.5	0.5	↑ 11.3	75.8
PROFENOFOS TECHNICAL	10.5	17.3	17.4	6.9	10.5	9.9	12.5	12.4	16.1	16.2	16.1	↑ 13.0	92.5
PRETILACHLOR TECHNICAL	4.2	4.2	4.5	1.9	2.6	3.6	3.6	3.1	3.6	3.2	3.5	↑ 8.6	77.1
LAMBDA CYHALOTHRIN	3.2	3.2	3.8	0.4	0.7	1.1	0.6	2.3	1.7	2.7	3.1	↑ 33.1	82.3
PHENTHOATE	0.9	0.9	0.9	1.1	1.1	1.3	1.5	1.4	1.3	1.8	1.8	↑ 7.1	199.7
PERMETHRIN TECH	1.8	1.8	1.9	1.3	1.1	1.5	1.9	1.2	1.7	2.5	3.6	↑ 15.6	187.3
IMIDACALOPRID TECH	0.2	0.2	0.2	0.2	0.2	0.3	0.1	0.0	0.0	0.0	0.0	↓ -53.1	0.7
CAPTAN & CAPTAFOL	3.4	3.4	3.4	2.1	1.8	1.8	1.9	1.5	1.5	1.9	1.6	↓ -3.6	47.6
ZIRAM (THIO BARBAMATE)	0.7	0.7	0.7	0.5	0.6	0.7	0.8	0.6	0.9	0.7	0.6	↑ 2.1	84.2
CARBENDZIM (BAVISTIN)	0.8	0.8	0.8	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	↓ -100.0	0.0
MANCOZAB	119.8	121.8	121.8	66.4	78.5	70.2	69.3	60.9	97.4	118.7	83.6	↑ 3.4	68.7
HEXACONAZOLE	1.7	2.8	3.5	0.6	0.5	0.6	0.5	0.8	0.8	1.3	0.6	↓ -0.2	17.7
METCONAZOLE	0.8	0.5	0.5	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.3	↓ -1.6	69.4
2, 4-D	27.0	30.0	30.0	18.5	23.4	25.8	24.2	22.6	27.1	40.0	42.0	↑ 12.5	139.9
BUTACHLOR	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	↓ -100.0	0.0
ETHOFUMESATE TECHNICAL	1.7	1.7	2.0	0.5	1.0	1.3	1.0	0.8	0.4	0.7	0.9	↑ 8.6	45.7
THIAMETHOXAM TECHNICAL	5.1	5.1	6.3	1.9	2.5	3.3	5.6	6.2	5.2	6.6	6.4	↑ 18.9	101.7
PENDIMETHALIN	5.8	6.6	7.4	2.8	4.0	3.8	2.8	2.8	3.6	4.8	4.7	↑ 7.5	63.2
METRIBUZIN	2.5	2.9	3.8	0.9	1.1	0.9	1.9	2.6	3.2	2.0	2.3	↑ 14.5	60.8
TRICLOPYR ACID TECH	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.0	0.4	0.2	↓ -7.9	56.3
ISOPROTURON	6.0	6.0	6.0	2.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	↓ -100.0	0.0
GLYPHOSATE	12.9	12.9	12.9	7.0	6.4	6.3	6.7	5.9	6.1	5.7	4.7	↓ -5.5	36.4
DIURON	6.0	6.0	6.0	1.3	3.7	3.3	3.6	3.4	3.4	2.3	3.5	↑ 15.8	58.4
ATRAZIN	1.2	1.2	2.4	1.2	1.9	2.2	1.5	1.7	1.6	1.7	3.1	↑ 14.2	127.6
ZINC PHOSPHIDE	1.9	1.9	1.9	1.5	1.3	1.4	1.3	1.3	1.5	2.0	1.5	↓ -0.1	77.5
ALUMINIUM PHOSPHIDE	4.7	4.7	4.7	5.7	6.4	4.8	4.9	4.9	7.6	9.9	7.4	↑ 3.6	155.4
DICOFOL	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	↓ -100.0	0.0
Total	371.5	380.1	388.6	187.5	213.7	212.7	216.7	192.1	255.1	299.3	258.1	↑ 4.7	66.4
5. Dyes and Pigments													
AZO DYES	21.1	21.1	18.9	9.8	10.0	11.0	9.0	8.5	6.6	9.1	7.6	↓ -3.5	40.5
ACID DIRECT DYES (OTHER THAN AZO)	40.9	40.9	46.0	20.6	19.9	21.2	24.1	22.7	20.2	24.0	21.2	↑ 0.4	46.0
DISPERSE DYES	77.9	77.9	92.3	43.6	41.4	46.7	55.2	61.9	51.8	65.9	60.4	↑ 4.8	65.5

Major Groups / Products	Installed Capacity			Production								CAGR (%)	Capacity Utilization in 2022-23 (%)
	2020-21	2021-22	2022-23	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
FAST COLOUR BASES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
INGRAIN DYES	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	↓ -100.0	
OIL SOLUBLE (SOLVENT DYES)	3.6	3.6	1.2	2.2	2.2	2.1	2.3	2.4	0.4	0.7	0.5	↓ -19.7	39.4
OPTICAL WHITENING AGENTS	67.7	67.7	67.7	24.7	23.8	23.2	29.3	20.7	18.2	22.5	16.8	↓ -5.4	24.8
ORGANIC PIGMENT	88.4	88.4	89.0	61.3	63.7	73.3	73.9	75.1	67.3	74.3	55.6	↓ -1.4	62.5
PIGMENT EMULSION	5.4	5.4	3.8	9.7	10.6	10.2	9.8	9.7	8.6	9.3	8.3	↓ -2.1	220.7
REACTIVE DYES	196.3	197.5	216.5	106.2	121.0	151.9	151.4	156.7	132.1	161.9	117.2	↑ 1.4	54.1
SULPHUR DYES (SULPHUR BLACK)	8.2	8.2	13.2	9.6	10.1	7.3	7.5	7.4	5.1	8.6	10.7	↑ 1.6	80.9
VAT DYES	2.9	2.9	3.3	1.4	1.5	1.7	1.8	2.1	2.0	2.3	2.4	↑ 7.8	73.1
SOLUBILISED VAT DYES	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	↓ -100.0	
FOOD COLOURS	0.0	0.0	0.0	0.7	0.8	0.8	0.8	0.7	0.5	0.7	0.9	↑ 3.8	
NAPTHOLS	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
INORGANIC PIGMENTS	18.1	18.1	18.1	14.2	15.4	17.9	16.3	16.1	14.6	18.6	16.4	↑ 2.1	90.9
Total	531.5	532.7	570.0	304.3	320.3	367.2	381.5	384.2	327.5	398.0	318.1	↑ 0.6	55.8
Total (All Groups)	15652.4	16177.8	16538.2	9883.9	10233.9	11068.6	11589.1	11943.2	11243.1	12743.1	13038.8	↑ 4.0	78.8

Note: Production and Installed Capacity data based on MPRs received from manufacturer under large and medium scale units only monitored by S&M Division of DCPC.

Table 4: Installed Capacities of Selected Chemicals (Group-Wise) from 2015-16 to 2022-23

(Figures in 000'MT)

Group	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Alkali Chemicals	8422	8822	9274	9422	10089	10473	10889	11100
2. Inorganic Chemicals	1316	1313	1315	1300	1538	1560	1575	1575
3. Organic Chemicals	2580	2529	2535	2575	2671	2716	2800	2905
4. Pesticides (Tech.)	307	322	325	324	334	371	380	389
5. Dyes & Pigments	456	471	478	492	528	532	533	570
Total Major Chemicals	13082	13456	13927	14112	15160	15652	16178	16538

Note: Installed Capacity data based on MPRs received from manufacturer of chemicals under large and medium scale units only monitored by S&M Division of DCPC.

Table 5: Consumption of Selected Major Chemicals (Product-Wise) during 2015-16 to 2022-23

(Figures in 000'MT)

Products	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Alkali Chemicals								
SODA ASH	3197.7	3244.3	3652.1	3826.3	3779.4	3208.1	3391.4	3592.9
CAUSTIC SODA	2905.9	2935.5	3004.0	2961.5	3258.8	2936.8	3323.0	3282.1
LIQUID CHLORINE	1709.3	1795.6	1895.7	2064.7	2246.3	2170.5	2495.2	2663.2
Total	7812.9	7975.5	8551.8	8852.5	9284.5	8315.4	9209.6	9538.2
Inorganic Chemicals								
ALUMINIUM FLUORIDE	35.0	54.4	57.1	67.6	44.1	62.9	82.3	59.6
CALCIUM CARBIDE	145.0	140.2	142.5	128.2	112.2	119.3	119.8	104.8
CARBON BLACK	479.0	331.8	594.3	702.1	553.6	436.5	408.9	349.2
POTASSIUM CHLORATE	2.8	-1.5	-1.6	-2.2	13.1	15.4	15.7	11.5
SODIUM CHLORATE	17.3	7.3	7.7	13.4	24.1	29.5	37.8	45.0
TITANIUM DIOXIDE	70.5	64.2	62.0	64.3	59.7	58.1	66.0	60.4
RED PHOSPHORUS	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.5
HYDROGEN PEROXIDE	196.8	205.7	225.4	240.5	174.8	159.2	171.3	173.9
POTASSIUM IODATE	0.0	0.0	0.0	0.0	0.6	0.5	0.6	0.5
CALCIUM CARBONATE	907.9	883.0	1026.5	1252.3	1416.9	1088.9	1221.2	1267.3
Total	1854.7	1685.4	2114.3	2466.6	2399.3	1970.8	2124.1	2072.8
Organic Chemicals								
ACETIC ACID	942.3	993.4	1029.4	1073.3	1081.6	1048.4	1199.2	1255.0
ACETIC ANHYDRIDE	77.3	76.6	81.8	89.3	74.1	69.9	78.6	75.9
ACETONE	152.6	159.5	174.7	146.6	97.7	92.9	133.2	130.9
PHENOL	282.4	321.7	337.3	292.5	179.6	179.2	220.7	256.8
METHANOL	1830.5	1801.8	2034.3	2247.7	2449.4	2445.5	2547.0	2843.7
FORMALDEHYDE	233.7	235.9	237.7	214.1	246.3	229.4	276.6	284.8
NITROBENZENE	74.2	83.8	86.7	86.9	76.5	85.9	90.5	68.2
CITRIC ACID	74.5	80.0	81.9	93.0	88.5	92.7	94.4	128.3
MALEIC ANHYDRIDE	50.9	54.1	55.7	74.4	71.8	64.9	80.7	89.2
PENTAERYTHRITOL	31.8	31.4	30.0	31.1	33.9	23.9	30.1	30.7
ANILINE	77.6	85.9	107.1	126.2	106.3	106.2	131.7	123.5
CHLORO METHANES	220.8	221.7	222.9	286.9	299.3	329.4	342.6	412.9
ISOBUTYLBENZENE	-5.3	-6.5	-3.4	-2.0	-0.3	-3.4	0.0	-4.7
ONCB	18.7	22.4	24.9	23.7	19.8	23.3	26.7	27.1
PNCB	38.0	39.3	37.8	36.1	31.9	38.9	43.7	46.2
MEK	46.5	37.3	51.7	53.7	35.1	50.5	51.2	57.4
ACETALDEHYDE	59.0	60.5	65.8	60.8	76.1	55.0	71.7	77.7
ETHANOLAMINES	22.2	23.1	24.5	30.2	30.4	33.0	36.5	32.9
ETHYL ACETATE	255.9	279.2	306.0	324.8	367.2	344.5	330.3	345.5
MENTHOL	6.8	4.0	2.3	-5.8	-6.6	-8.0	-5.4	-2.1
ORTHO NITRO TOLUENE	10.5	13.3	12.0	12.7	18.8	24.0	23.1	28.7
Total	4500.6	4618.4	5001.0	5296.1	5377.4	5326.1	5802.8	6308.6

Note: 1. Production and Installed Capacity data based on MPRs received from manufacturer of chemicals under large and medium scale units only monitored by S&M Division of DCPC.

2. Data Source in respect of Imports and Exports is DGCIS, Kolkata, M/o Commerce and Industry.

3. Consumption is derived as Production + Imports - Exports

Table 5A: Consumption of Selected Pesticides (Tech. Grade) (State -wise) during 2018-19 to 2022-23

(Figures in MT)

S. No.	States/UTs	2018-19	2019-20	2020-21	2021-22	2022-23
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Andhra Pradesh	1689	1559	1559	1759	2001
2	Bihar	850	850	995	850	995
3	Chhattisgarh	1770	1672	1639	1740	1775
4	Goa	25	30	30	32	34
5	Gujarat	1608	1784	1573	1869	1750
6	Haryana	4015	4200	4050	4066	4066
7	Himachal Pradesh	322	881	56	279	470
8	Jharkhand	646	681	1161	450	450
9	Karnataka	1524	1568	1930	2224	1669
10	Kerala	995	656	585	532	504
11	Madhya Pradesh	540	540	691	654	598
12	Maharashtra	11746	12783	13243	13175	6814
13	Orissa	1609	1115	1158	1240	1348
14	Punjab	5543	4995	5193	5376	5130
15	Rajasthan	2290	2088	2330	2104	1865
16	Tamil Nadu	1901	2225	1834	1851	1952
17	Telangana	4894	4915	4986	4920	4920
18	Uttar Pradesh	11049	12217	11557	11688	11824
19	Uttarakhand	195	224	135	213	111
20	West Bengal	3190	3630	3630	3630	3321
Sub Total		56402	58613	58336	58653	51597
North-Eastern States						
21	Arunachal Pradesh	5	5	2	1	NR
22	Assam	256	410	420	474	455
23	Manipur	NR	25	46	NR	NR
24	Meghalaya	Organic State	Organic State	Organic State	Organic State	Organic State
25	Mizoram	26	27	NR	29	31
26	Nagaland	21	19	36	41	NR
27	Sikkim	Organic State	Organic State	Organic State	Organic State	Organic State
28	Tripura	349	364	NR	NR	NR
Sub Total		657	851	503	545	485
Union Territories						
29	Andaman & Nicobar	NR	NR	1	NR	NR
30	Chandigarh	NR	NR	NR	NR	NR
31	Dadra & Nagar Haveli & Daman & Diu	NR	NR	NR	NR	NR
32	Delhi	110	NR	NR	NR	NR
33	Jammu & Kashmir	2459	2198	3352	4086	384
34	Ladakh	NR	NR	NR	NR	NR
35	Lakshadweep	NR	NR	NR	NR	NR
36	Pondicherry	42	40	NR	NR	NR
Sub Total		2611	2238	3353	4086	384
Grand Total		59670	61702	62193	63284	52466

Source: Directorate of Plant Protection, Quarantine & Storage, Department of Agriculture & Farmers Welfare, Ministry of Agriculture & Farmers Welfare (<https://ppqs.gov.in>)

NR- Not reported

Section - II

Petrochemical Sector

Table 6: Performance of Basic Major Petrochemicals (Group Wise) during 2015-16 to 2022-23

(Figures in 000'MT)										
Group	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	Trend Line	CAGR (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. Synthetic Fibre										
Capacity	4452	4393	4379	4440	4521	4529	4483	4496		↑ 0.1
Production	3558	3599	3625	3601	3893	3185	4040	3973		↑ 1.6
Capacity Utilisation (%)	79.9	81.9	82.8	81.1	86.1	70.3	90.1	88.4		
Imports	264	280	260	276	347	403	460	670		↑ 14.3
Exports	878	1026	1001	1016	1059	879	1202	759		↓ -2.1
2. Polymers										
Capacity	9768	10110	10112	10115	12754	12799	12820	12894		↑ 4.0
Production	8839	9163	9276	10040	12404	12144	12471	11487		↑ 3.8
Capacity Utilisation (%)	90.5	90.6	91.7	99.3	97.3	94.9	97.3	89.1		
Imports	4214	4452	4751	4479	3430	2641	2941	4789		↑ 1.8
Exports	998	912	1188	1934	1615	1489	921	586		↓ -7.3
3. Synthetic Rubber										
Capacity	425	425	425	425	411	406	400	402		↓ -0.8
Production	242	285	308	351	358	353	383	345		↑ 5.2
Capacity Utilisation (%)	56.9	67.0	72.4	82.5	87.0	87.0	95.8	85.9		
Imports	596	560	608	619	575	747	635	673		↑ 1.8
Exports	43	38	52	64	74	95	90	70		↑ 7.4
4. Synthetic Detergent Intermediates										
Capacity	687	687	687	687	680	680	680	680		↓ -0.2
Production	566	664	743	687	715	736	780	703		↑ 3.1
Capacity Utilisation (%)	82.3	96.6	108.1	99.9	105.2	108.3	114.7	103.4		
Imports	218	228	206	227	264	265	278	343		↑ 6.7
Exports	10	7	1	1	1	2	7	3		↓ -17.4
5. Performance Plastics										
Capacity	3018	2945	2947	2963	2919	3046	3032	3096		↑ 0.4
Production	1700	1799	1719	1589	1672	1520	1698	1628		↓ -0.6
Capacity Utilisation (%)	56.3	61.1	58.3	53.6	57.3	49.9	56.0	52.6		
Imports	389	417	583	684	741	299	283	292		↓ -4.0
Exports	814	973	1051	1080	969	217	284	182		↓ -19.3
Total Basic Major Petrochemicals (1 to 5)										
Capacity	18351	18561	18551	18630	21286	21460	21415	21567		↑ 2.3
Production	14905	15510	15671	16268	19042	17938	19372	18136		↑ 2.8
Capacity Utilisation (%)	81.2	83.6	84.5	87.3	89.5	83.6	90.5	84.1		
Imports	5681	5938	6408	6284	5356	4356	4597	6768		↑ 2.5
Exports	2743	2956	3293	4095	3719	2681	2505	1600		↓ -7.4

Note : 1. Production and Installed Capacity data based on MPRs received from manufacturer under large and medium scale units only monitored by S&M Division of DCPC.

2. Data Source in respect of imports and exports is DGCIS, Kolkata, M/o Commerce and Industry.

Table 6A: Projection of Production, Installed Capacity, Export and Import of Major Petrochemical (Group-wise) from the year 2023-24 to 2028-29

(Figures in 000'MT)												
Group	Actual Values						2023-24	Forcast values				
	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23		2024-25	2025-26	2026-27	2027-28	2028-29
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. Synthetic Fibre												
Capacity	4379	4440	4521	4529	4483	4496	4547	4544	4538	4551	4572	4580
Production	3625	3601	3893	3185	4040	3973	3954	4061	4159	4387	4335	4465
Capacity Utilisation (%)	82.8	81.1	86.1	70.3	90.1	88.4	87.0	89.4	91.6	96.4	94.8	97.5
Imports	260	276	347	403	460	670	669	770	866	964	1054	1122
Exports	1001	1016	1059	879	1202	759	903	855	804	773	677	710
2. Polymers												
Capacity	10112	10115	12754	12799	12820	12894	14123	14632	14680	15265	15878	16418
Production	9276	10040	12404	12144	12471	11487	13112	13237	13084	13452	13789	14265
Capacity Utilisation (%)	91.7	99.3	97.3	94.9	97.3	89.1	92.8	90.5	89.1	88.1	86.8	86.9
Imports	4751	4479	3430	2641	2941	4789	3318	3457	3830	4098	4044	3821
Exports	1188	1934	1615	1489	921	586	671	206	-68	-350	-551	-820
3. Synthetic Rubber												
Capacity	425	425	411	406	400	402	391	385	382	377	372	365
Production	308	351	358	353	383	345	377	373	376	380	380	390
Capacity Utilisation (%)	72.4	82.5	87.0	87.0	95.8	85.9	96.4	96.9	98.5	100.8	102.2	106.9
Imports	608	619	575	747	635	673	698	716	734	720	759	768
Exports	52	64	74	95	90	70	93	94	94	93	98	104
4. Synthetic Detergent Intermediates												
Capacity	687	687	680	680	680	680	676	675	675	673	672	670
Production	743	687	715	736	780	703	737	752	749	744	742	759
Capacity Utilisation (%)	108.1	99.9	105.2	108.3	114.7	103.4	109.0	111.5	110.9	110.6	110.4	113.3
Imports	206	227	264	265	278	343	348	373	397	429	455	474
Exports	1	1	1	2	7	3	5	6	7	8	8	9
5. Performance Plastics												
Capacity	2947	2963	2919	3046	3032	3096	3109	3152	3201	3220	3265	3297
Production	1719	1589	1672	1520	1698	1628	1610	1634	1628	1653	1622	1638
Capacity Utilisation (%)	58.3	53.6	57.3	49.9	56.0	52.6	51.8	51.9	50.9	51.3	49.7	49.7
Imports	583	684	741	299	283	292	170	19	-98	-129	-249	-371
Exports	1051	1080	969	217	284	182	-118	-393	-601	-714	-988	-1223
Total Major Petrochemicals (1 to 5)												
Capacity	18551	18630	21286	21460	21415	21567	22846	23388	23476	24086	24759	25330
Production	15671	16268	19042	17938	19372	18136	19791	20058	19996	20616	20868	21518
Capacity Utilisation (%)	84.5	87.3	89.5	83.6	90.5	84.1	86.6	85.8	85.2	85.6	84.3	84.9
Imports	6408	6284	5356	4356	4597	6768	5203	5334	5729	6082	6063	5814
Exports	3293	4095	3719	2681	2505	1600	1555	769	235	-191	-757	-1220

Note: 1. Production and Installed Capacity data based on MPRs received from manufacturer under large and medium scale units only monitored by S&M Division of DCPC.

2. Data Source in respect of imports and exports is DGCIS, Kolkata, M/o Commerce and Industry.

3. Projected figures have been calculated by using Forecast formula in MS Excel.

Table 7: Production, Installed Capacity & Growth of Major Petrochemicals (Group-wise) during 2015-16 to 2022-23

(Figures in 000' MT)

Group				Production / Growth Rate	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
	2020-21	2021-22	2022-23									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. Synthetic Fibre	4529	4483	4496	Production	3558	3599	3625	3601	3893	3185	4040	3973
				Growth Rate (%)	0.7	1.2	0.7	-0.7	8.1	-18.2	26.9	-1.7
2. Polymers	12799	12820	12894	Production	8839	9163	9276	10040	12404	12144	12471	11487
				Growth Rate (%)	17.0	3.7	1.2	8.2	23.5	-2.1	2.7	-7.9
3. Synthetic Rubber	406	400	402	Production	242	285	308	351	358	353	383	345
				Growth Rate (%)	40.8	17.9	8.0	14.0	2.1	-1.3	8.3	-9.9
4. Synthetic Detergent Intermediates	680	680	680	Production	566	664	743	687	715	736	780	703
				Growth Rate (%)	-5.1	17.4	11.9	-7.5	4.0	3.0	6.0	-9.9
5. Performance Plastics	3046	3032	3096	Production	1700	1799	1719	1589	1672	1520	1698	1628
				Growth Rate (%)	6.9	5.8	-4.5	-7.6	5.2	-9.1	11.7	-4.1
Total Basic Major Petrochemicals	21460	21415	21567	Production	14905	15510	15670	16269	19041	17938	19371	18135
				Growth Rate (%)	10.8	4.1	1.0	3.8	17.0	-5.8	8.0	-6.4

Note : 1. Production and Installed Capacity data based on MPRs received from manufacturer under large and medium scale units only monitored by S&M Division of DCPC.

Table 8: Production, Capacity Utilization & Growth of Selected Major Petrochemicals (Product-Wise) during 2015-16 to 2022-23

(Figures in 000'MT)

Major Groups / Products	Installed Capacity			Production								CAGR (%)	Capacity Utilisation in 2021-22
	2020-21	2021-22	2022-23	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	↑ (13)	(14)
A : BASIC MAJOR PETROCHEMICALS													
I : Synthetic Fibres / Yarn													
ACRYLIC FIBRE (AF)	107.0	107.0	108.0	105.9	95.4	91.0	99.5	102.9	77.0	66.7	96.2	↓ -1.4	89.0
POLYESTER STAPLE FIBREFILL	69.0	69.0	69.0	51.1	53.7	51.3	53.0	49.9	40.3	39.0	34.1	↓ -5.6	49.5
NYLON FILAMENT YARN	58.5	66.6	66.6	37.3	40.9	40.0	46.6	48.3	33.3	46.2	44.1	↑ 2.4	66.3
NYLON INDUSTRIAL YARN/TYRE CORD	152.0	165.7	165.7	94.9	103.6	107.6	109.5	99.7	90.3	115.5	100.6	↑ 0.8	60.7
POLYESTER FILAMENT YARN	2727.4	2661.1	2661.1	2179.0	2200.9	2283.4	2316.4	2520.3	1997.9	2560.8	2486.5	↑ 1.9	93.4
POLYESTER STAPLE FIBRE	1350.5	1350.5	1350.5	1039.6	1056.0	1005.3	931.4	1027.5	909.4	1160.5	1161.0	↑ 1.6	86.0
POLYPROPYLENE FILAMENT YARN	3.6	3.6	3.6	3.5	3.4	3.1	2.4	2.5	2.2	2.8	1.9	↓ -8.1	53.4
POLYPROPYLENE STAPLE FIBRE	30.9	29.7	29.7	27.0	24.6	22.2	20.7	18.8	15.3	21.2	22.2	↓ -2.8	74.8
POLYESTER INDUSTRIAL YARN	21.5	21.5	21.5	15.4	16.3	15.0	14.8	14.7	12.4	14.4	13.6	↓ -1.8	63.1
Elastomeric/Spandex Filament Yarn	8.5	8.5	20.0	4.8	4.7	6.2	7.1	8.1	6.6	12.9	12.3	↑ 14.4	61.7
Group Total	4528.9	4483.2	4495.7	3558.4	3599.4	3625.2	3601.5	3892.8	3184.6	4040.0	3972.5	↑ 1.6	88.4
II : Polymers													
LINEAR LOW DENSITY POLYETHYLENE (LLDPE)				1204.6	1318.3	1290.0	1581.2	2994.0	2958.9	2914.1	2424.4	↑ 10.5	
HIGH DENSITY POLYETHYLENE (HDPE)				1317.2	1520.0	1578.4	1597.7	1897.6	1910.0	1915.8	1717.9	↑ 3.9	
LLDPE/HDPE (Combined) (\$)	5158.1	5158.1	5158.1	2521.7	2838.3	2868.4	3178.9	4891.6	4869.0	4829.9	4142.3	↑ 7.3	80.3
LOW DENSITY POLYETHYLENE (LDPE)	610.0	610.0	610.0	200.0	201.8	185.7	193.1	613.3	616.6	583.0	625.1	↑ 17.7	102.5
POLYSTYRENE (PS)	471.0	471.0	499.0	308.6	311.3	301.6	292.9	291.7	217.4	247.9	271.7	↓ -1.8	57.7
POLYPROPYLENE (PP)	4933.8	4933.8	4933.8	4284.4	4253.4	4350.2	4779.0	4982.8	4919.1	5240.7	4773.5	↑ 1.6	96.8
EXPANDABLE POLYSTYRENE (EXPS)	133.3	147.1	193.0	86.2	96.8	103.9	108.3	110.7	87.4	97.2	108.4	↑ 3.3	73.7
POLY VINYL CHLORIDE (PVC)	1493.0	1500.0	1500.0	1437.9	1461.5	1466.1	1488.4	1513.6	1434.1	1471.9	1565.6	↑ 1.2	104.4
Group Total	12799.2	12820.0	12893.9	8838.8	9163.1	9275.9	10040.5	12403.7	12143.6	12470.7	11486.6	↑ 3.8	89.6
III : Synthetic Rubber													
STYRENE BUTADIENE RUBBER (SBR)	277.0	271.0	271.0	124.8	167.3	194.0	228.6	227.8	212.9	237.5	205.4	↑ 7.4	75.8
POLY BUTADIENE RUBBER (PBR)	100.0	100.0	100.0	113.9	117.1	113.6	122.2	130.3	128.5	132.8	126.1	↑ 1.5	126.1
ETHYL VINYL ACETATE (EVA)	15.0	15.0	15.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	↓ -100.0	0.0
NITRILE BUTADIENE RUBBER (NBR)	13.7	13.7	15.5	0.4	0.4	0.1	0.0	0.0	11.9	12.3	13.4	↑ 65.4	86.2
Group Total	405.7	399.7	401.5	241.5	284.8	307.7	350.9	358.1	353.3	382.6	344.9	↑ 5.2	85.9
IV : Synthetic Detergent Intermediates													
LINEAR ALKYL BENZENE (LAB)	544.8	544.8	544.8	377.2	447.6	451.5	454.8	413.5	457.1	462.3	413.2	↑ 1.3	75.8
ETHYLENE OXIDE (EO)	135.0	135.0	135.0	188.3	216.1	291.3	232.3	301.2	279.4	318.1	289.9	↑ 6.4	214.7
Group Total	679.8	679.8	679.8	565.5	663.7	742.8	687.2	714.7	736.4	780.4	703.0	↑ 3.2	103.4
V : Performance Plastic													
ABS RESINS	213.0	199.0	199.0	117.0	117.8	145.2	148.2	136.5	121.9	122.8	148.9	↑ 3.5	74.8
NYLON-6/ NYLON 6,6*	83.5	83.5	83.5	21.4	21.5	20.6	21.5	41.6	55.4	68.3	68.7	↑ 18.1	82.3
POLYMETHYL METHACRYLATE (PMMA)	3.9	3.9	3.9	1.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	↓ -100.0	0.0

Major Groups / Products	Installed Capacity			Production								CAGR (%)	Capacity Utilisation in 2021-22
	2020-21	2021-22	2022-23	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
STYRENE ACRYLONITRILE (SAN)	167.0	167.0	167.0	98.7	99.2	114.7	131.8	133.8	118.6	121.7	139.1	↑ 5.0	83.3
PET Chips/Polyester Chips	2558.6	2558.6	2622.6	1452.9	1548.7	1424.6	1271.1	1344.7	1209.0	1365.9	1254.3	↓ -2.1	47.8
PTFE (TEFLON)	20.3	20.3	20.3	8.7	11.7	13.7	16.2	15.1	14.6	18.9	17.3	↑ 10.3	85.3
Group Total	3046.3	3032.3	3096.3	1700.3	1799.3	1718.8	1588.8	1671.6	1519.6	1697.7	1628.4	↓ -0.6	52.6
Total Basic Major Petrochemicals (I+II+III+IV+V)	21459.8	21415.0	21567.2	14904.5	15510.3	15670.3	16268.8	19040.9	17937.6	19371.4	18135.4	2.8	84.1
B : INTERMEDIATES													
I : Fibre Intermediates													
ACRYLONITRILE (ACN)	24.0	24.0	24.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	↓ -100.0	0.0
CAPROLACTUM	120.0	120.0	120.0	86.3	87.0	86.0	92.6	84.1	80.4	108.2	129.6	↑ 6.0	108.0
MONO ETHYLENE GLYCOL (MEG)	2210.6	2210.6	2210.6	1159.0	1110.5	1132.7	1159.8	2007.8	1982.0	1990.2	1656.2	↑ 5.2	74.9
PURIFIED TEREPHTHALIC ACID (PTA)	3873.0	3873.0	3873.0	3431.8	3390.6	3492.4	3404.9	3267.1	2996.8	3383.3	3202.2	↓ -1.0	82.7
Group Total	6227.6	6227.6	6227.6	4679.0	4588.0	4711.1	4657.2	5358.9	5059.1	5481.7	4988.0	↑ 0.9	80.1
II : Building Blocks													
(a) Olefins													
BUTADIENE	552.0	552.0	552.0	343.5	347.4	332.4	385.8	481.0	458.8	477.4	429.4	↑ 3.2	77.8
ETHYLENE	7147.3	7147.3	7147.3	3727.4	4021.7	4222.7	3831.9	6466.8	6364.9	6414.5	5802.6	↑ 6.5	81.2
PROPYLENE	5190.4	5190.4	5190.4	4456.7	4425.2	4457.9	4639.5	4887.6	5215.8	5635.1	5064.0	↑ 1.8	97.6
Group Total	12889.7	12889.7	12889.7	8527.5	8794.3	9013.0	8857.2	11835.4	12039.4	12527.0	11296.0	↑ 4.1	87.6
(b) Aromatics													
BENZENE	1884.3	1884.3	1884.3	1332.6	1332.0	1318.0	1414.6	1346.2	1407.9	1427.6	1156.6	↓ -2.0	61.4
MIXED XYLENE	898.3	898.3	898.3	269.4	296.0	271.4	249.1	269.6	146.7	160.9	45.4	↓ -22.5	5.1
ORTHOXYLENE	511.0	511.0	511.0	499.5	444.9	447.8	406.3	386.4	522.1	511.2	408.4	↓ -2.8	79.9
TOLUENE	288.3	288.3	288.3	115.7	126.8	106.9	141.1	140.2	114.0	115.7	112.5	↓ -0.4	39.0
PARAXYLENE (PX)	3821.7	3821.7	3821.7	3266.4	3161.3	3194.5	3331.8	2782.3	2614.2	2461.9	1638.9	↓ -9.4	42.9
Group Total	7403.6	7403.6	7403.6	5483.5	5361.0	5338.6	5542.9	4924.7	4804.9	4677.2	3361.8	↓ -6.8	45.4
Total Intermediates (I+II(a)+II(b))	26520.9	26520.9	26520.9	18690.1	18743.3	19062.6	19057.3	22119.0	21903.5	22685.9	19645.9	↑ 0.7	74.1
C : OTHER PETRO-BASED CHEMICALS													
DIETHYLENE GLYCOL	170.9	170.9	170.9	114.2	108.2	105.7	107.4	167.7	172.3	173.7	141.8	↑ 3.1	82.9
DIACETONE ALCOHOL	9.5	9.5	9.5	0.0	0.0	0.2	4.1	6.0	2.9	5.7	3.2		33.4
ETHYLENE DICHLORIDE	593.2	593.2	593.2	277.4	282.6	282.3	339.2	345.3	326.2	367.0	398.6	↑ 5.3	67.2
BUTANOL	26.0	176.0	176.0	11.1	12.5	17.4	21.7	16.4	20.3	38.3	42.4	↑ 21.1	24.1
2-ETHYL HEXANOL	55.2	110.2	110.2	44.4	45.6	56.6	58.9	48.7	49.7	91.3	90.2	↑ 10.7	81.9
VINYL CHLORIDE MONOMER	541.3	541.3	541.3	790.7	791.3	778.0	803.6	874.5	799.2	813.1	849.3	↑ 1.0	156.9
PBT*	0.0	0.0	0.0	0.5	0.6	0.6	1.3	6.2	6.1	7.5	7.9	↑ 48.4	
POLYCARBONATE*	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	↓ -100.0	
PROPYLENE OXIDE	51.0	51.0	51.0	25.6	29.3	36.0	35.1	34.6	44.4	49.9	49.2	↑ 9.8	96.5
PROPYLENE GLYCOL	22.0	22.0	22.0	13.6	16.3	17.6	19.1	19.5	19.7	20.5	21.3	↑ 6.6	96.9
POLYVINYL ACETATE RESIN	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	3.0	7.3	9.5		79.5
UNSATURATED POLYESTER RESIN	34.0	34.0	34.0	0.0	0.0	0.0	0.0	16.4	12.9	16.5	19.0		55.9

Major Groups / Products	Installed Capacity			Production								CAGR (%)	Capacity Utilisation in 2021-22
	2020-21	2021-22	2022-23	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
METHYL METHACRYLATE	4.4	4.4	4.4	2.3	0.5	2.8	4.0	1.7	0.0	0.0	0.0	↓ -100.0	0.0
ISO-BUTANOL	2.8	9.8	9.8	1.9	2.0	2.2	2.2	1.7	2.1	4.0	5.8	↑ 17.6	59.0
C4-RAFFINATE	291.6	291.6	291.6	428.6	437.2	339.2	380.3	413.3	433.4	444.6	393.5	↓ -1.2	135.0
PHTHALIC ANHYDRIDE	401.9	401.9	401.9	305.8	296.1	290.0	275.1	269.6	293.0	339.6	330.2	↑ 1.1	82.1
VINYL ACETATE MONOMER	30.0	30.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
ISOPROPANOL	70.2	70.2	70.2	71.2	72.5	71.8	58.3	60.5	55.3	65.1	48.8	↓ -5.3	69.5
POLYOL	142.0	148.5	163.0	71.8	78.7	79.4	82.1	81.8	77.8	87.2	99.8	↑ 4.8	61.2
Group Total	2458.0	2676.5	2691.0	2159.2	2173.5	2080.1	2192.5	2364.2	2318.3	2531.3	2510.6	↑ 2.2	93.3
Total Major Petrochemical (9 Groups)	50438.8	50612.4	50779.1	35753.8	36427.1	36813.1	37518.5	43524.1	42159.4	44588.5	40291.9	↑ 1.7	79.3

Note : 1. Production and Installed Capacity data based on MPRs received from manufacturer under large and medium scale units only monitored by S&M Division of DCPC.

\$: Combined capacity to produce both LLDPE and HDPE. However, production is independent.

***** Nylon 6, 6 has combined Installed Capacity that includes the capacity of PBT and Polycarbonate also.

Table 9: Installed Capacities of Selected Major Petrochemicals (Group Wise) from 2015-16 to 2022-23

(Figures in 000'MT)

Groups / Products	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
(1)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
A : BASIC PETROCHEMICALS								
I : SYNTHETIC FIBRES	4452	4393	4379	4440	4521	4529	4483	4496
II : POLYMERS	9768	10110	10112	10115	12754	12799	12820	12894
III : SYNTHETIC RUBBER (ELASTOMERS)	425	425	425	425	411	406	400	402
IV : SYNTH. DETERGENT INTERMEDIATE	687	687	687	687	680	680	680	680
V : PERFORMANCE PLASTICS	3018	2945	2947	2963	2919	3046	3032	3096
TOTAL MAJOR PETROCHEMICALS (I TO V)	18351	18561	18551	18630	21286	21460	21415	21567
B : INTERMEDIATES								
VI : FIBRE INTERMEDIATES	5067	5067	5187	5187	5885	6228	6228	6228
VII : OLEFINS	9462	9683	9683	9683	12890	12890	12890	12890
VIII : AROMATICS	6304	6305	6305	6305	6460	7404	7404	7404
TOTAL INTERMEDIATES (VI TO VIII)	20834	21055	21175	21175	25234	26521	26521	26521
C : OTHER PETRO-BASED CHEMICALS	2272	2273	2271	2271	2413	2458	2677	2691
Total (A+B+C)	41457	41888	41998	42077	48933	50439	50612	50779

Note: Installed Capacity data based on MPRs received from manufacturer under large and medium scale units only monitored by S&M Division of DCPC.

Table 10: Consumption of Selected Major Petrochemicals (Product-wise) during 2015-16 to 2022-23

(Figures in 000'MT)

Groups / Products	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
1	2	3	4	5	6	7	8	9
1. SYNTHETIC FIBRE								
ACRYLIC FIBRE	97.2	83.8	83.9	94.0	118.7	93.4	78.1	93.6
POLYESTER STAPLE FIBREFILL	51.1	53.7	51.3	53.0	49.9	40.3	39.0	34.1
NYLON FILAMENT YARN	64.6	70.1	58.7	64.1	65.0	44.2	62.1	74.1
NYLON INDUSTRIAL YARN/TYRE CORD	98.2	109.8	112.5	115.8	103.0	95.5	121.6	102.7
POLYESTER FILAMENT YARN	1616.8	1537.2	1648.5	1703.7	1924.2	1696.0	2094.0	2502.1
POLYESTER STAPLE FIBRE	957.6	941.9	866.8	767.8	860.5	702.3	855.1	1029.1
POLYPROPYLENE FILAMENT YARN	1.3	2.0	3.6	3.2	2.5	2.2	2.3	1.1
POLYPROPYLENE STAPLE FIBRE	21.4	16.8	16.0	16.2	12.1	9.3	13.3	14.8
POLYESTER INDUSTRIAL YARN	15.4	16.3	15.0	14.8	14.7	12.4	14.4	13.6
Elastomeric/Spandex Filament Yarn	20.4	21.9	27.2	28.9	29.4	13.9	18.1	18.5
Total	2943.8	2853.7	2883.8	2861.4	3180.0	2709.3	3298.1	3883.8
2. POLYMERS								
LOW DENSITY POLYETHYLENE	550.8	566.4	542.0	370.0	825.6	833.5	756.3	830.9
HIGH DENSITY POLYTHYLENE	2122.8	2372.4	2365.7	2042.5	2198.6	2321.9	2544.9	3276.3
POLYSTYRENE	264.8	273.2	284.6	285.2	296.5	250.9	269.1	345.2
POLYPROPYLENE (INC. CO-POLYMER)	4249.9	4460.3	4737.2	4915.8	5438.4	4911.8	5831.0	6123.0
EXPANDABLE POLYSTYRENE	85.4	96.9	103.4	106.4	109.0	91.2	101.8	107.8
POLY VINYL CHLORIDE	2936.1	3157.9	3305.7	3523.8	2439.9	1836.4	1929.7	2155.2
LINEAR LOW DENSITY POLYTHYLENE	1778.8	1734.1	1486.2	1349.4	2910.4	3050.9	3070.8	2860.7
PVC COMPOUND	65.9	42.1	14.3	-7.7	0.0	0.0	-12.5	-9.5
Total	12054.5	12703.2	12839.1	12585.5	14218.4	13296.5	14491.0	15689.6
3. SYNTHETIC RUBBER								
STYRENE BUTADIENE RUBBER	266.5	289.8	286.3	305.5	285.6	325.5	371.4	335.1
POLY BUTADIENE RUBBER	182.6	196.9	201.4	213.7	207.6	220.2	220.3	258.4
ETHYL PROPYLENE DIMERS	36.6	40.1	42.6	50.3	43.2	40.4	47.5	53.5
ETHYL VINYL ACETATE	166.4	143.1	182.4	178.2	192.7	188.5	180.6	201.3
NITRILE BUTADIENE RUBBER	51.9	36.4	39.9	38.0	40.5	166.6	43.7	51.7
BUTYL RUBBER	90.8	100.3	111.0	120.1	89.3	64.3	64.4	47.9
Total	794.9	806.5	863.6	905.8	858.9	1005.6	927.8	947.9
4. SYNTHETIC DETERGENT INTERMEDIATES								
LINEAR ALKYL BENZENE	585.9	669.3	656.5	681.6	677.3	721.5	733.6	754.7
ETHYLENE OXIDE	188.0	215.6	290.9	231.6	300.4	278.4	317.1	288.7
Total	774.0	884.9	947.4	913.2	977.7	1000.0	1050.7	1043.4
5. PERFORMANCE PLASTICS								
ABS RESIN	206.6	220.2	243.0	267.1	240.8	220.4	233.8	263.7
NYLON-6	150.2	161.5	174.1	216.5	237.0	55.4	68.3	68.7
POLYMETHYL METHACRYLATE	12.6	18.9	26.5	25.2	24.7	28.5	21.8	29.8
STYRENE ACRYLONITRILE	107.7	107.1	122.9	140.6	143.8	131.7	141.4	160.3
NYLON 6,6	1.2	1.2	1.1	1.0	0.7	0.0	0.0	0.0
POLYESTER CHIPS/PET CHIPS	792.0	729.4	676.4	534.8	789.6	1158.6	1223.9	1207.3
POLYTETRAFLUOROETHYLENE(PTFE)	4.8	5.6	7.1	7.1	6.8	6.8	7.2	9.0
Total	1275.1	1244.0	1251.0	1192.4	1443.4	1601.4	1696.5	1738.8
6. FIBRE INTERMEDIATE								
ACRYLONITRILE	159.8	139.7	158.3	180.4	172.9	126.7	173.8	221.8
CAPROLACTAM	130.9	138.9	144.3	159.0	151.9	131.8	168.2	152.3
DIMETHYL TEREPHTHALATE	2.2	1.8	2.3	1.5	1.8	1.8	2.0	1.9
MONO ETHYLENE GLYCOL	2198.3	2283.7	2061.7	1501.9	2644.1	2277.8	2836.7	3117.4
PURIFIED TEREPHTHALIC ACID	3955.6	3543.1	3801.6	3812.3	4073.6	3487.2	4800.1	4794.2
Total	6446.9	6107.1	6168.1	5655.0	7044.2	6025.3	7980.8	8287.6
7. OLEFINS								

Groups / Products	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
1	2	3	4	5	6	7	8	9
BUTADIENE	214.6	242.6	231.8	250.6	306.8	292.0	333.3	316.9
ETHYLENE	3743.3	4102.6	4125.4	3699.2	6379.3	6301.9	6365.4	5838.9
PROPYLENE	4445.6	4415.1	4446.0	4608.3	4889.0	5204.4	5664.6	5072.7
Total	8403.5	8760.4	8803.2	8558.2	11575.1	11798.3	12363.3	11228.5
8. AROMATICS								
BENZENE	417.7	542.6	31.8	-214.3	-51.1	-80.5	-491.2	-284.0
MIXED XYLENE	269.5	296.1	273.4	248.7	269.3	146.7	160.9	47.4
ORTHO-XYLENE	299.6	316.8	277.8	203.6	225.5	237.7	293.2	338.0
TOLUENE	454.1	513.7	517.0	565.6	596.5	698.0	598.2	682.3
PARAXYLENE	3213.8	3557.3	2256.7	1508.8	940.5	442.7	805.9	1163.7
Total	4654.7	5226.5	3356.6	2312.4	1980.8	1444.6	1367.0	1947.5
9. OTHER PETRO-BASED CHEMICALS								
DIETHYLENE GLYCOL	114.2	108.2	105.7	107.4	167.7	172.3	173.7	141.8
DIACETONE ALCOHOL	0.0	0.0	0.2	4.1	6.0	2.9	5.7	3.2
ETHYLENE DICHLORIDE	861.5	786.5	950.8	901.7	1044.9	921.7	987.0	1061.4
BUTANOL	73.4	68.1	70.2	70.2	75.0	62.5	66.8	81.0
OXO ALCOHOL	0.7	1.9	1.4	-0.2	1.5	2.1	2.1	1.0
2-ETHYL HEXANOL	152.8	110.4	112.1	109.8	130.4	104.5	101.6	144.1
VINYL CHLORIDE MONOMER	1140.1	1135.7	1262.4	1261.2	1385.6	1279.1	1394.9	1386.5
EPICHLORHYDRINE	43.4	48.1	56.0	65.0	61.1	55.1	66.4	66.3
ISO BUTYLENE	15.8	20.1	48.7	44.6	-7.3	-4.2	-18.5	-14.1
METAXYLENE	3.0	2.6	2.1	2.9	1.9	2.7	4.7	3.0
METHYL ISOBUTYL KETONE	27.3	21.6	33.7	31.9	27.8	30.1	35.8	30.4
PBT	0.5	0.6	0.6	1.3	6.2	6.1	7.5	7.9
PIB	8.2	13.8	12.4	12.0	10.3	6.7	12.2	8.7
POLYCARBONATE	133.9	134.5	154.1	187.1	172.5	174.7	207.2	221.3
PROPYLENE OXIDE	51.1	52.4	59.4	61.9	54.7	61.8	70.4	74.1
PROPYLENE GLYCOL	67.2	66.8	73.9	83.9	80.9	76.0	81.0	88.0
POLYVINYL ACETATE RESIN	-8.1	-5.7	-3.5	-5.8	-5.5	-1.4	2.3	5.7
UNSATURATED POLYESTER RESIN	18.2	23.7	35.5	28.3	49.6	44.9	42.6	49.4
METHYL METHACRYLATE	2.3	0.5	2.8	4.0	1.7	0.0	0.0	0.0
ISO-BUTANOL	1.9	2.0	2.2	2.2	1.7	2.1	4.0	5.8
ETHYL BENZENE	0.2	0.3	0.4	0.7	0.5	0.5	0.9	0.7
C4-RAFFINATE	428.6	437.2	339.2	380.3	413.3	433.4	444.6	393.5
CELLULOSE ACETATE SHEET	1.3	1.0	1.3	1.5	1.3	1.3	1.6	1.6
CELLULOSE NITRATE SHEET	0.1	0.1	0.1	0.1	0.1	1.2	0.5	0.1
MELAMINE MOULDING POWDER	3.9	2.9	-0.1	-1.3	-6.7	-9.8	-19.0	-26.5
POLYACETAL RESIN	34.9	37.5	43.5	48.5	47.3	48.4	47.2	60.2
PHTHALIC ANHYDRIDE	345.1	346.1	382.6	393.4	415.2	410.4	428.3	403.7
STYRENE	716.9	724.5	784.7	811.2	872.6	720.8	847.2	1055.4
VINYL ACTATE MONOMER	140.0	150.2	163.7	163.0	159.4	136.5	174.4	209.6
ISOPROPANOL	155.1	162.3	171.3	193.1	204.2	233.8	189.5	183.9
POLYOL	236.9	226.0	274.5	308.3	295.7	239.5	247.7	99.8
Total	4770.3	4680.0	5142.0	5272.2	5669.7	5215.7	5610.3	5747.3

Note : 1. Production and Installed Capacity data based on MPRs received from manufacturer under large and medium scale units only

2. Data Source in respect of imports and exports is DGCIS, Kolkata, M/o Commerce and Industry.

3. Consumption is derived as Production + Imports - Exports

Section - III

Foreign Trade

Table 11: Exports and Imports of Chemicals & Chemical Products (excluding Pharmaceutical Products and Fertilizers) during 2015-16 to 2022-23

											(Rs. in Crore)
HS Code	Commodity	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	Trend line	CAGR (%)
(1)	(2)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Total National Exports of which		1716384	1849434	1956515	2307726	2219854	2159043	3147021	3621550		11.3
28	INORGANIC CHEMICALS	7913	9138	11175	14056	12512	12301	19800	26642		18.9
29	ORGANIC CHEMICALS	75295	78386	95381	127855	124195	133637	164815	172357		12.6
32	TANNING OR DYEING	16165	17189	18951	23124	24409	22660	29513	26528		7.3
38	MISCELLANEOUS CHEMICAL PRODUCTS.	20083	21792	25080	32397	35663	37886	52416	63282		17.8
39	PLASTIC AND ARTICLES THEREOF.	34381	35502	40928	56079	48970	51004	67440	61518		8.7
4002	SYNTHETIC RUBBER AND FACTICE	452	480	571	739	759	821	1141	964		11.4
54	MAN-MADE FILAMENTS.	13460	13334	13984	16018	16962	11470	18070	15731		2.3
55	MAN-MADE STAPLE FIBRES.	13625	14373	13212	13308	11824	9559	15402	14283		0.7
A: Total Chemicals and Petrochemical Products		181374	190193	219281	283575	275294	279337	368597	381306		11.2
% share in total export		10.6	10.3	11.2	12.3	12.4	12.9	11.7	10.5		
Total National Imports of which		2490306	2577675	3001033	3594675	3360954	2915958	4572775	5749801		12.7
28	INORGANIC CHEMICALS	33170	31654	38927	53237	45045	50955	76356	102895		17.6
29	ORGANIC CHEMICALS	101986	103798	123761	156552	140205	145830	212615	232169		12.5
32	TANNING OR DYEING	10467	11186	12995	15460	14518	14036	19431	20490		10.1
38	MISCELLANEOUS CHEMICAL PRODUCTS.	27207	30642	35521	41748	39069	45324	58634	65756		13.4
39	PLASTIC AND ARTICLES THEREOF.	74566	77573	89768	106591	100607	98392	149067	185547		13.9
4002	SYNTHETIC RUBBER AND FACTICE	5205	5654	6687	7896	6079	6269	9154	11121		11.5
54	MAN-MADE FILAMENTS.	4879	4856	5538	6843	7351	6727	11144	14287		16.6
55	MAN-MADE STAPLE FIBRES.	4401	3826	4658	6508	6785	6180	7714	9822		12.2
B: Total Chemicals and Petrochemical Products		261880	269189	317856	394834	359660	373714	544115	642088		13.7
% share in total import		10.5	10.4	10.6	11.0	10.7	12.8	11.9	11.2		

Chapter 28: Inorganic Chemicals; Organic or Inorganic Compounds of Precious Metals, of Rare-Earth Metals, of Radioactive Elements or of Isotopes; **Chapter 29:** Organic Chemicals; **Chapter 32:** Tanning or Dyeing Extracts; Tannins and their Derivatives; Dyes, Pigments and Other Colouring Matter; Paints and Varnishes; Putty and other Mastics; Inks; **Chapter 38:** Miscellaneous Chemical Products; **Chapter 39:** Plastics and articles thereof; **4002:** Synthetic rubber and factice derived from oils, in primary forms or in plates, sheets or strip; mixtures of any product of heading No.4001 with any product of this heading, in primary forms or in plates, sheets; **Chapter 54:** Man-made Filaments and **Chapter 55:** Man-made staple fibres

Note 1: Import and Export includes both technical and formulations.

Note 2: Data Source in respect of Imports and Exports is DGCIS, Kolkata, M/o Commerce and Industry

Table 12: Exports and Imports of Chemicals & Chemical Products (including Pharmaceutical Products and Fertilizers) during 2015-16 to 2022-23

(Rs. in Crore)

HS Code	Commodity	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	CARG (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Total National Exports of which		1716384	1849434	1956515	2307726	2219854	2159043	3147021	3621550	9.0
28,29,32,38,39,4002, 54 & 55	Chemicals and Chemical Products (excluding Pharmaceutical Products and Fertilizers)	181374	190193	219281	283575	275294	279337	368597	381306	11.2
	Share in Total Exports (%)	10.6	10.3	11.2	12.3	12.4	12.9	11.7	10.5	
30	Pharmaceutical Products	84481	86705	85447	103240	115473	143738	144581	159644	9.5
	Share in Total Exports (%)	4.9	4.7	4.4	4.5	5.2	6.7	4.6	4.4	
31	Fertilisers	673	466	685	1038	837	779	630	1057	6.7
	Share in Total Exports (%)	0.04	0.03	0.04	0.04	0.04	0.04	0.02	0.03	
A: Total Chemicals and Chemical Products (including Pharmaceutical Products and Fertilizers)		266528	277364	305413	387853	391604	423855	513807	542007	10.7
Share in Total Exports (%)		15.53	15.00	15.61	16.81	17.64	19.63	16.33	14.97	-0.5
Total National Imports of which		2490306	2577675	3001033	3594675	3360954	2915958	4572775	5749801	13
28,29,32,38,39,4002, 54 & 55	Chemicals and Chemical Products (excluding Pharmaceutical Products and Fertilizers)	261880	269189	317856	394834	359660	373714	544115	642088	13.7
	Share in Total Imports (%)	10.5	10.4	10.6	11.0	10.7	12.8	11.9	11.2	
30	Pharmaceutical Products	10742	11515	12241	14581	16530	18934	25603	21023	10.1
	Share in Total Imports (%)	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.4	
31	Fertilisers	45973	28754	30108	46457	47397	51034	95329	123407	15.1
	Share in Total Imports (%)	1.85	1.12	1.00	1.29	1.41	1.75	2.08	2.15	
B: Total Chemicals and chemical Products (including Pharmaceutical Products and Fertilizers)		318595	309458	360205	455872	423587	443683	665047	786518	13.8
Share in Total Imports (%)		12.79	12.01	12.00	12.68	12.60	15.22	14.54	13.68	

Chapter 28: Inorganic Chemicals; Organic or Inorganic Compounds of Precious Metals, of Rare-Earth Metals, of Radioactive Elements or of Isotopes; **Chapter 29:** Organic Chemicals; **Chapter 30:** Pharmaceutical Products; **Chapter 31:** Fertilisers; **Chapter 32:** Tanning or Dyeing Extracts; Tannins and their Derivatives; Dyes, Pigments and Other Colouring Matter; Paints and Varnishes; Putty and other Mastics; Inks; **Chapter 38:** Miscellaneous Chemical Products; **Chapter 39:** Plastics and articles thereof; **4002:** Synthetic rubber and factice derived from oils, in primary forms or in plates, sheets or strip; mixtures of any product of heading No.4001 with any product of this heading, in primary forms or in plates, sheets; **Chapter 54:** Man-made Filaments and **Chapter 55:** Man-made staple fibres

Note 1: Import and Export includes both technical and formulations.

Note 2: Data Source in respect of Imports and Exports is DGCIS, Kolkata, M/o Commerce and Industry

Table 12A: Net Imports of Chemicals and Chemical Products (including Pharmaceutical Products and Fertilizers) during 2015-16 to 2022-23

(Rs. in Crore)

HS Code	Commodity	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
(1)	(2)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Total National Net Imports of which		773921	728242	1044519	1286948	1141100	756914	1425753	2128251
28	INORGANIC CHEMICALS	25256	22516	27752	39181	32533	38654	56556	76253
29	ORGANIC CHEMICALS	26692	25412	28380	28696	16009	12194	47800	59812
32	TANNING OR DYEING	-5698	-6004	-5956	-7664	-9891	-8624	-10082	-6038
38	MISCELLANEOUS CHEMICAL PRODUCTS.	7124	8850	10441	9352	3407	7438	6218	2474
39	PLASTIC AND ARTICLES THEREOF.	40185	42071	48841	50512	51638	47388	81627	124029
4002	SYNTHETIC RUBBER AND FACTICE	4753	5174	6116	7157	5320	5448	8013	10157
54	MAN-MADE FILAMENTS.	-8582	-8479	-8446	-9175	-9611	-4743	-6926	-1444
55	MAN-MADE STAPLE FIBRES.	-9224	-10546	-8554	-6800	-5039	-3379	-7688	-4461
Net Imports of Total Chemicals and Chemical Products (excluding Pharmaceutical Products and Fertilizers)		80506	78995	98575	111259	84366	94377	175518	260782
Share in Total National Net Imports (%)		10.4	10.8	9.4	8.6	7.4	12.5	12.3	12.3
30	Pharmaceutical Products	-73739	-75190	-73206	-88659	-98943	-124804	-118978	-138621
31	Fertilisers	45300	28289	29423	45419	46560	50255	94699	122350
Net Imports of Total Chemicals and Chemical Products (including Pharmaceutical Products and Fertilizers)		52067	32094	54792	68019	31983	19828	151240	244511
Share in Total National Net Imports (%)		6.7	4.4	5.2	5.3	2.8	2.6	10.6	11.5

Chapter 28: Inorganic Chemicals; Organic or Inorganic Compounds of Precious Metals, of Rare-Earth Metals, of Radioactive Elements or of Isotopes; **Chapter 29:** Organic Chemicals; **Chapter 32:** Tanning or Dyeing Extracts; Tannins and their Derivatives; Dyes, Pigments and Other Colouring Matter; Paints and Varnishes; Putty and other Mastics; Inks; **Chapter 38:** Miscellaneous Chemical Products; **Chapter 39:** Plastics and articles thereof; **4002:** Synthetic rubber and factice derived from oils, in primary forms or in plates, sheets or strip; mixtures of any product of heading No.4001 with any product of this heading, in primary forms or in plates, sheets; Chapter 54: Man-made Filaments and **Chapter 55:** Man-made staple fibres

Note 1: Import and Export includes both technical and formulations.

Note 2: Data Source in respect of Imports and Exports is DGCIS, Kolkata, M/o Commerce and Industry

Table 13: Exports of Major Chemicals (Group Wise) during 2015-16 to 2022-23

(QTY. in MT; Value in Rs. Lakh)

GROUP	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
ALKALI CHEMICALS	106744	29210	154244	39591	273456	86880	239321	87844	329459	82760	428873	85310	597971	187161	667778	314334
INORGANIC CHEMICALS	156683	74466	377587	111322	173071	102270	176900	133248	196035	134079	194941	119206	272948	261181	337109	342807
ORGANIC CHEMICALS	231728	216771	190306	232940	204923	320492	233147	425738	244524	422713	295922	438010	310144	528314	303810	429707
PESTICIDES & INSECTICIDES \$	266915	1126874	342331	1315026	358481	1481030	404783	2004132	398069	2163297	470787	2380601	567666	3266419	539783	3861697
DYES & PIGMENTS	376046	1219795	419272	1307546	485741	1439290	525170	1800681	530297	1928414	514395	1770381	590558	2336505	464906	1984431
EXPORTS OF MAJOR CHEMICALS	1138116	2667116	1483740	3006425	1495672	3429962	1579321	4451643	1698384	4731263	1904918	4793508	2339287	6579580	2313386	6932976

Source: DGCIS, Kolkata, M/o Commerce and Industry.

Note: Import and Export includes both technical and formulations.

Table 14: Imports of Major Chemicals (Group Wise) during 2015-16 to 2022-23

(Qty. in MT; Value in Rs. Lakh)

GROUP	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
ALKALI CHEMICALS	1117878	218199	1121137	215051	1193978	265347	1049124	225523	1157130	240752	967827	170499	766564	174732	713367	269998
INORGANIC CHEMICALS	1009821	237368	1010071	235237	1228854	308363	1579667	485763	1531826	354602	1187990	302101	1345272	382374	1351450	433595
ORGANIC CHEMICALS	3143476	865684	3170287	904366	3407051	1207748	3644781	1520278	3775333	1078053	3715724	1124697	4159984	2308240	4700910	2117580
PESTICIDES & INSECTICIDES \$	33868	390707	42591	490581	44145	581385	49233	632590	42580	611078	66190	899057	59722	972605	67445	1025202
DYES & PIGMENTS	54691	219304	55868	214913	62971	231383	56452	278422	50583	281435	45339	252666	53657	326661	44637	290398
IMPORTS OF MAJOR CHEMICALS	5359734	1931262	5399954	2060148	5936999	2594226	6379257	3142576	6557452	2565920	5983070	2749020	6385199	4164612	6877809	4136773

Source: DGCIS, Kolkata, M/o Commerce and Industry

Note: Import and Export includes both technical and formulations.

Table 15: Net Imports of Major Chemicals (Group Wise) during 2015-16 to 2022-23

(Qty. in MT; Value in Rs. Lakh)

GROUP	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE	QTY.	VALUE
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
ALKALI CHEMICALS	1011134	188989	966893	175460	920522	178467	809803	137679	827671	157992	538954	85189	168593	-12429	45589	-44336
INORGANIC CHEMICALS	853138	162902	632484	123915	1055783	206093	1402767	352515	1335791	220523	993049	182895	1072324	121193	1014341	90788
ORGANIC CHEMICALS	2911748	648913	2979981	671426	3202128	887256	3411634	1094540	3530809	655340	3419802	686687	3849840	1779926	4397100	1687873
PESTICIDES & INSECTICIDES \$	-233047	-736167	-299740	-824445	-314336	-899645	-355550	-1371542	-355489	-1552219	-404597	-1481544	-507944	-2293814	-472338	-2836495
DYES & PIGMENTS	-321355	-1E+06	-363404	-1092633	-422770	-1207907	-468718	-1522259	-479714	-1646979	-469056	-1517715	-536901	-2009844	-420269	-1694033
NET IMPORTS OF MAJOR CHEMICALS	4221618	-735854	3916214	-946277	4441327	-835736	4799936	-1309067	4859068	-2165343	4078152	-2044488	4045912	-2414968	4564423	-2796203

Source: DGCIS, Kolkata, M/o Commerce and Industry

Note: Import and Export includes both technical and formulations.

Table 16: Exports of Major Chemicals (Product Wise) during 2015-16 to 2022-23

(QTY in MT; VAL in Rs. Lakh)

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
ALKALI CHEMICALS																
SODA ASH	18613	3927	64377	10793	110087	19377	62457	15202	137749	27137	149721	23725	250639	53739	203910	69376
CAUSTIC SODA	82144	23807	84809	27773	159630	66829	172165	71663	187494	54532	275374	60246	343042	131967	458181	242907
LIQUID CHLORINE	5987	1476	5058	1025	3739	674	4699	979	4216	1091	3778	1339	4290	1455	5687	2051
TOTAL	106744	29210	154244	39591	273456	86880	239321	87844	329459	82760	428873	85310	597971	187161	667778	314334
INORGANIC CHEMICALS																
ALUMINIUM FLUORIDE	1796	1240	321	265	206	204	442	363	1362	1210	2046	1872	984	247	391	502
CALCIUM CARBIDE	371	206	493	284	464	258	325	204	371	244	129	112	787	974	735	842
CARBON BLACK	114668	55019	332172	87414	122287	72959	122832	103643	144017	103457	138724	85640	203936	218180	224439	273212
POTASSIUM CHLORATE	758	576	1658	1145	1941	1245	3024	2124	3178	2190	2595	1803	1981	1564	2687	3034
SODIUM CHLORATE	13	13	118	56	1075	256	810	41	0	6	5	5	24	34	9	13
TITANIUM DIOXIDE	4436	5582	8183	10216	9560	15377	7345	12743	6235	10654	6483	11521	6051	15382	4932	12770
RED PHOSPHORUS	482	1777	454	1757	455	1716	595	2242	650	2567	582	2460	626	3628	672	5524
HYDROGEN PEROXIDE	351	222	270	284	116	214	263	225	808	482	3077	1053	5683	1996	55007	28081
CALCIUM CARBONATE	33808	9831	33918	9901	36967	10041	41264	11663	39414	13269	41300	14740	52876	19176	48237	18829
TOTAL	156683	74466	377587	111322	173071	102270	176900	133248	196035	134079	194941	119206	272948	261181	337109	342807
ORGANIC CHEMICALS																
ACETIC ACID	8378	5181	12914	6277	12220	5401	17821	10476	12746	6265	10697	6270	22227	20425	45005	28819
ACETIC ANHYDRIDE	18605	9941	20443	10277	19644	13743	18444	13582	20529	12815	23960	15302	20700	24118	35370	35898
ACETONE	10778	6392	3225	2201	5054	3173	10901	5904	11004	5646	28161	19355	21604	15500	13086	11180
PHENOL	6841	7379	4013	8192	4750	9709	4724	11740	22273	23408	53100	39575	43658	50811	16692	27933
METHANOL	44013	8196	12624	3123	9466	2846	10943	3819	12941	3482	8451	2607	18645	6084	41498	13915
FORMALDEHYDE	8480	1383	8406	1548	10616	2098	12484	2495	14153	2484	15241	2734	16486	4115	16214	4732
NITROBENZENE	49	38	344	231	60	49	103	110	133	131	98	99	119	149	151	237
CITRIC ACID	1487	1144	1670	1244	2393	1931	2323	2010	2411	1942	2296	2018	5572	11418	3145	5718
MALEIC ANHYDRIDE	80	67	232	164	233	227	87	105	167	193	50	62	114	204	133	209
PENTAERYTHRITOL	1632	2958	2044	3470	2110	3399	2287	4161	2584	4741	1336	2550	2620	6578	2491	7054
ANILINE	129	134	168	207	162	614	137	341	68	148	68	89	74	179	56	265
CHLORO METHANES	38	41	89	121	101	283	75	149	49	107	68	156	122	250	66	170
ISOBUTYLBENZENE	12572	14186	13430	14854	12341	14384	11740	16320	9705	14150	16156	20894	8541	13709	14280	28274
ONCB	843	883	973	950	0	0	0	0	0	0	0	0	0	0	0	0
PNCB	1670	1114	1023	738	0	0	0	0	0	0	0	0	0	0	0	0
MEK	184	795	189	98	19	36	465	477	243	245	66	75	10	37	341	525
ACETALDEHYDE	2	4	40	44	3	6	1148	912	1139	893	1027	692	993	812	151	175
ETHANOLAMINES	1129	7119	1692	4996	4801	14201	3143	13553	1686	10522	2760	11850	3081	10668	3175	14880
ETHYL ACETATE	104814	54269	93699	48020	105551	62174	118682	82170	108384	63095	108725	69937	118930	133346	93079	86539

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
MENTHOL	8836	94548	12006	125246	12749	183951	13351	253213	17089	265334	19980	240427	19795	222579	12715	154721
ORTHO NITRO TOLUENE	1168	999	1082	939	2650	2267	4289	4201	7220	7112	3682	3318	6853	7332	6162	8463
TOTAL	231728	216771	190306	232940	204923	320492	233147	425738	244524	422713	295922	438010	310144	528314	303810	429707
PESTICIDES & INSECTICIDES																
MALATHION	1010	1943	1264	2274	1977	3682	2499	5792	2318	6230	1673	5079	2772	9020	1443	5538
DIMETHOATE	20	52	24	58	24	62	126	429	199	603	154	590	96	443	13	75
D.D.V.P.	550	1461	322	1145	493	1835	689	2716	12	41	639	2620	468	1128	22	81
QUINALPHOS	235	1036	384	1772	382	1645	281	1439	338	1606	522	2909	811	5809	540	3954
CYPERMETHRIN	8837	45949	9416	45742	9706	62713	13609	112381	15122	95462	18945	106342	19820	126617	15185	95416
FENTHION	0	0	10	18	0	0	0	0	0	0	0	0	0	0	0	0
OTHER PESTICIDES	41058	214054	45560	208648	43320	216510	39174	233275	7416	28448	6155	23536	6410	24045	5030	25616
OTHER INSECTICIDES	31146	276427	41471	311285	50008	393497	62714	580271	106352	840555	111743	833725	125025	1083286	120034	1211192
COPPER-OXYCHLORIDE	810	1818	871	1921	723	1732	806	2427	2240	5896	1603	5135	1767	8035	1492	6858
2, 4-D	19449	29770	20677	27496	24125	36076	22242	46347	19623	32924	21097	33198	33070	80574	40025	101768
ISOPROTURON	1087	3830	356	1295	0	0	0	0	0	0	0	0	0	0	0	0
ALUMINIUM PHOSPHIDE	64	226	127	515	505	1703	481	2084	426	1909	764	3024	1029	3241	599	2981
METHYL BROMIDE	1274	4641	1756	6229	2000	7292	2208	8384	1628	6682	2089	9966	2214	11088	1967	13376
OTHER HERBICIDES-ANTI SPROUTING PRODUCTS	32381	266182	50720	362041	67039	425113	74058	595122	79434	717390	101726	857814	140909	1197464	147788	1553999
OTHER FUNGICIDE NES	128994	279485	169373	344587	158179	329170	185896	413465	162961	425551	203677	496663	233275	715669	205645	840843
TOTAL	266915	1126874	342331	1315026	358481	1481030	404783	2004132	398069	2163297	470787	2380601	567666	3266419	539783	3861697
DYES & PIGMENTS																
AZO DYES	55327	161970	60390	162456	69996	181785	72999	225224	68352	210313	64125	179167	76648	246547	62120	223050
ACID DIRECT DYES(OTHER THAN AZO)	3559	17300	4434	19689	5098	21655	5103	26145	5601	28666	5892	29584	6996	40191	6155	35428
BASIC DYES	8173	23896	9229	26186	10757	32222	12017	44585	12730	48887	13585	51140	13913	60670	13693	60434
DISPERSE DYES	13117	52818	16078	59912	14460	56914	20552	107647	23362	133160	18521	93517	24336	120607	16913	89863
FAST COLOUR BASES	2262	11868	2174	15766	2042	9726	2652	14987	5364	46929	3667	21816	4008	28273	2331	17799
OIL SOLUBLE (SOLVENT DYES)	6123	31703	8702	39439	8995	42906	10195	66808	11091	76571	9106	65358	10656	92079	9026	82819
OPTICAL WHITENING AGENTS	25203	46519	26957	46240	30124	48069	30259	66858	26084	82724	21458	44381	23448	63463	16691	52147
ORGANIC PIGMENT	75	531	71	293	62	185	15	98	50	333	67	229	29	84	16	63
PIGMENT EMULSION	81536	374190	88980	392700	102051	441253	110526	494598	110669	534039	116980	581196	130371	757608	97190	625872
REACTIVE DYES	113224	344963	128417	379350	147417	413080	158530	511426	169648	502283	152579	426490	180640	591072	134714	483493
SULPHUR DYES (SULPHUR BLACK)	1472	1945	2023	2682	5467	5794	5720	7303	4510	5233	3701	4115	5565	7958	3314	4905
VAT DYES	1364	20523	1404	22737	1707	26607	4475	46284	4524	64023	3643	63587	6936	81370	3197	56620
SOLUBILISED VAT DYES	36	354	31	265	46	529	63	789	71	1185	83	759	74	1043	62	1044

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
FOOD COLOURS	27101	79537	28359	79492	31110	87129	29007	107344	25347	107786	30271	118294	35087	143435	30985	148750
NAPTHOLS	1489	3463	2076	4753	2329	5725	3276	8341	4169	11467	4982	10894	3053	8471	2504	6751
OTHER DYES	10159	22693	12711	24977	13735	26227	13621	31196	15218	34504	17473	34086	17930	38503	16581	38193
INORGANIC PIGMENTS	25826	25522	27236	30609	40345	39484	46160	41048	43507	40311	48262	45768	50868	55131	49414	57200
TOTAL	376046	1219795	419272	1307546	485741	1439290	525170	1800681	530297	1928414	514395	1770381	590558	2336505	464906	1984431

Source: DGCIS, Kolkata, M/o Commerce and Industry

Table 17: Imports of Major Chemicals (Product Wise) during 2015-16 to 2022-23

(QTY in MT; VAL in Rs. Lakh)

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
ALKALI CHEMICALS																
SODA ASH	633263	101707	695307	102490	772622	111757	840591	144900	847704	152515	719731	114804	563140	97002	577480	195359
CAUSTIC SODA	484133	116303	425795	112391	421298	153382	208267	79927	309345	87982	248057	55495	203275	77347	135823	74227
LIQUID CHLORINE	482	189	35	170	58	208	266	696	81	255	39	200	149	383	64	412
TOTAL	1117878	218199	1121137	215051	1193978	265347	1049124	225523	1157130	240752	967827	170499	766564	174732	713367	269998
INORGANIC CHEMICALS																
ALUMINIUM FLUORIDE	27258	18102	46564	26437	49758	29075	62374	56075	40362	37910	61224	48059	74347	52878	54655	56217
CALCIUM CARBIDE	61935	25429	55692	23652	55651	23941	45321	21554	31218	14507	32666	17749	22008	15761	22133	17150
CARBON BLACK	124059	83401	128740	82424	186224	143618	278531	249368	197491	153367	190469	127583	156331	155878	126675	165212
POTASSIUM CHLORATE	3160	2026	100	61	29	22	128	272	55	119	909	884	0	9	0	2
SODIUM CHLORATE	17298	6400	7447	2907	8822	3041	14240	5884	24082	11254	11589	5118	16655	6822	21823	14720
TITANIUM DIOXIDE	16421	25709	13901	22943	13701	24771	14546	28686	16416	30825	13389	25107	15134	36230	18505	53925
RED PHOSPHORUS	0	0	0	1	0	3	14	51	18	57	4	18	0	1	0	0
HYDROGEN PEROXIDE	44084	11211	57068	15910	68474	19305	84261	36931	52727	15858	22355	8150	33475	11293	44550	14499
CALCIUM CARBONATE	715606	65090	700559	60902	846195	64587	1080252	86942	1169457	90705	855385	69433	1027322	103502	1063109	111870
TOTAL	1009821	237368	1010071	235237	1228854	308363	1579667	485763	1531826	354602	1187990	302101	1345272	382374	1351450	433595
ORGANIC CHEMICALS																
ACETIC ACID	792775	206305	847808	193958	884515	290624	937298	422360	926492	273709	904345	275694	1054823	778838	1134506	512714
ACETIC ANHYDRIDE	2918	1780	2272	1118	4381	2346	12275	9700	20529	11716	18807	10479	20896	22339	13400	10112
ACETONE	138402	55796	135887	63055	146878	74975	116760	52108	72402	28094	82056	53673	118656	82777	110027	65925
PHENOL	248769	147715	282187	176601	288572	202842	231808	217710	144005	99070	170993	89789	206208	210164	218476	242182
METHANOL	1711879	285259	1637457	295762	1783293	400004	1986712	519474	2286274	425567	2219944	434805	2397912	743153	2815926	752424
FORMALDEHYDE	66	42	84	248	46	44	22	13	5	111	6	148	8	194	6	108
NITROBENZENE	5838	2733	14429	6944	15384	8207	18204	10721	15533	8073	9866	5008	7816	6361	3887	4235
CITRIC ACID	75978	36119	81681	39558	84262	45489	95283	45136	90958	38453	94966	47550	99929	100565	131440	140713
MALEIC ANHYDRIDE	47399	31392	50813	34618	52627	42928	69920	61694	66942	46858	59533	46705	74467	107691	82414	94533
PENTAERYTHRITOL	19486	21468	19380	20690	17963	19614	18407	23000	21311	23116	13613	13022	16340	25537	17553	25392
ANILINE	38341	26965	44650	29368	65416	58924	88454	81524	80946	53293	72770	47402	92072	113186	101437	137516
CHLORO METHANES	608	364	258	223	519	429	1413	1089	2404	2122	2469	2111	1905	2163	1406	1720
ISOBUTYLBENZENE	0	0	0	0	0	0	0	0	2	4	0	0	0	0	0	0
ONCB	237	192	839	628	0	0	0	0	0	0	0	0	0	0	0	0
PNCB	8408	3886	6095	2899	0	0	0	0	0	0	0	0	0	0	0	0
MEK	40883	26950	30901	16629	45331	36027	47158	40994	25509	19145	42542	33013	42363	44585	49348	61386
ACETALDEHYDE	74	299	130	357	81	243	94	275	113	375	82	568	150	497	141	454
ETHANOLAMINES	10072	10321	11662	10202	16101	16140	16648	19347	16694	16398	19070	17807	18605	24326	16431	23742
ETHYL ACETATE	290	909	1664	861	43	127	2917	2358	2157	1768	141	1697	3778	5336	262	1630
MENTHOL	936	7112	1511	10211	1372	8573	1334	12718	3057	30181	4521	45226	4056	40528	4250	42794
ORTHO NITRO TOLUENE	117	77	579	436	267	212	74	57	0	0	0	0	0	0	0	0
TOTAL	3143476	865684	3170287	904366	3407051	1207748	3644781	1520278	3775333	1078053	3715724	1124697	4159984	2308240	4700910	2117580
PESTICIDES & INSECTICIDES																

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
MALATHION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	540	1758
DIMETHOATE	0	0	0	0	0	0	0	0	0	0	63	326	153	723	334	1382
D.D.V.P.	64	116	16	28	35	66	1561	3167	0	0	0	0	0	0	0	0
QUINALPHOS	0	0	0	0	0	0	0	0	15	81	0	0	0	0	0	0
CYPERMETHRIN	0	0	0	0	8	47	5	53	93	849	6	57	3	45	0	0
FENTHION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER PESTICIDES	1318	12700	1176	91641	1907	139991	1868	163792	4534	131268	5453	216253	1443	143124	891	65176
OTHER INSECTICIDES	15634	213829	18067	208838	17307	239549	17188	240036	13525	268040	16512	343526	16376	385766	16776	385652
COPPER-OXYCHLORIDE	0	0	0	1	0	1	0	2	0	0	0	0	40	138	0	0
2, 4-D	72	123	16	27	1824	2735	2819	5935	2382	4311	2412	3657	601	2315	746	2078
ISOPROTURON	0	0	0	0	0	0	3	4	0	0	0	0	0	0	0	0
ALUMINIUM PHOSPHIDE	6	98	0	0	0	0	5	39	1	27	7	40	0	1	0	1
METHYL BROMIDE	53	250	24	70	18	107	2	14	28	141	12	63	30	170	0	0
OTHER HERBICIDES-ANTI SPROUTING PRODUCTS	10171	85167	16149	104626	15248	100387	18044	122207	14232	104807	30307	189422	24959	213811	31871	311738
OTHER FUNGICIDE NES	6550	78424	7143	85350	7798	98502	7738	97341	7770	101554	11418	145713	16117	226512	16287	257417
TOTAL	33868	390707	42591	490581	44145	581385	49233	632590	42580	611078	66190	899057	59722	972605	67445	1025202
DYES & PIGMENTS																
AZO DYES	716	4016	630	3509	514	3734	437	4207	306	4096	298	3880	408	4775	323	5548
ACID DIRECT DYES(OTHER THAN AZO)	312	1685	188	1348	248	1942	322	2639	133	1295	163	1073	125	1548	90	1582
BASIC DYES	475	4135	560	4183	647	5445	487	6868	529	8213	735	9836	636	8916	399	5824
DISPERSE DYES	6199	28647	4970	23618	4051	23972	1731	19295	2322	23128	2314	20496	2266	20665	2264	19214
FAST COLOUR BASES	510	3058	426	2314	379	2113	169	1743	265	2149	260	2414	45	773	253	1897
OIL SOLUBLE (SOLVENT DYES)	689	5967	762	5446	846	6414	710	7812	590	6250	525	6140	894	14411	918	13174
OPTICAL WHITENING AGENTS	664	5376	612	5455	593	5540	565	6978	738	8746	588	6492	742	8961	556	7156
ORGANIC PIGMENT	190	889	100	678	65	271	138	471	98	272	107	646	93	444	275	870
PIGMENT EMULSION	6578	47122	7085	47759	8261	52679	7985	57272	7303	54365	6443	53389	7080	65345	7314	69850
REACTIVE DYES	3148	27009	3460	28744	3340	24642	3117	26440	3661	27931	2962	21959	3461	28663	2819	22464
SULPHUR DYES (SULPHUR BLACK)	1332	2636	1283	2638	1252	2916	1116	3286	1041	3128	1337	3294	1810	5523	3363	9298
VAT DYES	20580	48846	23527	53539	26368	59134	21571	77638	16400	63470	13310	40263	20402	89474	11536	57921
SOLUBILISED VAT DYES	473	1007	337	756	319	764	358	1289	170	810	108	463	22	261	19	444
FOOD COLOURS	1083	5225	1041	4859	1162	5057	1364	6747	1215	6695	375	6268	449	6638	350	7628
NAPHTHOLS	1051	3824	1107	3750	1286	4446	1255	5267	1374	6559	1465	5757	1355	8239	1408	6248
OTHER DYES	177	1531	183	1533	512	2239	2337	7151	2265	7188	2332	7239	2439	8260	2671	9706
INORGANIC PIGMENTS	10514	28331	9597	24784	13128	30075	12790	43319	12173	57140	12017	63057	11430	53765	10079	51574
TOTAL	54691	219304	55868	214913	62971	231383	56452	278422	50583	281435	45339	252666	53657	326661	44637	290398

Source: DGCIS, Kolkata, M/o Commerce and Industry

Table 18: Net Imports of Major Chemicals (Product Wise) during 2015-16 to 2022-23

[QTY in MT & VAL in Rs. Lakh]

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
ALKALI CHEMICALS																
SODA ASH	614650	97780	630930	91697	662535	92380	778134	129698	709955	125378	570010	91079	312501	43263	373570	125983
CAUSTIC SODA	401989	92496	340986	84618	261668	86553	36102	8264	121851	33450	-27317	-4751	-139767	-54620	-322358	-168680
LIQUID CHLORINE	-5505	-1287	-5023	-855	-3681	-466	-4433	-283	-4135	-836	-3739	-1139	-4141	-1072	-5623	-1639
TOTAL	1011134	188989	966893	175460	920522	178467	809803	137679	827671	157992	538954	85189	168593	-12429	45589	-44336
INORGANIC CHEMICALS																
ALUMINIUM FLUORIDE	25462	16862	46243	26172	49552	28871	61932	55712	39000	36700	59178	46187	73363	52631	54264	55715
CALCIUM CARBIDE	61564	25223	55199	23368	55187	23683	44996	21350	30847	14263	32537	17637	21221	14787	21398	16308
CARBON BLACK	9391	28382	-203432	-4990	63937	70659	155699	145725	53474	49910	51745	41943	-47605	-62302	-97764	-108000
POTASSIUM CHLORATE	2402	1450	-1558	-1084	-1912	-1223	-2896	-1852	-3123	-2071	-1686	-919	-1981	-1555	-2687	-3032
SODIUM CHLORATE	17285	6387	7329	2851	7747	2785	13430	5843	24082	11248	11584	5113	16631	6788	21814	14707
TITANIUM DIOXIDE	11985	20127	5718	12727	4141	9394	7201	15943	10181	20171	6906	13586	9083	20848	13573	41155
RED PHOSPHORUS	-482	-1777	-454	-1756	-455	-1713	-581	-2191	-632	-2510	-578	-2442	-626	-3627	-672	-5524
HYDROGEN PEROXIDE	43733	10989	56798	15626	68358	19091	83998	36706	51919	15376	19278	7097	27792	9297	-10457	-13582
CALCIUM CARBONATE	681798	55259	666641	51001	809228	54546	1038988	75279	1130043	77436	814085	54693	974446	84326	1014872	93041
TOTAL	853138	162902	632484	123915	1055783	206093	1402767	352515	1335791	220523	993049	182895	1072324	121193	1014341	90788
ORGANIC CHEMICALS																
ACETIC ACID	784397	201124	834894	187681	872295	285223	919477	411884	913746	267444	893648	269424	1032596	758413	1089501	483895
ACETIC ANHYDRIDE	-15687	-8161	-18171	-9159	-15263	-11397	-6169	-3882	0	-1099	-5153	-4823	196	-1779	-21970	-25786
ACETONE	127624	49404	132662	60854	141824	71802	105859	46204	61398	22448	53895	34318	97052	67277	96941	54745
PHENOL	241928	140336	278174	168409	283822	193133	227084	205970	121732	75662	117893	50214	162550	159353	201784	214249
METHANOL	1667866	277063	1624833	292639	1773827	397158	1975769	515655	2273333	422085	2211493	432198	2379267	737069	2774428	738509
FORMALDEHYDE	-8414	-1341	-8322	-1300	-10570	-2054	-12462	-2482	-14148	-2373	-15235	-2586	-16478	-3921	-16208	-4624
NITROBENZENE	5789	2695	14085	6713	15324	8158	18101	10611	15400	7942	9768	4909	7697	6212	3736	3998
CITRIC ACID	74491	34975	80011	38314	81869	43558	92960	43126	88547	36511	92670	45532	94357	89147	128295	134995
MALEIC ANHYDRIDE	47319	31325	50581	34454	52394	42701	69833	61589	66775	46665	59483	46643	74353	107487	82281	94324
PENTAERYTHRITOL	17854	18510	17336	17220	15853	16215	16120	18839	18727	18375	12277	10472	13720	18959	15062	18338
ANILINE	38212	26831	44482	29161	65254	58310	88317	81183	80878	53145	72702	47313	91998	113007	101381	137251
CHLORO METHANES	570	323	169	102	418	146	1338	940	2355	2015	2401	1955	1783	1913	1340	1550
ISOBUTYLBENZENE	-12572	-14186	-13430	-14854	-12341	-14384	-11740	-16320	-9703	-14146	-16156	-20894	-8541	-13709	-14280	-28274
ONCB	-606	-691	-134	-322	0	0	0	0	0	0	0	0	0	0	0	0
PNCB	6738	2772	5072	2161	0	0	0	0	0	0	0	0	0	0	0	0
MEK	40699	26155	30712	16531	45312	35991	46693	40517	25266	18900	42476	32938	42353	44548	49007	60861
ACETALDEHYDE	72	295	90	313	78	237	-1054	-637	-1026	-518	-945	-124	-843	-315	-10	279
ETHANOLAMINES	8943	3202	9970	5206	11300	1939	13505	5794	15008	5876	16310	5957	15524	13658	13256	8862
ETHYL ACETATE	-104524	-53360	-92035	-47159	-105508	-62047	-115765	-79812	-106227	-61327	-108584	-68240	-115152	-128010	-92817	-84909
MENTHOL	-7900	-87436	-10495	-115035	-11377	-175378	-12017	-240495	-14032	-235153	-15459	-195201	-15739	-182051	-8465	-111927
ORTHO NITRO TOLUENE	-1051	-922	-503	-503	-2383	-2055	-4215	-4144	-7220	-7112	-3682	-3318	-6853	-7332	-6162	-8463
TOTAL	2911748	648913	2979981	671426	3202128	887256	3411634	1094540	3530809	655340	3419802	686687	3849840	1779926	4397100	1687873
PESTICIDES & INSECTICIDES																
MALATHION	-1010	-1943	-1264	-2274	-1977	-3682	-2499	-5792	-2318	-6230	-1673	-5079	-2772	-9020	-903	-3780

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
DIMETHOATE	-20	-52	-24	-58	-24	-62	-126	-429	-199	-603	-91	-264	57	280	321	1307
D.D.V.P.	-486	-1345	-306	-1117	-458	-1769	872	451	-12	-41	-639	-2620	-468	-1128	-22	-81
QUINALPHOS	-235	-1036	-384	-1772	-382	-1645	-281	-1439	-323	-1525	-522	-2909	-811	-5809	-540	-3954
CYPERMETHRIN	-8837	-45949	-9416	-45742	-9698	-62666	-13604	-112328	-15029	-94613	-18939	-106285	-19817	-126572	-15185	-95416
FENTHION	0	0	-10	-18	0	0	0	0	0	0	0	0	0	0	0	0
OTHER PESTICIDES	-39740	-201354	-44384	-117007	-41413	-76519	-37306	-69483	-2882	102820	-702	192717	-4967	119079	-4139	39560
OTHER INSECTICIDES	-15512	-62598	-23404	-102447	-32701	-153948	-45526	-340235	-92827	-572515	-95231	-490199	-108649	-697520	-103258	-825540
COPPER-OXYCHLORIDE	-810	-1818	-871	-1920	-723	-1731	-806	-2425	-2240	-5896	-1603	-5135	-1727	-7897	-1492	-6858
2, 4-D	-19377	-29647	-20661	-27469	-22301	-33341	-19423	-40412	-17241	-28613	-18685	-29541	-32469	-78259	-39279	-99690
ISOPROTURON	-1087	-3830	-356	-1295	0	0	3	4	0	0	0	0	0	0	0	0
ALUMINIUM PHOSPHIDE	-58	-128	-127	-515	-505	-1703	-476	-2045	-425	-1882	-757	-2984	-1029	-3240	-599	-2980
METHYL BROMIDE	-1221	-4391	-1732	-6159	-1982	-7185	-2206	-8370	-1600	-6541	-2077	-9903	-2184	-10918	-1967	-13376
OTHER HERBICIDES-ANTI SPROUTING PRODUCTS	-22210	-181015	-34571	-257415	-51791	-324726	-56014	-472915	-65202	-612583	-71419	-668392	-115950	-983653	-115917	-1242261
OTHER FUNGICIDE NES	-122444	-201061	-162230	-259237	-150381	-230668	-178158	-316124	-155191	-323997	-192259	-350950	-217158	-489157	-189358	-583426
TOTAL	-233047	-736167	-299740	-824445	-314336	-899645	-355550	-1371542	-355489	-1552219	-404597	-1481544	-507944	-2293814	-472338	-2836495
DYES & PIGMENTS																
AZO DYES	-54611	-157954	-59760	-158947	-69482	-178051	-72562	-221017	-68046	-206217	-63827	-175287	-76240	-241772	-61797	-217502
ACID DIRECT DYES(OTHER THAN AZO)	-3247	-15615	-4246	-18341	-4850	-19713	-4781	-23506	-5468	-27371	-5729	-28511	-6871	-38643	-6065	-33846
BASIC DYES	-7698	-19761	-8669	-22003	-10110	-26777	-11530	-37717	-12201	-40674	-12850	-41304	-13277	-51754	-13294	-54610
DISPERSE DYES	-6918	-24171	-11108	-36294	-10409	-32942	-18821	-88352	-21040	-110032	-16207	-73021	-22070	-99942	-14649	-70649
FAST COLOUR BASES	-1752	-8810	-1748	-13452	-1663	-7613	-2483	-13244	-5099	-44780	-3407	-19402	-3963	-27500	-2078	-15902
OIL SOLUBLE (SOLVENT DYES)	-5434	-25736	-7940	-33993	-8149	-36492	-9485	-58996	-10501	-70321	-8581	-59218	-9762	-77668	-8108	-69645
OPTICAL WHITENING AGENTS	-24539	-41143	-26345	-40785	-29531	-42529	-29694	-59880	-25346	-73978	-20870	-37889	-22706	-54502	-16135	-44991
ORGANIC PIGMENT	115	358	29	385	3	86	123	373	48	-61	40	417	64	360	259	807
PIGMENT EMULSION	-74958	-327068	-81895	-344941	-93790	-388574	-102541	-437326	-103366	-479674	-110537	-527807	-123291	-692263	-89876	-556022
REACTIVE DYES	-110076	-317954	-124957	-350606	-144077	-388438	-155413	-484986	-165987	-474352	-149617	-404531	-177179	-562409	-131895	-461029
SULPHUR DYES (SULPHUR BLACK)	-140	691	-740	-44	-4215	-2878	-4604	-4017	-3469	-2105	-2364	-821	-3755	-2435	49	4393
VAT DYES	19216	28323	22123	30802	24661	32527	17096	31354	11876	-553	9667	-23324	13466	8104	8339	1301
SOLUBILISED VAT DYES	437	653	306	491	273	235	295	500	99	-375	25	-296	-52	-782	-43	-600
FOOD COLOURS	-26018	-74312	-27318	-74633	-29948	-82072	-27643	-100597	-24132	-101091	-29896	-112026	-34638	-136797	-30635	-141122
NAPTHOLS	-438	361	-969	-1003	-1043	-1279	-2021	-3074	-2795	-4908	-3517	-5137	-1698	-232	-1096	-503
OTHER DYES	-9982	-21162	-12528	-23444	-13223	-23988	-11284	-24045	-12953	-27316	-15141	-26847	-15491	-30243	-13910	-28487
INORGANIC PIGMENTS	-15312	2809	-17639	-5825	-27217	-9409	-33370	2271	-31334	16829	-36245	17289	-39438	-1366	-39335	-5626
TOTAL	-321355	-1000491	-363404	-1092633	-422770	-1207907	-468718	-1522259	-479714	-1646979	-469056	-1517715	-536901	-2009844	-420269	-1694033

Source: DGCIS, Kolkata, M/o Commerce and Industry

Table 19: Top Five Export Destinations of selected Chemicals during 2022-23			
PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
SODA ASH	BANGLADESH PR	92247.42	29247.97
	NEPAL	12636.32	4164.16
	SRI LANKA DSR	11991.42	4372.58
	SAUDI ARAB	11144.03	3508.26
	U ARAB EMTS	10889.90	4146.82
	Product Total	138912.09	45443.79
CAUSTIC SODA	SOUTH AFRICA	84369.27	41483.75
	SAUDI ARAB	54188.12	28697.03
	ITALY	28346.93	15662.06
	KENYA	21167.05	10851.64
	NETHERLAND	20331.93	11461.67
	Product Total	208403.31	108156.15
LIQUID CHLORINE	KENYA	1201.50	345.40
	SRI LANKA DSR	780.34	141.85
	U ARAB EMTS	702.17	145.84
	NIGERIA	649.27	409.17
	PHILIPPINES	627.30	190.01
	Product Total	3960.58	1232.26
ALUMINIUM FLUORIDE	U ARAB EMTS	200.40	245.13
	JAPAN	180.00	242.17
	TURKEY	10.03	10.55
	GERMANY	0.95	3.73
	BELGIUM	0.05	0.62
	Product Total	391.43	502.19
CALCIUM CARBIDE	BANGLADESH PR	519.30	622.45
	BHUTAN	46.65	53.54
	NEPAL	45.78	25.45
	CONGO P REP	36.00	38.04
	GERMANY	0.24	0.80
	Product Total	647.98	740.29
CARBON BLACK	SRI LANKA DSR	33360.40	40641.32
	POLAND	19719.17	25232.60
	VIETNAM SOC REP	19166.44	20485.65
	THAILAND	17195.73	20307.98
	KOREA RP	16705.39	18777.13
	Product Total	106147.12	125444.68
POTASSIUM CHLORATE	KENYA	525.00	573.17
	MEXICO	432.00	471.88
	PHILIPPINES	252.00	291.45
	THAILAND	240.00	264.83
	SRI LANKA DSR	230.00	281.77
	Product Total	1679.00	1883.10
SODIUM CHLORATE	SINGAPORE	8.00	11.39
	BANGLADESH PR	0.60	1.72
	NEPAL	0.05	0.06
	SRI LANKA DSR	0.00	0.08
	BHUTAN	0.00	0.01
	Product Total	8.65	13.24
	U S A	2584.65	6737.34

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
TITANIUM DIOXIDE	ITALY	664.00	1628.58
	JAPAN	558.01	1154.47
	NIGERIA	156.33	405.37
	NEPAL	148.13	420.59
	Product Total	4111.11	10346.35
RED PHOSPHORUS	U S A	254.17	1993.92
	U ARAB EMTS	164.90	1392.51
	ISRAEL	32.00	245.19
	CHILE	30.00	244.98
	BRAZIL	26.02	213.37
	Product Total	507.08	4089.96
HYDROGEN PEROXIDE	RUSSIA	18642.58	10956.57
	TURKEY	14082.17	7103.22
	GHANA	6237.60	2742.76
	U ARAB EMTS	3963.52	1642.88
	IRAN	3396.20	1590.22
	Product Total	46322.07	24035.65
CALCIUM CARBONATE	NEPAL	20163.11	4519.00
	SOUTH AFRICA	6257.53	2049.78
	BANGLADESH PR	4968.68	3849.01
	SRI LANKA DSR	4653.15	890.68
	U S A	1214.51	1055.75
	Product Total	37256.98	12364.21
ACETIC ACID	TURKEY	10218.24	6424.22
	BELGIUM	9053.83	5421.44
	U ARAB EMTS	8501.26	4134.92
	BANGLADESH PR	4015.08	3125.19
	U S A	3869.07	2473.28
	Product Total	35657.48	21579.05
ACETIC ANHYDRIDE	BELGIUM	28920.80	28418.30
	NETHERLAND	3407.36	3963.95
	KOREA RP	1364.83	1473.53
	BANGLADESH PR	813.33	966.75
	VIETNAM SOC REP	488.80	581.17
	Product Total	34995.12	35403.70
ACETONE	IRAN	4277.17	3446.59
	U ARAB EMTS	1479.92	1072.06
	KENYA	1408.93	1168.42
	TANZANIA REP	701.03	582.42
	SRI LANKA DSR	660.46	545.71
	Product Total	8527.51	6815.20
PHENOL	IRAN	4108.40	7154.88
	U ARAB EMTS	4043.79	5011.89
	TURKEY	2252.73	2566.90
	NEPAL	1642.64	1944.35
	INDONESIA	729.02	803.76
	Product Total	12776.57	17481.78
METHANOL	U ARAB EMTS	14213.87	3895.19
	BANGLADESH PR	10730.68	4013.13
	SRI LANKA DSR	9941.31	3221.06

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
	NEPAL	2359.55	787.08
	NIGERIA	1747.00	738.45
	Product Total	38992.40	12654.89
FORMALDEHYDE	NEPAL	12743.14	2213.61
	BHUTAN	1069.89	212.86
	CHILE	864.00	1715.73
	KENYA	288.33	85.34
	MYANMAR	192.71	57.83
	Product Total	15158.06	4285.37
NITROBENZENE	JAPAN	80.00	107.53
	U S A	25.00	45.82
	NEPAL	15.96	21.10
	PERU	12.00	22.60
	MEXICO	11.00	22.09
	Product Total	143.96	219.15
CITRIC ACID	U S A	1462.65	2560.48
	BRAZIL	194.40	673.54
	CHINA P RP	180.00	132.70
	QATAR	103.65	150.09
	SPAIN	100.25	84.96
	Product Total	2040.95	3601.77
MALEIC ANHYDRIDE	SAUDI ARAB	34.00	55.11
	BANGLADESH PR	28.50	68.07
	SRI LANKA DSR	24.10	29.48
	QATAR	22.00	18.92
	KOREA RP	12.00	16.11
	Product Total	120.60	187.68
PENTAERYTHRITOL	U S A	1907.68	5781.54
	NETHERLAND	288.00	550.34
	SWEDEN	72.00	137.78
	NEPAL	67.00	118.51
	COLOMBIA	54.00	105.70
	Product Total	2388.68	6693.87
ANILINE	U S A	16.80	40.35
	TURKEY	16.38	35.62
	THAILAND	13.20	29.92
	CHINA P RP	4.20	69.86
	NETHERLAND	3.00	77.72
	Product Total	53.58	253.47
CHLORO METHANES	U ARAB EMTS	49.14	129.09
	SAUDI ARAB	13.72	30.70
	U S A	1.52	8.19
	NEPAL	1.15	0.67
	NIGERIA	0.02	0.15
	Product Total	65.56	168.81
ISOBUTYLBENZENE	CHINA P RP	8777.00	18097.80
	U S A	5222.40	9676.71
	JAPAN	240.00	414.66
	NEPAL	27.81	32.16
	NETHERLAND	6.80	21.16

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
	Product Total	6.80	21.16
MEK	U ARAB EMTS	339.02	507.79
	NEPAL	1.09	6.26
	BHUTAN	0.20	2.82
	CONGO D. REP.	0.18	1.59
	SAUDI ARAB	0.17	0.31
	Product Total	340.66	518.77
ACETALDEHYDE	TURKEY	150.32	152.96
	BANGLADESH PR	0.64	21.23
	BHUTAN	0.11	0.00
	EGYPT A RP	0.10	0.66
	NEPAL	0.01	0.30
	Product Total	151.18	175.16
ETHANOLAMINES	IRAQ	690.16	876.85
	U ARAB EMTS	276.06	467.37
	KOREA RP	243.62	1139.41
	BELGIUM	232.55	1766.66
	TURKEY	231.76	445.99
	Product Total	1674.15	4696.28
ETHYL ACETATE	ITALY	17855.05	16436.01
	BELGIUM	17158.20	15364.35
	U ARAB EMTS	7912.38	6833.53
	BANGLADESH PR	7365.40	7160.77
	NIGERIA	6862.01	6615.00
	Product Total	57153.04	52409.66
MENTHOL	CHINA P RP	7596.28	85780.52
	U S A	1121.37	14954.18
	SINGAPORE	680.65	7999.98
	JAPAN	388.83	5053.88
	NETHERLAND	376.34	4922.49
	Product Total	10163.46	118711.05
ORTHO NITRO TOLUENE	GERMANY	4726.89	6244.61
	JAPAN	427.08	646.38
	NETHERLAND	398.82	658.62
	KOREA RP	298.45	438.59
	CHINA P RP	210.79	278.91
	Product Total	6062.02	8267.11
MALATHION	TURKEY	731.82	2717.04
	MEXICO	256.00	1043.86
	PHILIPPINES	200.00	774.28
	MALAYSIA	100.00	409.90
	EGYPT A RP	50.00	183.60
	Product Total	1337.82	5128.68
DIMETHOATE	U ARAB EMTS	10.08	30.11
	NEPAL	3.09	44.46
	MALDIVES	0.01	0.14
	Product Total	13.18	74.70
D.D.V.P.	ZAMBIA	21.93	80.86
	Product Total	21.93	80.86
	VIETNAM SOC REP	487.35	3640.96

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
QUINALPHOS	BANGLADESH PR	41.96	185.05
	AUSTRALIA	5.50	64.25
	THAILAND	3.00	34.56
	SOUTH AFRICA	1.35	19.88
	Product Total	539.16	3944.70
CYPERMETHRIN	CHINA P RP	2188.94	16144.90
	BRAZIL	1726.73	14049.30
	INDONESIA	979.21	3954.97
	NIGERIA	972.17	2260.38
	THAILAND	949.15	6682.42
	Product Total	6816.20	43091.97
OTHER PESTICIDES	NEPAL	678.70	1207.43
	BANGLADESH PR	450.99	843.80
	BRAZIL	441.57	2856.00
	VIETNAM SOC REP	213.32	999.75
	THAILAND	212.79	738.42
	Product Total	1997.37	6645.39
OTHER INSECTICIDES	BRAZIL	54143.91	619568.32
	U S A	8798.48	164801.19
	BANGLADESH PR	6963.01	22051.51
	NIGERIA	3267.49	11444.94
	VIETNAM SOC REP	2768.16	20103.80
	Product Total	75941.04	837969.76
COPPER-OXYCHLORIDE	SPAIN	157.20	719.18
	MOROCCO	136.91	605.47
	VIETNAM SOC REP	135.00	611.57
	PORTUGAL	132.00	641.36
	TURKEY	107.60	525.33
	Product Total	668.71	3102.92
2, 4-D	BRAZIL	11320.21	29841.58
	U S A	10706.88	28140.00
	AUSTRALIA	3768.00	10859.86
	ARGENTINA	2039.00	5565.85
	THAILAND	1564.82	3443.94
	Product Total	29398.91	77851.23
ALUMINIUM PHOSPHIDE	BANGLADESH PR	291.85	1089.54
	TURKEY	96.35	563.55
	NIGERIA	48.56	256.28
	TANZANIA REP	41.65	298.74
	ZAMBIA	23.04	159.17
	Product Total	501.45	2367.29
METHYL BROMIDE	VIETNAM SOC REP	464.57	2818.25
	U ARAB EMTS	330.50	2490.64
	AUSTRALIA	234.00	1537.08
	EL SALVADOR	232.35	1761.67
	EGYPT A RP	192.00	1220.53
	Product Total	1453.42	9828.16
OTHER HERBICIDES-ANTI SPROUTING PRODUCTS	U S A	59356.32	760025.26
	BRAZIL	15863.11	154991.96
	AUSTRALIA	9528.73	49619.72

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
	ARGENTINA	6836.48	73300.26
	FRANCE	5258.48	56421.02
	Product Total	96843.12	1094358.21
OTHER FUNGICIDE NES	BRAZIL	36032.39	199424.77
	BANGLADESH PR	25980.02	28586.45
	U S A	15407.46	121724.08
	COSTA RICA	10031.36	23224.32
	INDONESIA	9451.64	26797.20
	Product Total	96902.87	399756.83
AZO DYES	ITALY	9178.97	41679.12
	CHINA P RP	7579.98	24783.35
	SPAIN	4440.17	18995.89
	NETHERLAND	4219.12	14208.29
	TURKEY	3474.84	11781.16
	Product Total	28893.07	111447.81
ACID DIRECT DYES(OTHER THAN AZO)	U S A	1349.29	7313.01
	CHINA P RP	633.15	3086.65
	ITALY	451.17	3774.85
	MALAYSIA	384.29	1369.94
	MEXICO	317.76	1427.23
	Product Total	3135.65	16971.68
BASIC DYES	CHINA P RP	2654.36	10629.62
	THAILAND	974.15	2525.51
	BRAZIL	932.54	2875.48
	U S A	892.48	5292.03
	NETHERLAND	850.98	3783.46
	Product Total	6304.51	25106.11
DISPERSE DYES	TURKEY	3932.85	14939.65
	HONDURAS	2015.53	10435.94
	CHINA P RP	1302.52	10131.02
	BRAZIL	918.07	4677.97
	EGYPT A RP	895.18	3197.50
	Product Total	9064.13	43382.07
FAST COLOUR BASES	NETHERLAND	420.25	4509.04
	GERMANY	386.40	2620.12
	JAPAN	320.07	2301.87
	CHINA P RP	231.88	2158.76
	MEXICO	140.00	854.49
	Product Total	1498.59	12444.28
OIL SOLUBLE (SOLVENT DYES)	U K	1394.58	8263.78
	U S A	869.59	13420.47
	SINGAPORE	764.23	4185.43
	CHINA P RP	609.68	8588.74
	ITALY	597.47	3970.07
	Product Total	4235.55	38428.48
OPTICAL WHITENING AGENTS	BANGLADESH PR	1644.40	4049.20
	SOUTH AFRICA	1358.91	2433.99
	JAPAN	1206.44	1386.39
	U ARAB EMTS	1074.52	1596.58
	U S A	1063.92	6286.07

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
	Product Total	6348.18	15752.23
ORGANIC PIGMENT	NIGERIA	10.80	35.89
	OMAN	2.12	14.80
	AUSTRALIA	1.00	3.04
	NEW ZEALAND	0.96	3.89
	U S A	0.67	3.12
	Product Total	15.55	60.74
PIGMENT EMULSION	CHINA P RP	13692.61	69570.61
	U S A	11345.97	92027.28
	NETHERLAND	6009.22	41695.51
	JAPAN	4512.09	35467.00
	BRAZIL	4355.94	26576.93
	Product Total	39915.84	265337.33
REACTIVE DYES	BANGLADESH PR	36620.17	101440.58
	TURKEY	28112.68	85673.89
	HONDURAS	7765.59	32289.25
	BRAZIL	6431.69	22061.06
	INDONESIA	6409.55	23602.92
	Product Total	85339.68	265067.70
SULPHUR DYES (SULPHUR BLACK)	EGYPT A RP	816.70	1042.15
	ITALY	668.85	795.56
	BANGLADESH PR	421.93	492.89
	U ARAB EMTS	381.05	524.01
	BRAZIL	162.00	433.49
	Product Total	2450.54	3288.11
VAT DYES	BANGLADESH PR	407.48	4893.70
	CHINA P RP	352.12	9940.05
	TAIWAN	268.87	1213.30
	U S A	194.33	5155.82
	SINGAPORE	178.18	899.71
	Product Total	1400.98	22102.57
SOLUBILISED VAT DYES	INDONESIA	38.50	753.30
	VIETNAM SOC REP	10.70	164.59
	BANGLADESH PR	5.17	18.49
	MALAYSIA	2.50	44.39
	CHINA P RP	1.96	28.66
	Product Total	58.83	1009.42
FOOD COLOURS	U S A	2871.60	18554.44
	CHINA P RP	2566.51	12571.32
	U ARAB EMTS	1625.94	6069.30
	INDONESIA	1596.50	8874.09
	MEXICO	1555.79	8789.03
	Product Total	10216.35	54858.17
NAPTHOLS	SOUTH AFRICA	525.21	584.28
	RUSSIA	312.70	511.93
	U S A	276.03	1436.93
	TURKEY	151.26	218.95
	POLAND	139.30	200.55
	Product Total	1404.49	2952.64
	POLAND	2656.15	3409.15

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
OTHER DYES	NETHERLAND	2167.97	3758.85
	CHINA P RP	1641.74	4773.52
	U K	981.84	1367.91
	JAPAN	921.07	2216.64
	Product Total	8368.76	15526.07
INORGANIC PIGMENTS	KENYA	7253.25	4826.55
	ECUADOR	2685.08	2111.98
	ALGERIA	2473.49	4043.68
	COLOMBIA	2132.63	1633.61
	BANGLADESH PR	2108.08	3048.40
	Product Total	16652.52	15664.22
Source: DGCIS, Kolkata, M/o Commerce and Industry			

Table 20: Top Five Import Destinations of selected Chemicals during 2022-23			
PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
SODA ASH	TURKEY	109758.5	32030.4
	CHINA P RP	96552.5	37296.4
	U S A	88186.3	30051.2
	KENYA	79604.6	25964.4
	U ARAB EMTS	71978.4	24030.4
	Product Total	446080.4	149372.9
CAUSTIC SODA	JAPAN	87452.2	44544.1
	OMAN	20363.8	13277.7
	BANGLADESH PR	12494.5	6883.2
	QATAR	5917.5	3372.6
	TAIWAN	5207.6	3414.2
	Product Total	131435.5	71491.9
LIQUID CHLORINE	KOREA RP	40.4	269.7
	CHINA P RP	18.8	31.2
	JAPAN	3.0	90.1
	FRANCE	1.4	17.1
	GERMANY	0.2	1.5
	Product Total	63.8	409.7
ALUMINIUM FLUORIDE	CHINA P RP	29769.0	36130.5
	QATAR	5569.6	693.9
	INDONESIA	5220.0	5065.8
	MEXICO	4625.0	4853.4
	U ARAB EMTS	3125.7	4389.3
	Product Total	48309.3	51133.0
CALCIUM CARBIDE	CHINA P RP	19550.1	15293.4
	INDONESIA	2583.0	1837.8
	GERMANY	0.0	0.4
	SWITZERLAND	0.0	18.5
	Product Total	22133.1	17150.1
CARBON BLACK	TURKEY	24928.9	26372.8
	CHINA P RP	20824.2	21509.7
	U ARAB EMTS	19146.3	18136.3
	KOREA RP	16541.3	24926.5
	RUSSIA	13217.9	16151.0
	Product Total	94658.5	107096.3
POTASSIUM CHLORATE	U K	0.0	0.2
	GERMANY	0.0	0.4
	BELGIUM	0.0	0.1
	U S A	0.0	0.8
	Product Total	0.0	1.6
SODIUM CHLORATE	U S A	9513.8	5791.7
	URUGUAY	4975.0	3586.5
	FINLAND	4404.0	3194.7
	CHINA P RP	1503.0	1354.8
	FRANCE	1118.9	592.8
	Product Total	21514.7	14520.5
TITANIUM DIOXIDE	CHINA P RP	5770.7	14399.2
	KOREA RP	5540.0	14196.1
	NETHERLAND	2102.3	7350.6
	GERMANY	1940.5	7383.3
	JAPAN	1348.3	3994.6
	Product Total	16701.8	47323.8

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
HYDROGEN PEROXIDE	BANGLADESH PR	40997.9	11746.9
	THAILAND	2535.8	1817.8
	KOREA RP	345.6	144.7
	BELGIUM	301.0	208.6
	TAIWAN	241.9	111.5
	Product Total	44422.3	14029.5
CALCIUM CARBONATE	EGYPT A RP	373932.7	28238.2
	VIETNAM SOC REP	326943.6	34726.4
	MALAYSIA	277858.5	34071.3
	JORDAN	58738.3	5179.0
	GREECE	6075.0	647.8
	Product Total	1043548.1	102862.7
ACETIC ACID	CHINA P RP	578057.7	260633.1
	MALAYSIA	287189.7	132056.2
	SINGAPORE	201230.9	90605.4
	TAIWAN	25499.0	12105.5
	SAUDI ARAB	13261.4	4852.2
	Product Total	1105238.7	500252.5
ACETIC ANHYDRIDE	SAUDI ARAB	13124.3	9874.0
	SINGAPORE	208.2	181.9
	CHINA P RP	67.8	56.0
	Product Total	13400.3	10111.9
ACETONE	THAILAND	36641.3	21656.3
	TAIWAN	33920.4	19543.5
	KOREA RP	28560.8	17574.6
	SAUDI ARAB	5075.5	3033.2
	NETHERLAND	2379.3	1378.7
	Product Total	106577.4	63186.3
PHENOL	THAILAND	48740.6	53477.6
	CHINA P RP	30403.5	35198.9
	SAUDI ARAB	28833.8	33430.0
	KOREA RP	25484.3	26812.3
	U S A	24230.8	26893.6
	Product Total	157692.8	175812.5
METHANOL	SAUDI ARAB	671363.1	181920.6
	IRAN	542384.4	141655.3
	QATAR	525289.0	138796.9
	OMAN	418413.3	106821.3
	FINLAND	229657.5	61560.8
	Product Total	2387107.2	630754.8
FORMALDEHYDE	GERMANY	2.6	37.1
	SPAIN	1.7	10.3
	CHINA P RP	1.1	47.7
	U K	0.7	3.8
	U S A	0.1	8.4
	Product Total	6.2	107.3
NITROBENZENE	KOREA RP	3790.8	4130.4
	U ARAB EMTS	96.0	102.9
	GERMANY	0.0	0.9
	Product Total	3886.8	4234.3
CITRIC ACID	CHINA P RP	130156.0	138458.1
	THAILAND	521.3	848.9
	U ARAB EMTS	400.0	204.0
	HONG KONG	154.0	110.7
	GERMANY	56.9	657.0

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
	Product Total	131288.3	140278.7
MALEIC ANHYDRIDE	CHINA P RP	48730.3	56116.9
	TAIWAN	13317.2	14613.9
	MALAYSIA	12331.1	15262.8
	KOREA RP	3700.6	3687.0
	RUSSIA	2524.6	1902.9
	Product Total	80603.8	91583.5
PENTAERYTHRITOL	SAUDI ARAB	10007.2	14500.5
	TAIWAN	2909.0	3536.3
	CHINA P RP	2526.5	3449.6
	SWEDEN	1360.0	2207.4
	RUSSIA	273.0	351.9
	Product Total	17075.7	24045.7
ANILINE	CHINA P RP	84058.2	111556.2
	U S A	15890.7	23778.3
	BELGIUM	1000.8	1374.8
	IRAN	208.0	338.7
	U ARAB EMTS	208.0	353.8
	Product Total	101365.6	137401.8
CHLORO METHANES	CHINA P RP	1194.0	1213.1
	NETHERLAND	156.1	334.3
	U S A	55.6	171.4
	HONG KONG	0.0	0.9
	Product Total	1405.7	1719.7
MEK	CHINA P RP	25797.4	33949.8
	TAIWAN	8216.5	10559.9
	KOREA RP	6805.7	6924.1
	SOUTH AFRICA	5104.8	6369.5
	NETHERLAND	1611.7	1761.6
	Product Total	47536.0	59564.7
ACETALDEHYDE	SWITZERLAND	67.9	135.1
	NETHERLAND	45.8	92.2
	BELGIUM	23.6	45.6
	U K	2.0	80.6
	U S A	1.1	59.0
	Product Total	140.4	412.4
ETHANOLAMINES	MALAYSIA	4760.6	4714.1
	U ARAB EMTS	4711.9	4173.9
	SAUDI ARAB	3874.7	3646.8
	THAILAND	1697.8	2252.0
	CHINA P RP	389.8	3919.0
	Product Total	15434.9	18705.8
ETHYL ACETATE	SAUDI ARAB	126.3	20.3
	SWITZERLAND	74.0	1421.8
	SINGAPORE	30.1	24.2
	KOREA RP	13.6	22.3
	CHINA P RP	9.2	18.3
	Product Total	253.2	1507.0
MENTHOL	MALAYSIA	2282.4	24460.5
	U S A	436.3	4346.1
	SINGAPORE	397.2	4133.7
	GERMANY	370.7	3547.4
	CHINA P RP	311.4	2971.7
	Product Total	3798.0	39459.4
DIMETHOATE	DENMARK	334.1	1381.9

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
	Product Total	334.1	1381.9
OTHER PESTICIDES	U S A	334.3	50338.6
	TAIWAN	212.0	729.7
	CHINA P RP	171.5	12778.0
	RUSSIA	120.0	905.9
	U ARAB EMTS	20.5	160.0
	Product Total	858.2	64912.1
OTHER INSECTICIDES	CHINA P RP	10235.6	131817.7
	ISRAEL	1657.2	19215.4
	U S A	1509.7	128650.2
	TAIWAN	756.8	2415.7
	JAPAN	575.4	31251.0
	Product Total	14734.7	313350.0
2, 4-D	CHINA P RP	576.0	1648.8
	MAURITIUS	116.2	286.0
	RUSSIA	54.0	142.6
	GERMANY	0.0	0.8
	Product Total	746.2	2078.1
ALUMINIUM PHOSPHIDE	U S A	0.0	0.1
	ISRAEL	0.0	0.5
	Product Total	0.0	0.6
OTHER HERBICIDES-ANTI SPROUTING PRODUCTS	CHINA P RP	12416.2	124279.0
	ISRAEL	8012.5	56071.2
	U S A	4313.8	27024.5
	TAIWAN	2974.4	9119.9
	JAPAN	1588.3	43873.7
	Product Total	29305.1	260368.4
OTHER FUNGICIDE NES	THAILAND	4529.2	18937.6
	CHINA P RP	3116.8	51723.7
	GERMANY	1943.2	34844.8
	U S A	1126.0	23972.0
	SPAIN	784.1	14948.3
	Product Total	11499.3	144426.5
AZO DYES	CHINA P RP	83.2	969.9
	SPAIN	42.8	2546.5
	THAILAND	41.2	348.8
	POLAND	34.7	39.3
	ITALY	24.0	158.5
	Product Total	225.9	4063.0
ACID DIRECT DYES(OTHER THAN AZO)	ITALY	21.4	223.5
	MALAYSIA	17.0	55.2
	CHINA P RP	12.7	336.6
	SINGAPORE	8.9	281.7
	THAILAND	7.2	109.2
	Product Total	67.3	1006.2
BASIC DYES	CHINA P RP	285.2	4372.4
	ICELAND	40.0	462.8
	TURKEY	21.9	119.0
	GERMANY	13.2	198.4
	SWITZERLAND	10.6	173.2
	Product Total	370.9	5325.8
	CHINA P RP	1484.6	11550.2
	ICELAND	322.0	1103.9

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
DISPERSE DYES	SINGAPORE	99.0	1927.6
	KOREA RP	75.3	581.2
	INDONESIA	60.8	741.9
	Product Total	2041.6	15904.7
FAST COLOUR BASES	CHINA P RP	180.3	1234.7
	GERMANY	61.3	370.0
	ITALY	5.0	31.6
	BELGIUM	3.8	169.1
	NETHERLAND	2.2	91.4
	Product Total	252.7	1896.8
OIL SOLUBLE (SOLVENT DYES)	CHINA P RP	505.6	9293.3
	KOREA RP	190.9	1227.9
	U ARAB EMTS	111.1	1280.3
	U S A	44.9	292.8
	TAIWAN	18.8	110.9
	Product Total	871.4	12205.2
OPTICAL WHITENING AGENTS	BELGIUM	240.0	3309.5
	CHINA P RP	148.4	1880.4
	NETHERLAND	112.8	1495.2
	FRANCE	18.6	82.7
	SINGAPORE	16.5	194.3
	Product Total	536.3	6962.2
ORGANIC PIGMENT	SPAIN	202.8	334.0
	U S A	42.0	272.0
	TURKEY	11.3	62.2
	POLAND	9.0	11.6
	CHINA P RP	7.3	25.5
	Product Total	272.4	705.3
PIGMENT EMULSION	CHINA P RP	4212.6	28865.8
	GERMANY	564.3	11033.5
	KOREA RP	402.2	4518.7
	ITALY	334.6	1580.2
	U S A	278.2	5771.0
	Product Total	5791.9	51769.2
REACTIVE DYES	KOREA RP	1055.9	5812.2
	THAILAND	1036.4	8548.8
	CHINA P RP	329.3	4560.9
	TURKEY	105.6	858.8
	ITALY	70.6	690.4
	Product Total	2597.8	20471.1
SULPHUR DYES (SULPHUR BLACK)	CHINA P RP	3114.9	7899.9
	SPAIN	225.0	781.3
	SINGAPORE	11.2	36.0
	GERMANY	5.4	113.2
	KOREA RP	4.4	429.6
	Product Total	3360.9	9260.0
VAT DYES	SINGAPORE	7232.4	23566.4
	CHINA P RP	4176.9	33052.0
	MEXICO	58.6	544.0
	GERMANY	48.3	327.0
	ITALY	5.4	28.7
	Product Total	11521.6	57518.1
	ITALY	7.3	72.3
	SWITZERLAND	5.1	184.1

PRODUCTS	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
SOLUBILISED VAT DYES	CHINA P RP	4.2	80.0
	HONG KONG	1.4	56.6
	SINGAPORE	0.6	32.9
	Product Total	18.6	425.9
FOOD COLOURS	U S A	77.9	1897.4
	TAIWAN	58.8	250.7
	KOREA RP	52.0	299.2
	CHINA P RP	43.8	2118.5
	KENYA	20.0	134.5
	Product Total	252.5	4700.3
NAPTHOLS	CHINA P RP	1227.5	5725.9
	MALAYSIA	162.1	214.5
	BELGIUM	10.9	100.0
	JAPAN	2.2	118.0
	GERMANY	1.5	7.8
	Product Total	1404.3	6166.2
OTHER DYES	U K	2061.2	6192.2
	CHINA P RP	323.1	596.5
	U S A	167.9	2016.3
	UNSPECIFIED	39.6	39.0
	ITALY	36.7	349.1
	Product Total	2628.4	9193.2
INORGANIC PIGMENTS	CHINA P RP	2454.6	9105.7
	U ARAB EMTS	1318.9	2533.0
	VIETNAM SOC REP	1068.3	805.6
	THAILAND	819.2	3751.7
	KOREA RP	598.5	3360.1
	Product Total	6259.6	19555.9

Source: DGCIS, Kolkata, M/o Commerce and Industry

Table 21: Exports of Major Petrochemicals (Group-wise) during 2015-16 to 2022-23

[QTY in MT & VAL in Rs. Lakh]

GROUP	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
SYNTHETIC FIBRES	878358	833783	1025740	922018	1001053	977982	1015666	1172008	1059348	1054987	878619	787040	1202246	1438887	759004	1026104
FIBRE INTERMEDIATES	247540	121394	323096	153574	351358	181069	456955	275919	234372	123612	475165	162929	127582	86540	56213	60804
POLYMERS	998339	732497	912124	667432	1188233	891771	1934155	1558391	1615451	1095332	1488512	968069	921155	942517	586351	622514
SYNTHETIC RUBBER (ELASTOMERS)	42688	42428	38204	46387	51889	54589	63550	70696	74036	73065	95037	79421	89936	111822	70431	97450
SYNTHETIC DETERGENT INTERMEDIATES	9634	7768	7058	5941	1413	1468	1048	1534	1044	1479	1876	1939	7491	8701	2523	3107
PERFORMANCE PLASTICS	813967	527737	972750	636450	1050548	747271	1080286	1018773	968791	739010	217142	198743	283722	353686	181928	287567
OLEFINS	149389	76055	117365	101742	260597	179804	368714	276701	336140	188100	284988	136102	255597	173883	161748	117262
AROMATICS	2033143	942807	1749173	885136	3303041	1754998	4550911	2880299	4271477	2337408	4660796	1854685	4434556	2998035	2660009	2132705
OTHER PETRO-BASED CHEMICALS	128670	101261	144135	116773	193342	138613	147298	139759	237571	194934	171468	169127	212298	249815	189073	224161
TOTAL EXPORT OF MAJOR PETROCHEMICALS	5301728	3385730	5289645	3535453	7401474	4927565	9618583	7394080	8798230	5807927	8273603	4358055	7534583	6363886	4667280	4571674

Source: DGCIS, Kolkata, M/o Commerce and Industry

Table 22: Imports of Major Petrochemicals (Group-wise) during 2015-16 to 2022-23

[QTY in MT & VAL in Rs. Lakh]

GROUP	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
SYNTHETIC FIBRES	263774	346368	279993	342993	259632	363079	275617	453356	346600	460883	403273	410701	460377	678520	670250	864661
FIBRE INTERMEDIATES	2015419	1026126	1842229	943136	1808425	1072331	1454656	1056882	1919655	1059484	1441326	649525	2626726	1713284	3355729	2176204
POLYMERS	4214022	3132488	4452258	3267230	4751478	3549286	4479129	3684829	3430180	2639363	2641372	2142272	2941493	3267215	4789378	4956650
SYNTHETIC RUBBER (ELASTOMERS)	596101	612690	559919	628042	607867	741750	618500	851418	574832	709547	747278	718860	635138	1144125	673480	1320567
SYNTHETIC DETERGENT INTERMEDIATES	218097	177489	228229	179003	205984	164533	227136	210428	264058	237426	265406	216258	277828	336160	342892	523554
PERFORMANCE PLASTICS	388796	445847	417442	472270	582692	621047	683851	891721	740577	782460	298958	293817	282523	394910	292316	414336
OLEFINS	25398	20177	83453	60651	50791	43283	69700	57846	75857	51011	43875	33958	91880	76193	94231	102839
AROMATICS	1204325	633048	1614652	864845	1321018	708548	1320424	910212	1327535	772834	1300486	542096	1124365	742531	1245729	1123727
OTHER PETRO-BASED CHEMICALS	2739780	1775978	2650608	1764933	3255244	2232102	3227017	2709229	3543017	2388328	3068899	2152067	3291372	3656404	3425800	3404342
TOTAL IMPORT OF MAJOR PETROCHEMICALS	11665712	8170211	12128783	8523103	12843131	9495959	12356030	10825921	12222311	9101336	10210873	7159554	11731702	12009342	14889805	14886880

Source: DGCIS, Kolkata, M/o Commerce and Industry

Table 23: Net Imports of Major Petrochemicals (Group Wise) during 2015-16 to 2022-23

[QTY in MT & VAL in Rs. Lakh]

GROUP	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
SYNTHETIC FIBRES	-614584	-487415	-745747	-579025	-741421	-614903	-740049	-718652	-712748	-594104	-475346	-376339	-741869	-760367	-88754	-161443
FIBRE INTERMEDIATES	1767879	904732	1519133	789562	1457067	891262	997701	780963	1685283	935872	966161	486596	2499144	1626744	3299516	2115400
POLYMERS	3215683	2399991	3540134	2599798	3563245	2657515	2544974	2126438	1814729	1544031	1152860	1174203	2020338	2324698	4203027	4334136
SYNTHETIC RUBBER (ELASTOMERS)	553413	570262	521715	581655	555978	687161	554950	780722	500796	636482	652241	639439	545202	1032303	603049	1223117
SYNTHETIC DETERGENT INTERMEDIATES	208463	169721	221171	173062	204571	163065	226088	208894	263014	235947	263530	214319	270337	327459	340369	520447
PERFORMANCE PLASTICS	-425171	-81890	-555308	-164180	-467856	-126224	-396435	-127052	-228214	43450	81816	95074	-1199	41224	110388	126769
OLEFINS	-123991	-55878	-33912	-41091	-209806	-136521	-299014	-218855	-260283	-137089	-241113	-102144	-163717	-97690	-67517	-14423
AROMATICS	-828818	-309759	-134521	-20291	-1982023	-1046450	-3230487	-1970087	-2943942	-1564574	-3360310	-1312589	-3310191	-2255504	-1414280	-1008978
OTHER PETRO-BASED CHEMICALS	2611110	1674717	2506473	1648160	3061902	2093489	3079719	2569470	3305446	2193394	2897431	1982940	3079074	3406589	3236727	3180181
TOTAL NET IMPORT OF MAJOR PETROCHEMICALS	6363984	4784481	6839138	4987650	5441657	4568394	2737447	3431841	3424081	3293409	1937270	2801499	4197119	5645456	10222525	10315206

Table 24: Exports of Major Petrochemicals (Product Wise) 2015-16 to 2022-23

[QTY in MT & VAL in Rs. Lakh]

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
SYNTHETIC FIBRES																
ACRYLIC FIBRE	47911	58966	48332	60060	39213	52227	45932	71700	40505	59726	25569	33923	23743	43557	28587	61652
NYLON FILAMENT YARN	1639	6236	1857	6462	4014	12111	5794	18888	7748	22360	6098	15495	9363	29452	8708	28857
NYLON INDUSTRIAL YARN/TYRE CORD	1122	1471	1474	1872	1620	2239	1895	2827	3624	5116	4296	5939	5312	9033	6586	12303
POLYESTER FILAMENT YARN	634799	624444	748037	690836	717714	730282	696668	839555	711319	750466	540650	545550	762473	966876	472031	665983
POLYESTER STAPLE FIBRE	181813	129129	213903	150316	227441	169364	255455	225045	285157	204876	291399	172242	383703	329736	227366	228194
POLYPROPYLENE FILAMENT YARN	2844	3878	2077	2690	869	1117	494	713	720	965	729	1005	798	1297	1015	1629
POLYPROPYLENE STAPLE FIBRE	7531	6885	9755	8767	9497	8663	7892	8446	9509	9103	8212	7668	10896	14033	12126	16028
Elastomeric/Spandex Filament Yarn	699	2774	305	1015	685	1979	1536	4834	766	2375	1666	5218	5958	44903	2585	11458
TOTAL	878358	833783	1025740	922018	1001053	977982	1015666	1172008	1059348	1054987	878619	787040	1202246	1438887	759004	1026104
FIBRE INTERMEDIATES																
ACRYLONITRILE	2323	2132	6	39	1514	1900	1872	3059	2988	3262	8533	8178	1956	3401	12005	15568
CAPROLACTUM	0	8	1010	867	53	93	77	129	258	327	6225	4672	25	554	62	130
DIMETHYL TEREPHTHALATE	1	1	1	1	0	0	1	2	0	1	0	0	0	0	58	113
MONO EHYLENE GLYCOL	72239	52081	62199	45932	137462	90499	292583	175325	151301	81361	325429	105684	71204	48936	39649	37248
PURIFIED TEREPHTHALIC ACID	172977	67172	259880	106735	212329	88577	162422	97404	79825	38661	134978	44395	54397	33649	4439	7745
TOTAL	247540	121394	323096	153574	351358	181069	456955	275919	234372	123612	475165	162929	127582	86540	56213	60804
POLYMERS																
LOW DENSITY POLYETHYLENE	24007	26531	26909	27321	108257	88430	164142	132765	140022	98135	39442	35801	49187	66522	72626	100016
HIGH DENSITY POLYTHYLENE	116114	97840	148142	117815	205797	155550	457416	365235	486892	315945	398659	247524	198169	192824	70053	95448
POLYSTYRENE	86290	72301	82542	75483	69814	67452	63990	64060	49611	43139	36502	27805	44494	52518	39224	46728
POLYPROPYLENE (INC. CO-POLYMER)	735410	503124	574234	382678	552002	397646	718053	596611	539045	386684	861712	561818	546609	547136	351751	324200
EXPANDABLE POLYSTYRENE	3762	3735	3697	3548	3119	3272	3064	3818	2745	2762	894	895	944	1279	2403	3127
POLY VINYL CHLORIDE	3054	3272	6484	6127	6662	6015	2133	1788	2060	1471	16985	8467	2537	2894	967	1337
LINEAR LOW DENSITY POLYTHYLENE	15825	14160	53215	41558	228952	163632	508135	380841	395076	247196	134318	85759	66494	65425	39851	40881
PVC COMPOUND	13877	11534	16901	12902	13630	9774	17222	13273	0	0	0	0	12721	13919	9476	10777
TOTAL	998339	732497	912124	667432	1188233	891771	1934155	1558391	1615451	1095332	1488512	968069	921155	942517	586351	622514
SYNTHETIC RUBBER (ELASTOMERS)																
STYRENE BUTADIENE RUBBER	31053	23969	27139	27423	40704	36382	46179	43572	44929	37838	39757	28768	35715	38037	36863	42498
POLY BUTADIENE RUBBER	5988	4008	5114	4942	7012	7376	13175	15311	20323	19289	23329	15059	22558	28190	2556	3863
ETHYL PROPYLENE DIMERS	2725	8882	3282	9531	2517	7696	2463	7958	2292	7284	1371	3275	1429	3438	1067	3222
ETHYL VINYL ACETATE	1274	1510	1494	1751	901	1314	530	1251	999	1614	1042	1650	1381	3351	4906	8986
NITRILE BUTADIENE RUBBER	400	970	451	1092	427	1128	507	1316	719	1316	3823	4326	7134	9282	8097	8482
BUTYL RUBBER	1248	3089	724	1648	328	693	696	1288	4774	5724	25715	26343	21719	29524	16942	30399
TOTAL	42688	42428	38204	46387	51889	54589	63550	70696	74036	73065	95037	79421	89936	111822	70431	97450
SYNTHETIC DETERGENT INTERMEDIATES																
LINEAR ALKYL BENZENE	9256	7034	6440	4816	930	809	323	367	193	253	926	956	6402	7462	1135	1096
ETHYLENE OXIDE	378	734	618	1125	483	659	725	1167	851	1226	950	983	1089	1239	1388	2011
TOTAL	9634	7768	7058	5941	1413	1468	1048	1534	1044	1479	1876	1939	7491	8701	2523	3107
PERFORMANCE PLASTICS																
ABS RESIN	465	682	294	473	273	445	449	622	328	598	407	673	1744	2197	393	879
NYLON-6	14577	25321	17656	29593	21353	34774	19744	38965	21214	40855	0	0	0	0	0	0
POLYMETHYL METHACRYLATE	9158	10541	8557	10230	3563	3584	4323	5218	4632	5586	3296	4774	4104	6781	3381	5101
STYRENE ACRYLONITRILE	579	459	671	450	1179	682	387	380	460	362	230	212	817	990	2606	2616

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
POLYESTER CHIPS/PET CHIPS	783106	460787	937251	557185	1014588	655326	1043386	889691	930982	618181	202297	117960	262129	221810	163189	156350
POLYTETRAFLUOROETHYLENE(PTFE)	6082	29947	8321	38519	9592	52460	11997	83897	11175	73428	10912	75124	14928	121908	12359	122621
TOTAL	813967	527737	972750	636450	1050548	747271	1080286	1018773	968791	739010	217142	198743	283722	353686	181928	287567
OLEFINS																
BUTADIENE	129808	66961	106838	97268	103426	73371	136191	113889	174252	103916	166809	72272	144095	89886	121316	86424
ETHYLENE	5119	3789	27	23	136426	97327	193233	140672	152230	79955	102895	57712	111502	83997	40432	30837
PROPYLENE	14462	5305	10500	4451	20745	9106	39290	22140	9658	4229	15284	6118	0	0	0	1
TOTAL	149389	76055	117365	101742	260597	179804	368714	276701	336140	188100	284988	136102	255597	173883	161748	117262
AROMATICS																
BENZENE	914875	371288	789425	366822	1286323	662408	1651123	822052	1408477	635303	1507626	559554	1922951	1388168	1451638	1156971
MIXED XYLENE	8	49	66	110	418	278	981	668	410	297	535	330	46	57	127	167
ORTHO-XYLENE	234386	107621	154347	74761	185675	86881	225703	122734	177267	100950	309550	127934	234328	148221	121303	108059
TOLUENE	5268	3314	5843	3764	4103	2772	13601	9501	8124	5564	17834	9791	17804	13832	14714	15295
PARAXYLENE	878606	460535	799492	439679	1826522	1002659	2659503	1925344	2677199	1595294	2825251	1157076	2259427	1447757	1072227	852213
TOTAL	2033143	942807	1749173	885136	3303041	1754998	4550911	2880299	4271477	2337408	4660796	1854685	4434556	2998035	2660009	2132705
OTHER PETRO-BASED CHEMICALS																
ETHYLENE DICHLORIDE	15839	3103	16	8	44861	6510	19181	4478	80857	20134	37412	8605	5902	3221	450	358
BUTANOL	195	162	2292	1189	863	703	452	655	282	287	1032	1288	577	887	627	781
OXO ALCOHOL	582	565	1271	731	890	682	2935	1505	1328	1146	740	2021	988	5590	1293	7097
2-ETHYL HEXANOL	746	654	2055	1437	2636	1701	3175	2781	46	54	1408	1412	3463	5010	754	1104
VINYL CHLORIDE MONOMER	0	0	0	0	0	0	0	3	0	0	0	1	6	8	25	52
EPICHLHYDRINE	28	33	54	55	49	76	48	90	106	183	58	306	28	275	5248	10478
ISO BUTYLENE	28	249	1	3	0	2	0	1	18085	9028	6048	2593	18588	12966	14076	12958
METAXYLENE	46	140	64	217	4	263	15	282	35	587	18	857	20	676	41	711
METHYL ISOBUTYL KETONE	287	266	918	788	940	878	2038	1817	2165	1525	667	882	1350	2681	809	1271
PIB	6128	7200	2237	2448	2620	2711	4297	4788	5828	5839	9729	8097	6327	7754	11191	15029
POLYCARBONATE	4790	4597	3990	3284	4926	5370	3432	4605	3331	3621	4447	5685	4603	6563	2980	6280
PROPYLENE OXIDE	0	0	0	1	0	0	0	0	0	1	0	1	0	3	0	1
PROPYLENE GLYCOL	531	724	865	1113	1117	1713	1697	2419	5934	6573	3254	3931	1706	5187	3175	7345
POLYVINYL ACETATE RESIN	11259	11415	8767	8927	6958	6522	8510	8622	9048	7767	8175	7358	9527	15019	9247	18218
UNSATURATED POLYSTER RESIN	12112	15025	16263	18552	14436	18212	14667	21668	15498	22694	17443	27544	22071	42671	23605	47919
ETHYL BENZENE	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CELLULOSE ACETATE BUTYRATE	6	81	8	30	1	18	1	15	0	0	9	39	0	2	0	0
CELLULOSE ACETATE SHEET	34	116	85	178	59	145	22	79	33	106	25	102	13	39	4	15
CELLULOSE NITRATE SHEET	3	5	19	14	2	5	7	24	5	9	4	31	2	13	2	11
MELAMINE MOULDING POWDER	7993	2541	10124	3072	14754	3747	16578	4758	21691	6495	21800	6695	32531	11571	42319	17085
POLYACETAL RESIN	312	383	387	439	141	279	276	402	334	540	590	1081	1636	3556	1547	4220
PHTHALIC ANHYDRIDE	40448	22378	42033	25960	37869	25156	26495	18956	28898	17976	23296	12668	32492	25529	20742	20677
STYRENE	793	669	5088	4176	4524	3842	6531	6690	4366	3326	17361	7081	41340	42223	38041	38529
VINYL ACETATE MONOMER	1695	1388	11755	6285	21261	13220	8344	6623	3434	2260	1834	1231	4545	6316	2117	2775
ISOPROPANOL	3716	2805	7385	5106	11004	7850	6281	5336	10442	7773	8298	9567	11100	11539	10780	11247
POLYOL	21099	26760	28458	32760	23427	39008	22316	43162	25825	77010	7820	60051	13483	40516	0	0
TOTAL	128670	101261	144135	116773	193342	138613	147298	139759	237571	194934	171468	169127	212298	249815	189073	224161
TOTAL EXPORT OF MAJOR PETRO-CHEMICALS	5301728	3385730	5289645	3535453	7401474	4927565	9618583	7394080	8798230	5807927	8273603	4358055	7534583	6363886	4667280	4571674

Source: DGCIS, Kolkata, M/o Commerce and Industry

Table 25: Imports of Major Petrochemicals (Product Wise) 2015-16 to 2022-23

[QTY in MT & VAL in Rs. Lakh]

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
SYNTHETIC FIBRES																
ACRYLIC FIBRE	39238	53809	36771	44394	32184	46549	40475	71158	56316	84841	41928	53586	35164	76074	26049	57635
NYLON FILAMENT YARN	28972	54485	31063	53352	22731	43317	23259	52088	24476	49669	17058	34533	25307	60951	38680	82278
NYLON INDUSTRIAL YARN/TYRE CORD	4411	6803	7741	10247	6566	10070	8108	16323	6893	11802	9459	15174	11445	31261	8720	20790
POLYESTER FILAMENT YARN	72605	86166	84367	92492	82784	100756	83954	118045	115170	129162	238680	197017	295709	343248	487693	540875
POLYESTER STAPLE FIBRE	99719	73357	99809	70113	88990	71053	91775	89685	118176	94729	84273	64616	78310	78489	95480	95660
POLYPROPYLENE FILAMENT YARN	697	1001	695	850	1343	1715	1362	2007	670	954	755	1418	315	975	164	1092
POLYPROPYLENE STAPLE FIBRE	1885	1997	2016	2181	3281	3378	3333	3863	2778	3097	2164	2316	2986	4218	4706	5998
Elastomeric/Spandex Filament Yarn	16247	68750	17531	69364	21753	86241	23351	100187	22121	86629	8956	42041	11141	83304	8758	60333
TOTAL	263774	346368	279993	342993	259632	363079	275617	453356	346600	460883	403273	410701	460377	678520	670250	864661
FIBRE INTERMEDIATES																
ACRYLONITRILE	160202	121692	139709	108192	159778	172707	182234	244043	175867	200713	135230	121075	175763	298158	233759	302358
CAPROLACTUM	44577	45299	52906	50601	58413	75965	66497	99336	68049	75256	57649	55553	60061	94382	22757	36652
DIMETHYL TEREPHTHALATE	2216	1400	1761	1051	2256	1520	1455	1137	1807	1199	1766	982	1973	1567	1934	2217
MONO EHYLENE GLYCOL	1111582	539689	1235385	604838	1066477	584695	634714	371592	787574	312149	621221	226286	917787	471777	1500812	666600
PURIFIED TEREPHTHALIC ACID	696842	318046	412468	178454	521501	237444	569756	340774	886358	470167	625460	245629	1471142	847400	1596467	1168377
TOTAL	2015419	1026126	1842229	943136	1808425	1072331	1454656	1056882	1919655	1059484	1441326	649525	2626726	1713284	3355729	2176204
POLYMERS																
LOW DENSITY POLYETHYLENE	374761	313547	391501	330125	464591	398992	341063	310441	352372	282510	256287	208489	222431	268779	278393	331845
HIGH DENSITY POLYTHYLENE	921743	798927	1000457	824364	993072	840665	902265	872720	787964	634354	810467	648402	827307	863139	1628435	1690936
POLYSTYRENE	42514	47364	44374	54225	52790	64224	56312	69827	54371	62759	69916	81878	65664	121494	112718	178082
POLYPROPYLENE (INC. CO-POLYMER)	700914	574265	781188	611882	938998	762085	854828	837001	994615	853958	854399	746492	1136898	1290866	1701271	1778886
EXPANDABLE POLYSTYRENE	2981	2723	3779	3554	2644	2744	1241	1611	1037	1184	4684	4308	5511	6709	1822	2705
POLY VINYL CHLORIDE	1501311	878823	1702852	1015835	1846296	1123738	2037570	1354121	928376	587544	419309	300980	460352	508138	590624	534672
LINEAR LOW DENSITY POLYTHYLENE	590015	459471	469075	381387	425112	335698	276313	228745	311445	217054	226310	151723	223153	208037	476089	439494
PVC COMPOUND	79783	57368	59032	45858	27975	21140	9537	10363	0	0	0	0	177	53	26	30
TOTAL	4214022	3132488	4452258	3267230	4751478	3549286	4479129	3684829	3430180	2639363	2641372	2142272	2941493	3267215	4789378	4956650
SYNTHETIC RUBBER (ELASTOMERS)																
STYRENE BUTADIENE RUBBER	172802	155614	149559	155436	132989	161301	123010	156987	102738	118659	152373	149081	169618	256501	166616	287301
POLY BUTADIENE RUBBER	74646	63210	84910	93064	94772	122673	104671	138315	97712	107321	114961	113497	109987	167151	134822	233641
ETHYL PROPYLENE DIMERS	39370	60759	43411	54947	45099	59035	52800	80061	45465	59429	41810	52572	48943	101663	54585	130656
ETHYL VINYL ACETATE	165264	162033	144604	141686	183348	184503	178684	202884	193671	212988	189581	212461	182004	383881	206182	406974
NITRILE BUTADIENE RUBBER	51937	44391	36451	45999	40310	63203	38519	73014	41179	60140	158510	52408	38508	78806	46436	108043
BUTYL RUBBER	92082	126683	100984	136910	111349	151035	120816	200157	94067	151010	90043	138841	86078	156123	64839	153952
TOTAL	596101	612690	559919	628042	607867	741750	618500	851418	574832	709547	747278	718860	635138	1144125	673480	1320567
SYNTHETIC DETERGENT INTERMEDIATES																
LINEAR ALKYL BENZENE	217997	176537	228092	177675	205910	163748	227111	210012	264026	236771	265392	215927	277724	333278	342695	521880
ETHYLENE OXIDE	100	952	137	1328	74	785	25	416	32	655	14	331	104	2882	197	1674
TOTAL	218097	177489	228229	179003	205984	164533	227136	210428	264058	237426	265406	216258	277828	336160	342892	523554
PERFORMANCE PLASTICS																
ABS RESIN	90081	100935	102685	114201	98026	131230	119398	173631	104643	126833	98848	129553	112791	210059	115165	195968
NYLON-6	144545	218291	158810	233711	175945	299915	215718	430268	217382	345202	0	0	0	0	0	0
POLYMETHYL METHACRYLATE	20309	30401	27175	35588	29994	47445	29540	55142	29331	45525	31774	44980	25928	51293	33196	65329
STYRENE ACRYLONITRILE	9569	9061	8542	8299	9430	10630	9188	11431	10452	11103	13347	14631	20468	29048	23791	32202

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
POLYESTER CHIPS/PET CHIPS	122206	74948	117996	68960	266358	113614	307111	199059	375865	233917	151926	85030	120110	80693	116151	87603
POLYTETRAFLUOROETHYLENE(PTFE)	2086	12211	2234	11511	2939	18213	2896	22190	2904	19880	3063	19623	3226	23817	4013	33234
TOTAL	388796	445847	417442	472270	582692	621047	683851	891721	740577	782460	298958	293817	282523	394910	292316	414336
OLEFINS																
BUTADIENE	994	706	2105	1657	2859	3104	1048	1363	14	82	29	108	24	138	8803	9232
ETHYLENE	21050	14753	80917	57116	39119	32795	60583	50604	64816	43283	39902	28526	62387	49807	76690	85887
PROPYLENE	3354	4718	431	1878	8813	7384	8069	5879	11027	7646	3944	5324	29469	26248	8738	7720
TOTAL	25398	20177	83453	60651	50791	43283	69700	57846	75857	51011	43875	33958	91880	76193	94231	102839
AROMATICS																
BENZENE	0	5	0	8	60	66	22264	12820	11153	5330	19212	8254	4195	2724	11073	7764
MIXED XYLENE	108	96	113	125	2424	1200	641	433	122	139	524	293	40	60	2077	1865
ORTHO-XYLENE	34502	16871	26275	14609	15730	8337	22974	15464	16382	9962	25136	11309	16390	11452	50955	49532
TOLUENE	343662	163765	392749	183101	414144	194854	438055	235492	464497	238119	601835	238357	500323	315330	584524	514839
PARAXYLENE	826053	452311	1195515	667002	888660	504091	836490	646003	835381	519284	653779	283883	603417	412965	597100	549727
TOTAL	1204325	633048	1614652	864845	1321018	708548	1320424	910212	1327535	772834	1300486	542096	1124365	742531	1245729	1123727
OTHER PETRO-BASED CHEMICALS																
ETHYLENE DICHLORIDE	600033	104976	503987	86304	713334	108450	581677	141440	780433	182591	632881	150504	625955	379706	663234	262323
BUTANOL	62512	31380	57959	26234	53679	30719	48955	35342	58865	33488	43270	27054	29060	35970	39170	35136
OXO ALCOHOL	1270	4347	3186	6713	2272	6324	2696	7376	2873	6210	2798	4355	3088	5707	2283	7831
2-ETHYL HEXANOL	109095	66012	66867	37312	58129	39652	54107	44522	81656	56216	56250	38505	13840	19050	54665	63018
VINYL CHLORIDE MONOMER	349371	167169	344423	177368	484390	247256	457532	252913	511166	280807	479876	315306	581809	552782	537183	410677
EPICHLHYDRINE	43383	37643	48112	34563	56024	51446	65013	83311	61163	72337	55202	58174	66405	118899	71546	121208
ISO BUTYLENE	15853	10526	20051	14133	48702	36009	44558	40254	10787	7475	1806	1231	54	143	13	81
METAXYLENE	3064	2755	2667	2600	2078	2064	2943	3306	1910	1991	2711	2492	4726	4208	3033	4713
METHYL ISOBUTYL KETONE	27576	22104	22487	17388	34684	31270	33932	29589	29977	18245	30744	31945	37198	62842	31195	36790
PIB	14367	17322	16034	16949	15041	16964	16287	20089	16125	19857	16396	18107	18485	24889	19902	33102
POLYCARBONATE	138535	207756	138365	204195	158944	256209	190435	369272	175692	263317	179111	267899	211794	475954	224233	503033
PROPYLENE OXIDE	25552	25697	23064	21699	23446	23594	26800	30694	20160	20127	17361	22038	20504	32293	24821	34135
PROPYLENE GLYCOL	54045	46881	51339	39956	57333	49579	66498	69089	67372	54615	59532	55321	62175	129778	69814	105480
POLYVINYL ACETATE RESIN	3209	5941	3043	3829	3448	5059	2713	3894	3578	4955	3818	4871	4451	7998	5402	11596
UNSATURATED POLYSTER RESIN	30303	36568	39975	42255	49888	53751	42954	59992	48616	58735	49482	58712	48099	98713	54046	114548
ETHYL BENZENE	150	146	308	267	351	320	719	806	463	471	500	490	947	1247	666	1050
CELLULOSE ACETATE BUTYRATE	2	12	3	18	3	10	0	0	12	18	19	14	57	106	4	254
CELLULOSE ACETATE SHEET	1295	775	1066	564	1346	921	1516	1122	1356	1013	1311	1059	1645	1632	1572	1649
CELLULOSE NITRATE SHEET	88	260	75	250	99	327	106	396	75	270	1243	538	521	366	134	276
MELAMINE MOULDING POWDER	11872	13961	12997	15304	14699	16993	15280	20127	14945	18772	11992	15425	13559	23132	15827	28395
POLYACETAL RESIN	35212	34173	37883	37829	43672	43617	48759	59046	47673	53004	49011	56158	48878	72046	61732	121350
PHTHALIC ANHYDRIDE	79803	44118	92058	53567	130440	86282	144801	107477	174482	110039	140781	80887	121211	91699	94250	88182
STYRENE	717696	516539	729627	557571	789273	654655	817779	744118	876922	610879	738149	459419	888499	799875	1093429	1015028
VINYL ACTATE MONOMER	141649	88260	162004	87159	184964	117193	171353	135851	162866	98977	138364	88247	178958	252872	211731	281602
ISOPROPANOL	87606	47646	97262	55519	110464	71816	141113	98531	154095	83539	186792	164736	135446	112481	145915	122885
POLYOL	186239	243011	175766	225387	218541	281622	248491	350672	239755	330380	169499	228580	174008	352016	0	0
TOTAL	2739780	1775978	2650608	1764933	3255244	2232102	3227017	2709229	3543017	2388328	3068899	2152067	3291372	3656404	3425800	3404342
TOTAL IMPORT OF MAJOR PETRO-CHEMICALS	11665712	8170211	12128783	8523103	12843131	9495959	12356030	10825921	12222311	9101336	10210873	7159554	11731702	12009342	14889805	14886880

Source: DGCI, Kolkata, M/o Commerce and Industry

Table 26: Net Imports of Major Petrochemicals (Product-wise) 2015-16 to 2022-23

PRODUCT	[QTY in MT & VAL in Rs. Lakh]															
	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
SYNTHETIC FIBRES																
ACRYLIC FIBRE	-8673	-5157	-11561	-15666	-7029	-5678	-5457	-542	15811	25115	16359	19663	11421	32517	-2538	-4017
NYLON FILAMENT YARN	27333	48249	29206	46890	18717	31206	17465	33200	16728	27309	10960	19038	15944	31499	29972	53421
NYLON INDUSTRIAL YARN/TYRE CORD	3289	5332	6267	8375	4946	7831	6213	13496	3269	6686	5163	9235	6133	22228	2134	8487
POLYESTER FILAMENT YARN	-562194	-538278	-663670	-598344	-634930	-629526	-612714	-721510	-596149	-621304	-301970	-348533	-466764	-623628	15662	-125108
POLYESTER STAPLE FIBRE	-82094	-55772	-114094	-80203	-138451	-98311	-163680	-135360	-166981	-110147	-207126	-107626	-305393	-251247	-131886	-132534
POLYPROPYLENE FILAMENT YARN	-2147	-2877	-1382	-1840	474	598	868	1294	-50	-11	26	413	-483	-322	-851	-537
POLYPROPYLENE STAPLE FIBRE	-5646	-4888	-7739	-6586	-6216	-5285	-4559	-4583	-6731	-6006	-6048	-5352	-7910	-9815	-7420	-10030
Elastomeric/Spandex Filament Yarn	15548	65976	17226	68349	21068	84262	21815	95353	21355	84254	7290	36823	5183	38401	6173	48875
TOTAL	-614584	-487415	-745747	-579025	-741421	-614903	-740049	-718652	-712748	-594104	-475346	-376339	-741869	-760367	-88754	-161443
FIBRE INTERMEDIATES																
ACRYLONITRILE	157879	119560	139703	108153	158264	170807	180362	240984	172879	197451	126697	112897	173807	294757	221754	286790
CAPROLACTUM	44577	45291	51896	49734	58360	75872	66420	99207	67791	74929	51424	50881	60036	93828	22695	36522
DIMETHYL TEREPHTHALATE	2215	1399	1760	1050	2256	1520	1454	1135	1807	1198	1766	982	1973	1567	1876	2104
MONO EHYLENE GLYCOL	1039343	487608	1173186	558906	929015	494196	342131	196267	636273	230788	295792	120602	846583	422841	1461163	629352
PURIFIED TEREPHTHALIC ACID	523865	250874	152588	71719	309172	148867	407334	243370	806533	431506	490482	201234	1416745	813751	1592028	1160632
TOTAL	1767879	904732	1519133	789562	1457067	891262	997701	780963	1685283	935872	966161	486596	2499144	1626744	3299516	2115400
POLYMERS																
LOW DENSITY POLYETHYLENE	350754	287016	364592	302804	356334	310562	176921	177676	212350	184375	216845	172688	173244	202257	205767	231829
HIGH DENSITY POLYTHYLENE	805629	701087	852315	706549	787275	685115	444849	507485	301072	318409	411808	400878	629138	670315	1558382	1595488
POLYESTYRENE	-43776	-24937	-38168	-21258	-17024	-3228	-7678	5767	4760	19620	33414	54073	21170	68976	73494	131354
POLYPROPYLENE (INC. CO-POLYMER)	-34496	71141	206954	229204	386996	364439	136775	240390	455570	467274	-7313	184674	590289	743730	1349520	1454686
EXPANDABLE POLYESTYRENE	-781	-1012	82	6	-475	-528	-1823	-2207	-1708	-1578	3790	3413	4567	5430	-581	-422
POLY VINYL CHLORIDE	1498257	875551	1696368	1009708	1839634	1117723	2035437	1352333	926316	586073	402324	292513	457815	505244	589657	533335
LINEAR LOW DENSITY POLYTHYLENE	574190	445311	415860	339829	196160	172066	-231822	-152096	-83631	-30142	91992	65964	156659	142612	436238	398613
PVC COMPOUND	65906	45834	42131	32956	14345	11366	-7685	-2910	0	0	0	0	-12544	-13866	-9450	-10747
TOTAL	3215683	2399991	3540134	2599798	3563245	2657515	2544974	2126438	1814729	1544031	1152860	1174203	2020338	2324698	4203027	4334136
SYNTHETIC RUBBER (ELASTOMERS)																
STYRENE BUTADIENE RUBBER	141749	131645	122420	128013	92285	124919	76831	113415	57809	80821	112616	120313	133903	218464	129753	244803
POLY BUTADIENE RUBBER	68658	59202	79796	88122	87760	115297	91496	123004	77389	88032	91632	98438	87429	138961	132266	229778
ETHYL PROPYLENE DIMERS	36645	51877	40129	45416	42582	51339	50337	72103	43173	52145	40439	49297	47514	98225	53518	127434
ETHYL VINYL ACETATE	163990	160523	143110	139935	182447	183189	178154	201633	192672	211374	188539	210811	180623	380530	201276	397988
NITRILE BUTADIENE RUBBER	51537	43421	36000	44907	39883	62075	38012	71698	40460	58824	154687	48082	31374	69524	38339	99561
BUTYL RUBBER	90834	123594	100260	135262	111021	150342	120120	198869	89293	145286	64328	112498	64359	126599	47897	123553
TOTAL	553413	570262	521715	581655	555978	687161	554950	780722	500796	636482	652241	639439	545202	1032303	603049	1223117
SYNTHETIC DETERGENT INTERMEDIATES																
LINEAR ALKYL BENZENE	208741	169503	221652	172859	204980	162939	226788	209645	263833	236518	264466	214971	271322	325816	341560	520784
ETHYLENE OXIDE	-278	218	-481	203	-409	126	-700	-751	-819	-571	-936	-652	-985	1643	-1191	-337
TOTAL	208463	169721	221171	173062	204571	163065	226088	208894	263014	235947	263530	214319	270337	327459	340369	520447
PERFORMANCE PLASTICS																
ABS RESIN	89616	100253	102391	113728	97753	130785	118949	173009	104315	126235	98441	128880	111047	207862	114772	195089

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
NYLON-6	129968	192970	141154	204118	154592	265141	195974	391303	196168	304347	0	0	0	0	0	0
POLYMETHYL METHACRYLATE	11151	19860	18618	25358	26431	43861	25217	49924	24699	39939	28478	40206	21824	44512	29815	60228
STYRENE ACRYLONITRILE	8990	8602	7871	7849	8251	9948	8801	11051	9992	10741	13117	14419	19651	28058	21185	29586
POLYESTER CHIPS/PET CHIPS	-660900	-385839	-819255	-488225	-748230	-541712	-736275	-690632	-555117	-384264	-50371	-32930	-142019	-141117	-47038	-68747
POLYTETRAFLUOROETHYLENE(PTFE)	-3996	-17736	-6087	-27008	-6653	-34247	-9101	-61707	-8271	-53548	-7849	-55501	-11702	-98091	-8346	-89387
TOTAL	-425171	-81890	-555308	-164180	-467856	-126224	-396435	-127052	-228214	43450	81816	95074	-1199	41224	110388	126769
OLEFINS																
BUTADIENE	-128814	-66255	-104733	-95611	-100567	-70267	-135143	-112526	-174238	-103834	-166780	-72164	-144071	-89748	-112513	-77192
ETHYLENE	15931	10964	80890	57093	-97307	-64532	-132650	-90068	-87414	-36672	-62993	-29186	-49115	-34190	36258	55050
PROPYLENE	-11108	-587	-10069	-2573	-11932	-1722	-31221	-16261	1369	3417	-11340	-794	29469	26248	8738	7719
TOTAL	-123991	-55878	-33912	-41091	-209806	-136521	-299014	-218855	-260283	-137089	-241113	-102144	-163717	-97690	-67517	-14423
AROMATICS																
BENZENE	-914875	-371283	-789425	-366814	-1286263	-662342	-1628859	-809232	-1397324	-629973	-1488414	-551300	-1918756	-1385444	-1440565	-1149207
MIXED XYLENE	100	47	47	15	2006	922	-340	-235	-288	-158	-11	-37	-6	3	1950	1698
ORTHO-XYLENE	-199884	-90750	-128072	-60152	-169945	-78544	-202729	-107270	-160885	-90988	-284414	-116625	-217938	-136769	-70348	-58527
TOLUENE	338394	160451	386906	179337	410041	192082	424454	225991	456373	232555	584001	228566	482519	301498	569810	499544
PARAXYLENE	-52553	-8224	396023	227323	-937862	-498568	-1823013	-1279341	-1841818	-1076010	-2171472	-873193	-1656010	-1034792	-475127	-302486
TOTAL	-828818	-309759	-134521	-20291	-1982023	-1046450	-3230487	-1970087	-2943942	-1564574	-3360310	-1312589	-3310191	-2255504	-1414280	-1008978
OTHER PETRO-BASED CHEMICALS																
ETHYLENE DICHLORIDE	584194	101873	503971	86296	668473	101940	562496	136962	699576	162457	595469	141899	620053	376485	662784	261965
BUTANOL	62317	31218	55667	25045	52816	30016	48503	34687	58583	33201	42238	25766	28483	35083	38543	34355
OXO ALCOHOL	688	3782	1915	5982	1382	5642	-239	5871	1545	5064	2058	2334	2100	117	990	734
2-ETHYL HEXANOL	108349	65358	64812	35875	55493	37951	50932	41741	81610	56162	54842	37093	10377	14040	53911	61914
VINYL CHLORIDE MONOMER	349371	167169	344423	177368	484390	247256	457532	252910	511166	280807	479876	315305	581803	552774	537158	410625
EPICHLHYDRINE	43355	37610	48058	34508	55975	51370	64965	83221	61057	72154	55144	57868	66377	118624	66298	110730
ISO BUTYLENE	15825	10277	20050	14130	48702	36007	44558	40253	-7298	-1553	-4242	-1362	-18534	-12823	-14063	-12877
METAXYLENE	3018	2615	2603	2383	2074	1801	2928	3024	1875	1404	2693	1635	4706	3532	2992	4002
METHYL ISOBUTYL KETONE	27289	21838	21569	16600	33744	30392	31894	27772	27812	16720	30077	31063	35848	60161	30386	35519
PIB	8239	10122	13797	14501	12421	14253	11990	15301	10297	14018	6667	10010	12158	17135	8711	18073
POLYCARBONATE	133745	203159	134375	200911	154018	250839	187003	364667	172361	259696	174664	262214	207191	469391	221253	496753
PROPYLENE OXIDE	25552	25697	23064	21698	23446	23594	26800	30694	20160	20126	17361	22037	20504	32290	24821	34134
PROPYLENE GLYCOL	53514	46157	50474	38843	56216	47866	64801	66670	61438	48042	56278	51390	60469	124591	66639	98135
POLYVINYL ACETATE RESIN	-8050	-5474	-5724	-5098	-3510	-1463	-5797	-4728	-5470	-2812	-4357	-2487	-5076	-7021	-3845	-6622
UNSATURATED POLYSTER RESIN	18191	21543	23712	23703	35452	35539	28287	38324	33118	36041	32039	31168	26028	56042	30441	66629
ETHYL BENZENE	150	144	308	267	351	320	719	806	463	471	500	490	947	1247	666	1050
CELLULOSE ACETATE BUTYRATE	-4	-69	-5	-12	2	-8	-1	-15	12	18	10	-25	57	104	4	254
CELLULOSE ACETATE SHEET	1261	659	981	386	1287	776	1494	1043	1323	907	1286	957	1632	1593	1568	1634
CELLULOSE NITRATE SHEET	85	255	56	236	97	322	99	372	70	261	1239	507	519	353	132	265
MELAMINE MOULDING POWDER	3879	11420	2873	12232	-55	13246	-1298	15369	-6746	12277	-9808	8730	-18972	11561	-26492	11310
POLYACETAL RESIN	34900	33790	37496	37390	43531	43338	48483	58644	47339	52464	48421	55077	47242	68490	60185	117130
PHTHALIC ANHYDRIDE	39355	21740	50025	27607	92571	61126	118306	88521	145584	92063	117485	68219	88719	66170	73508	67505
STYRENE	716903	515870	724539	553395	784749	650813	811248	737428	872556	607553	720788	452338	847159	757652	1055388	976499
VINYL ACTATE MONOMER	139954	86872	150249	80874	163703	103973	163009	129228	159432	96717	136530	87016	174413	246556	209614	278827

PRODUCT	2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23	
	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL	QTY	VAL
(1)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
ISOPROPANOL	83890	44841	89877	50413	99460	63966	134832	93195	143653	75766	178494	155169	124346	100942	135135	111638
POLYOL	165140	216251	147308	192627	195114	242614	226175	307510	213930	253370	161679	168529	160525	311500	0	0
TOTAL	2611110	1674717	2506473	1648160	3061902	2093489	3079719	2569470	3305446	2193394	2897431	1982940	3079074	3406589	3236727	3180181
TOTAL IMPORT OF MAJOR PETRO-CHEMICALS	6363984	4784481	6839138	4987650	5441657	4568394	2737447	3431841	3424081	3293409	1937270	2801499	4197119	5645456	10222525	10315206

Source: DGCIS, Kolkata, M/o Commerce and Industry

Table 27: Top Five Export Destinations of selected Petrochemicals during 2022-23			
PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
ACRYLIC FIBRE	KENYA	6969.51	9958.94
	U ARAB EMTS	5223.93	10605.21
	SOUTH AFRICA	2103.98	7362.21
	ETHIOPIA	1937.48	2662.91
	TURKEY	1196.76	2242.67
	Product Total	17431.65	32831.94
NYLON FILAMENT YARN	U ARAB EMTS	1294.30	4259.55
	U S A	961.28	3657.69
	TURKEY	744.48	1952.51
	AUSTRALIA	652.63	2044.54
	BRAZIL	591.90	1872.58
	Product Total	4244.59	13786.87
NYLON INDUSTRIAL YARN/TYRE CORD	U S A	1897.08	4188.89
	SPAIN	693.61	1140.34
	MEXICO	445.37	800.04
	GERMANY	431.61	834.06
	U ARAB EMTS	404.72	967.66
	Product Total	3872.40	7930.98
POLYESTER FILAMENT YARN	TURKEY	179842.61	231720.97
	BRAZIL	55226.04	61916.30
	MOROCCO	28170.74	36837.06
	U S A	22971.17	37061.44
	ARGENTINA	16695.86	22596.60
	Product Total	302906.42	390132.37
POLYESTER STAPLE FIBRE	U S A	50757.29	55294.68
	NEPAL	38958.47	34428.53
	TURKEY	19509.64	18910.60
	BELGIUM	15999.81	15972.91
	SPAIN	9971.20	9838.13
	Product Total	135196.41	134444.84
POLYPROPYLENE FILAMENT YARN	U ARAB EMTS	208.18	279.58
	NEPAL	138.17	244.02
	MEXICO	87.48	141.80
	MALAYSIA	85.56	171.20
	NIGERIA	67.99	150.94
	Product Total	587.38	987.55
POLYPROPYLENE STAPLE FIBRE	U S A	8798.13	11433.06
	SAUDI ARAB	1745.74	2517.62
	SLOVENIA	672.05	781.63
	HUNGARY	235.13	274.92
	GERMANY	204.67	253.98
	Product Total	11655.73	15261.22
Elastomeric/Spandex Filament Yarn	TURKEY	1098.05	4632.93
	SRI LANKA DSR	354.36	2556.49
	BANGLADESH PR	190.41	928.67
	EGYPT A RP	139.83	572.97
	BRAZIL	135.75	540.32
	Product Total	1918.40	9231.38
ACRYLONITRILE	U ARAB EMTS	11998.39	15535.82
	BANGLADESH PR	5.12	10.16
	BELGIUM	1.50	13.45

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
	CHINA P RP	0.01	8.93
	FRANCE	0.00	0.01
	Product Total	12005.02	15568.37
CAPROLACTUM	U S A	27.75	67.85
	SPAIN	20.00	30.14
	INDONESIA	9.00	19.52
	MEXICO	5.00	12.68
	UGANDA	0.00	0.03
	Product Total	61.75	130.22
DIMETHYL TEREPHTHALATE	GERMANY	58.20	110.67
	JAPAN	0.15	0.91
	NEPAL	0.00	1.57
	TAIWAN	0.00	0.01
	OMAN	0.00	0.03
	Product Total	58.36	113.18
MONO EHYLENE GLYCOL	EGYPT A RP	16911.24	7740.31
	INDONESIA	8954.00	11345.33
	KOREA RP	5092.43	6875.70
	TAIWAN	4026.00	5446.94
	CHINA P RP	1146.53	1523.80
	Product Total	36130.20	32932.08
PURIFIED TEREPHTHALIC ACID	U S A	2370.06	6120.17
	U ARAB EMTS	1034.00	808.43
	SAUDI ARAB	528.02	428.70
	EGYPT A RP	336.01	296.86
	MEXICO	96.00	68.03
	Product Total	4364.08	7722.19
LOW DENSITY POLYETHYLENE	U ARAB EMTS	19870.06	16718.48
	EGYPT A RP	13981.72	24188.94
	TURKEY	6872.08	11308.87
	ALGERIA	5611.35	8854.08
	SAUDI ARAB	3679.48	5943.21
	Product Total	50014.69	67013.58
HIGH DENSITY POLYTHYLENE	NEPAL	18658.29	19782.69
	U ARAB EMTS	10179.26	12839.47
	VIETNAM SOC REP	7170.59	5986.09
	EGYPT A RP	5533.03	11533.66
	BANGLADESH PR	4866.03	4988.25
	Product Total	46407.20	55130.15
POLYSTYRENE	BANGLADESH PR	6970.52	6284.41
	EGYPT A RP	4224.51	5367.24
	NEPAL	2874.87	2171.65
	U ARAB EMTS	2578.55	2888.62
	TURKEY	2359.89	2417.66
	Product Total	19008.34	19129.58
POLYPROPYLENE (INC. CO-POLYMER)	CHINA P RP	73403.51	54644.18
	TURKEY	46620.99	45179.10
	VIETNAM SOC REP	33188.60	28291.25
	NEPAL	31783.86	30778.73
	BANGLADESH PR	23681.11	19339.64
	Product Total	208678.06	178232.91
	U ARAB EMTS	647.55	678.50

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
EXPANDABLE POLYSTYRENE	EGYPT A RP	550.00	898.94
	QATAR	378.00	507.17
	KUWAIT	376.00	382.09
	NEPAL	180.33	268.99
	Product Total	2131.88	2735.67
POLY VINYL CHLORIDE	NEPAL	232.91	189.33
	KENYA	158.70	157.21
	SRI LANKA DSR	112.83	133.51
	GHANA	106.57	320.70
	GERMANY	97.78	77.42
	Product Total	708.78	878.16
LINEAR LOW DENSITY POLYTHYLENE	KENYA	11181.40	10965.09
	U ARAB EMTS	4189.16	4147.11
	TANZANIA REP	2457.88	2283.86
	NIGERIA	2377.13	2292.17
	CHINA P RP	2297.13	1651.74
	Product Total	22502.69	21339.97
PVC COMPOUND	NIGERIA	4020.00	4460.20
	NEPAL	1392.05	1365.12
	KENYA	903.66	996.65
	BANGLADESH PR	756.70	1000.67
	U ARAB EMTS	540.94	690.71
	Product Total	7613.35	8513.35
STYRENE BUTADIENE RUBBER	U ARAB EMTS	4225.31	4130.92
	VIETNAM SOC REP	3900.45	4153.91
	BANGLADESH PR	3242.60	5345.62
	THAILAND	3108.39	3516.92
	EGYPT A RP	3077.43	2584.56
	Product Total	17554.18	19731.93
POLY BUTADIENE RUBBER	SRI LANKA DSR	1296.31	2207.08
	THAILAND	542.71	621.61
	CHINA P RP	267.75	286.24
	BANGLADESH PR	233.31	336.64
	BRAZIL	87.62	128.85
	Product Total	2427.69	3580.42
ETHYL PROPYLENE DIMERS	U ARAB EMTS	335.51	886.06
	BANGLADESH PR	193.68	177.38
	VIETNAM SOC REP	168.22	697.20
	U S A	70.78	527.68
	RUSSIA	56.98	178.72
	Product Total	825.17	2467.05
ETHYL VINYL ACETATE	CHINA P RP	2772.82	4412.12
	NEPAL	790.73	1468.18
	RUSSIA	537.25	1074.46
	U ARAB EMTS	381.02	964.15
	BANGLADESH PR	224.77	546.07
	Product Total	4706.59	8464.99
NITRILE BUTADIENE RUBBER	THAILAND	2875.17	1969.01
	SRI LANKA DSR	2072.95	1616.88
	MALAYSIA	1942.12	1725.48
	U S A	446.82	1435.17
	U ARAB EMTS	196.52	382.88

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
	Product Total	7533.58	7129.42
BUTYL RUBBER	U S A	5254.38	9278.01
	CHINA P RP	4797.59	8142.26
	INDONESIA	1520.67	2573.73
	BANGLADESH PR	1342.12	2647.26
	THAILAND	926.64	1512.79
	Product Total	13841.39	24154.04
LINEAR ALKYL BENZENE	U ARAB EMTS	500.77	239.84
	CHINA P RP	308.31	341.72
	YEMEN REPUBLIC	199.98	302.75
	NEPAL	62.77	88.89
	QATAR	16.93	44.22
	Product Total	1088.75	1017.41
ETHYLENE OXIDE	THAILAND	473.48	811.39
	MALAYSIA	430.19	475.52
	VIETNAM SOC REP	270.83	294.00
	INDONESIA	143.35	155.88
	BANGLADESH PR	23.23	50.64
	Product Total	1341.08	1787.44
ABS RESIN	CHINA P RP	89.17	205.52
	NEPAL	77.83	154.89
	POLAND	41.42	94.67
	U ARAB EMTS	41.07	80.51
	KENYA	29.10	39.30
	Product Total	278.59	574.89
POLYMETHYL METHACRYLATE	NEPAL	2029.50	1954.43
	BANGLADESH PR	273.20	416.36
	GERMANY	227.94	855.51
	TAIWAN	144.45	138.74
	AUSTRALIA	112.50	119.36
	Product Total	2787.59	3484.40
STYRENE ACRYLONITRILE	NIGERIA	2208.80	2073.96
	ETHIOPIA	200.00	225.13
	U ARAB EMTS	65.00	138.94
	SRI LANKA DSR	44.66	43.97
	KOREA RP	39.30	36.35
	Product Total	2557.76	2518.35
POLYESTER CHIPS/PET CHIPS	BAHARAIN IS	31483.00	29778.33
	POLAND	27430.20	26283.60
	U ARAB EMTS	25587.03	24340.68
	MEXICO	19838.20	19166.17
	EGYPT A RP	9866.00	9638.39
	Product Total	114204.43	109207.17
POLYTETRAFLUOROETHYLENE(PTFE)	U S A	4245.97	42192.20
	GERMANY	3298.55	31757.16
	ITALY	1498.35	13469.91
	U K	569.60	6536.52
	TURKEY	497.92	4714.01
	Product Total	10110.39	98669.80
BUTADIENE	MALAYSIA	51988.49	36117.76
	KOREA RP	37206.11	26425.81
	INDONESIA	15174.48	9662.10

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
	TAIWAN	11169.46	8651.63
	CHINA P RP	2959.57	1614.12
	Product Total	118498.11	82471.41
ETHYLENE	INDONESIA	23625.00	16695.72
	QATAR	13650.00	11681.12
	BANGLADESH PR	3150.00	2413.63
	TANZANIA REP	6.80	42.95
	KOREA RP	0.10	2.55
	Product Total	40431.90	30835.98
BENZENE	SAUDI ARAB	931006.06	729685.19
	KUWAIT	140516.39	105978.25
	BELGIUM	97202.68	90039.30
	CHINA P RP	55123.37	39755.56
	SINGAPORE	43861.04	33796.76
	Product Total	1267709.55	999255.05
MIXED XYLENE	GABON	77.40	78.65
	BAHARAIN IS	14.00	14.92
	KENYA	11.43	13.97
	QATAR	8.94	10.00
	CONGO D. REP.	3.61	4.56
	Product Total	115.39	122.10
ORTHO-XYLENE	BELGIUM	37979.44	35518.44
	ITALY	32099.78	30020.95
	TAIWAN	20809.73	15972.11
	NETHERLAND	18047.39	17607.12
	CHINA P RP	10120.98	6784.74
	Product Total	119057.32	105903.34
TOLUENE	JORDAN	1883.15	1879.27
	KENYA	1822.63	2003.77
	U S A	1498.41	1771.00
	EGYPT A RP	1474.55	1324.09
	SOUTH AFRICA	1442.04	1303.65
	Product Total	8120.78	8281.78
PARAXYLENE	MALAYSIA	359566.09	292810.22
	CHINA P RP	173425.25	141763.72
	INDONESIA	169812.04	126868.62
	U S A	132771.63	102507.83
	PORTUGAL	74395.13	58395.38
	Product Total	909970.15	722345.78
ETHYLENE DICHLORIDE	EGYPT A RP	250.00	194.05
	SAUDI ARAB	80.00	64.16
	U ARAB EMTS	50.00	23.33
	THAILAND	43.74	32.12
	KUWAIT	19.60	8.11
	Product Total	443.34	321.77
BUTANOL	U ARAB EMTS	251.65	235.69
	NEPAL	100.77	115.67
	KENYA	49.18	63.20
	ARGENTINA	48.84	66.10
	BELGIUM	39.61	94.35
	Product Total	490.05	575.01
	NETHERLAND	1063.16	2008.97

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
OXO ALCOHOL	U S A	127.04	1668.44
	BANGLADESH PR	59.33	17.28
	JAPAN	27.57	60.60
	GERMANY	3.89	1362.96
	Product Total	1280.98	5118.25
2-ETHYL HEXANOL	U ARAB EMTS	506.01	648.69
	IRAN	149.59	255.64
	BANGLADESH PR	33.14	48.40
	QATAR	24.48	38.66
	NEPAL	13.09	18.64
	Product Total	726.31	1010.03
VINYL CHLORIDE MONOMER	NETHERLAND	25.00	48.41
	EGYPT A RP	0.26	2.96
	RUSSIA	0.08	0.44
	NEPAL	0.05	0.13
	Product Total	25.39	51.94
EPICHLHYDRINE	BELGIUM	2566.55	3294.83
	U S A	1210.46	3961.49
	GERMANY	823.85	1715.97
	NETHERLAND	305.93	672.03
	ITALY	149.90	283.39
	Product Total	5056.69	9927.71
ISO BUTYLENE	SAUDI ARAB	8300.00	7396.34
	THAILAND	2100.00	1944.66
	MALAYSIA	2100.00	1960.61
	OMAN	1575.00	1655.96
	NEPAL	0.70	0.29
	Product Total	14075.70	12957.85
METAXYLENE	NEPAL	29.76	31.99
	DENMARK	6.00	645.80
	BELGIUM	4.76	28.00
	SPAIN	0.86	5.07
	OMAN	0.00	0.28
	Product Total	41.38	711.14
METHYL ISOBUTYL KETONE	U ARAB EMTS	422.10	554.15
	NEPAL	92.03	128.21
	BANGLADESH PR	51.66	74.50
	NIGERIA	50.16	73.43
	SAUDI ARAB	48.00	72.20
	Product Total	663.95	902.47
PIB	CHINA P RP	5393.57	6504.49
	SINGAPORE	2088.68	2574.54
	U ARAB EMTS	660.25	1221.03
	THAILAND	595.24	807.17
	INDONESIA	511.74	673.19
	Product Total	9249.48	11780.42
POLYCARBONATE	KOREA RP	835.51	1075.17
	BELGIUM	334.73	492.47
	ITALY	294.02	411.46
	GERMANY	205.33	274.95
	MEXICO	193.00	303.68
	Product Total	1862.58	2557.72

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
PROPYLENE GLYCOL	U ARAB EMTS	728.88	861.87
	IRAN	619.20	1025.46
	U S A	503.79	551.88
	NEPAL	233.19	479.73
	IRELAND	218.42	2007.92
	Product Total	2303.48	4926.86
POLYVINYL ACETATE RESIN	U S A	3151.84	7640.16
	TURKEY	1182.76	2685.40
	BELGIUM	639.00	1329.05
	GHANA	588.10	643.31
	BRAZIL	492.45	1099.29
	Product Total	6054.14	13397.21
UNSATURATED POLYSTER RESIN	QATAR	2429.01	4051.46
	SPAIN	2045.78	2623.40
	NEPAL	1989.28	2524.77
	BANGLADESH PR	1936.54	3559.41
	OMAN	1895.25	2553.80
	Product Total	10295.86	15312.84
ETHYL BENZENE	RUSSIA	0.00	0.10
	SRI LANKA DSR	0.00	0.00
	Product Total	0.00	0.10
CELLULOSE ACETATE SHEET	THAILAND	3.93	11.46
	NEPAL	0.20	1.53
	U ARAB EMTS	0.18	0.42
	MALDIVES	0.16	0.38
	BHUTAN	0.03	0.53
	Product Total	4.49	14.31
CELLULOSE NITRATE SHEET	KENYA	1.50	7.33
	TANZANIA REP	0.24	1.15
	CAMEROON	0.20	1.47
	AUSTRALIA	0.01	0.07
	CANADA	0.00	0.02
	Product Total	1.94	10.04
MELAMINE MOULDING POWDER	NEPAL	33385.62	7050.82
	GABON	1985.30	1054.92
	GHANA	1737.55	1340.03
	COTE D' IVOIRE	1178.00	914.93
	U S A	852.50	1732.63
	Product Total	39138.97	12093.32
POLYACETAL RESIN	U ARAB EMTS	469.19	1071.40
	THAILAND	241.10	683.92
	MALAYSIA	231.05	697.11
	INDONESIA	225.20	695.67
	CANADA	112.25	384.69
	Product Total	1278.79	3532.79
PHTHALIC ANHYDRIDE	U ARAB EMTS	7301.00	7234.88
	EGYPT A RP	5976.00	5881.16
	ALGERIA	1824.00	1723.67
	SAUDI ARAB	1801.00	1847.85
	TUNISIA	1741.00	1832.60
	Product Total	18643.00	18520.16
	U ARAB EMTS	30078.18	29941.65

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
STYRENE	IRAN	4782.43	4776.77
	SRI LANKA DSR	1116.79	1225.91
	NIGERIA	760.00	981.97
	KENYA	649.90	836.29
	Product Total	37387.30	37762.59
VINYL ACTATE MONOMER	U ARAB EMTS	784.57	963.85
	ETHIOPIA	409.40	460.63
	SRI LANKA DSR	346.35	520.82
	NEPAL	336.97	514.91
	KENYA	149.45	156.61
	Product Total	2026.74	2616.82
ISOPROPANOL	U ARAB EMTS	6481.38	5798.23
	JORDAN	555.42	628.87
	IRAN	498.92	597.83
	BANGLADESH PR	431.52	634.74
	NEPAL	347.77	482.75
	Product Total	8315.02	8142.43
Source: DGCIS, Kolkata, M/o Commerce and Industry			

Table 28: Top Five Import Destinations of selected Petrochemicals during 2022-23

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
ACRYLIC FIBRE	THAILAND	9938.21	19036.09
	JAPAN	3922.64	8542.04
	CHINA P RP	3813.86	8616.45
	NEPAL	3014.12	8405.89
	TURKEY	1949.35	4363.45
	Product Total	22638.18	48963.92
NYLON FILAMENT YARN	CHINA P RP	34889.00	70387.44
	VIETNAM SOC REP	1204.51	2521.59
	TAIWAN	996.85	3188.76
	MEXICO	314.24	298.42
	SRI LANKA DSR	272.52	1359.03
	Product Total	37677.13	77755.24
NYLON INDUSTRIAL YARN/TYRE CORD	CHINA P RP	7145.29	15859.73
	TURKEY	317.69	750.55
	U K	311.26	986.35
	KOREA RP	207.19	180.93
	U S A	156.43	1433.78
	Product Total	8137.86	19211.34
POLYESTER FILAMENT YARN	CHINA P RP	416628.77	442385.85
	INDONESIA	22146.91	31605.48
	VIETNAM SOC REP	13658.93	16167.24
	TAIWAN	8970.16	9596.01
	KOREA RP	7158.71	11826.47
	Product Total	468563.48	511581.05
POLYESTER STAPLE FIBRE	CHINA P RP	44827.22	45604.20
	THAILAND	16583.51	14307.07
	KOREA RP	9901.91	11288.68
	INDONESIA	7787.37	6900.42
	MALAYSIA	5099.36	4944.66
	Product Total	84199.36	83045.02
POLYPROPYLENE FILAMENT YARN	SAUDI ARAB	91.36	143.97
	TURKEY	28.48	52.07
	CHINA P RP	25.98	49.28
	PORTUGAL	13.36	57.40
	U S A	4.03	745.14
	Product Total	163.20	1047.87
POLYPROPYLENE STAPLE FIBRE	CHINA P RP	2348.51	3010.42
	SAUDI ARAB	2228.50	2747.56
	KOREA RP	79.00	107.28
	SOUTH AFRICA	14.04	19.20
	TURKEY	10.80	36.26
	Product Total	4680.85	5920.71
Elastomeric/Spandex Filament Yarn	CHINA P RP	2446.47	15053.25
	KOREA RP	2395.37	13749.41
	VIETNAM SOC REP	1297.51	8133.23
	SINGAPORE	1076.17	10418.99
	THAILAND	912.66	7554.65
	Product Total	8128.18	54909.53

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
ACRYLONITRILE	CHINA P RP	77380.53	101431.89
	TAIWAN	70032.19	86414.58
	KOREA RP	59620.35	80993.98
	NETHERLAND	11024.29	13678.51
	BRAZIL	6704.10	8041.35
	Product Total	224761.46	290560.31
CAPROLACTUM	RUSSIA	6875.00	10664.37
	KOREA RP	6256.00	11274.33
	TURKEY	4970.00	7609.98
	CHINA P RP	2624.00	3706.46
	THAILAND	1792.00	3005.43
	Product Total	22517.00	36260.57
DIMETHYL TEREPHTHALATE	TURKEY	699.00	790.32
	KOREA RP	666.00	837.23
	GERMANY	288.00	293.82
	U ARAB EMTS	140.00	149.12
	CANADA	80.15	64.44
	Product Total	1873.16	2134.93
MONO EHYLENE GLYCOL	KUWAIT	776565.70	338203.02
	SAUDI ARAB	405689.51	180001.25
	SINGAPORE	121762.09	56441.72
	OMAN	54694.50	26076.67
	U ARAB EMTS	40213.86	19117.18
	Product Total	1398925.66	619839.84
PURIFIED TEREPHTHALIC ACID	CHINA P RP	925400.83	675869.58
	TAIWAN	333962.39	246075.47
	THAILAND	315979.40	232269.38
	MALAYSIA	11592.00	7805.77
	INDONESIA	8980.00	6194.30
	Product Total	1595914.62	1168214.49
LOW DENSITY POLYETHYLENE	U S A	50721.77	52120.44
	SAUDI ARAB	45008.09	43409.58
	U ARAB EMTS	42230.42	37479.69
	BELGIUM	23148.67	38949.41
	THAILAND	22755.50	28874.97
	Product Total	183864.44	200834.09
HIGH DENSITY POLYTHYLENE	U ARAB EMTS	656764.91	650107.37
	SAUDI ARAB	240502.98	230604.12
	QATAR	126636.02	131717.75
	U S A	121085.17	122023.05
	OMAN	118436.86	108578.47
	Product Total	1263425.94	1243030.75
POLYESTYRENE	KOREA RP	25263.45	45773.09
	CHINA P RP	24662.24	31078.43
	TAIWAN	19211.00	26326.56
	SINGAPORE	9889.67	13786.48
	THAILAND	9772.00	13046.26
	Product Total	88798.34	130010.82
	SAUDI ARAB	438464.52	401854.62

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
POLYPROPYLENE (INC. CO-POLYMER)	U ARAB EMTS	435427.95	397899.77
	SINGAPORE	314254.05	363010.14
	CHINA P RP	101941.53	117810.43
	OMAN	97823.21	87542.79
	Product Total	1387911.26	1368117.76
EXPANDABLE POLYSTYRENE	TAIWAN	881.54	1274.21
	SAUDI ARAB	321.75	258.26
	U S A	166.38	171.06
	GERMANY	116.06	375.08
	CHINA P RP	90.97	127.15
	Product Total	1576.70	2205.75
POLY VINYL CHLORIDE	CHINA P RP	177845.61	168380.15
	THAILAND	114148.31	101920.03
	JAPAN	71184.65	64163.52
	TAIWAN	63983.47	61155.26
	KOREA RP	47020.97	41117.32
	Product Total	474182.99	436736.29
LINEAR LOW DENSITY POLYTHYLENE	OMAN	104325.56	95156.87
	U ARAB EMTS	79661.88	70767.83
	SAUDI ARAB	71346.38	66970.16
	QATAR	46088.34	43104.45
	SINGAPORE	42805.68	41438.94
	Product Total	344227.83	317438.26
PVC COMPOUND	CHINA P RP	25.00	18.21
	SINGAPORE	1.20	5.06
	U S A	0.13	1.21
	HONG KONG	0.06	4.95
	U K	0.01	0.02
	Product Total	26.39	29.45
STYRENE BUTADIENE RUBBER	KOREA RP	48725.62	80741.37
	POLAND	33580.46	56611.75
	CHINA P RP	12622.63	22075.42
	SINGAPORE	9340.91	20878.32
	THAILAND	8915.52	18904.07
	Product Total	113185.14	199210.92
POLY BUTADIENE RUBBER	KOREA RP	37062.22	67569.16
	SAUDI ARAB	20619.52	32088.53
	RUSSIA	14339.58	24299.86
	GERMANY	14285.47	25740.99
	U ARAB EMTS	12922.80	17186.42
	Product Total	99229.59	166884.95
ETHYL PROPYLENE DIMERS	KOREA RP	18313.37	44334.04
	SAUDI ARAB	9207.12	18703.57
	JAPAN	8507.27	21666.71
	U S A	7527.87	19725.88
	MALAYSIA	2840.52	4606.22
	Product Total	46396.15	109036.43
	KOREA RP	97784.90	196247.67
	SAUDI ARAB	62277.95	102977.83

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
ETHYL VINYL ACETATE	JAPAN	7627.26	19166.77
	THAILAND	7390.00	14189.33
	BELGIUM	6638.82	13313.45
	Product Total	181718.92	345895.05
NITRILE BUTADIENE RUBBER	KOREA RP	20660.07	42333.84
	CHINA P RP	6434.27	11640.61
	JAPAN	5142.10	13273.57
	TAIWAN	4165.32	9762.71
	THAILAND	2515.13	6336.31
	Product Total	38916.89	83347.03
BUTYL RUBBER	SINGAPORE	40329.39	96189.74
	CHINA P RP	5882.05	12444.30
	U K	3613.58	9947.37
	RUSSIA	3397.23	5529.67
	JAPAN	3173.33	8275.44
	Product Total	56395.57	132386.52
LINEAR ALKYL BENZENE	SAUDI ARAB	159716.22	259361.75
	THAILAND	40235.40	60731.99
	SPAIN	35189.60	52166.63
	QATAR	34777.26	49154.85
	IRAN	28460.00	38494.07
	Product Total	298378.48	459909.30
ETHYLENE OXIDE	CHINA P RP	178.93	1083.41
	U S A	17.30	573.79
	ARGENTINA	0.45	14.62
	GERMANY	0.01	1.20
	U K	0.00	1.09
	Product Total	196.69	1674.11
ABS RESIN	KOREA RP	70218.41	125461.26
	TAIWAN	24710.24	35578.43
	THAILAND	6030.15	10339.31
	SAUDI ARAB	5049.89	7244.57
	MALAYSIA	3943.92	6549.84
	Product Total	109952.60	185173.41
POLYMETHYL METHACRYLATE	KOREA RP	14815.47	32128.81
	SAUDI ARAB	6723.14	9328.75
	SINGAPORE	6718.65	11649.04
	CHINA P RP	1352.94	2251.05
	NETHERLAND	920.39	2862.59
	Product Total	30530.59	58220.23
STYRENE ACRYLONITRILE	KOREA RP	7059.92	10014.54
	JAPAN	4454.56	6032.83
	THAILAND	3770.60	4346.54
	CHINA P RP	2520.18	3362.91
	SAUDI ARAB	2137.44	1763.01
	Product Total	19942.70	25519.83
POLYESTER CHIPS/PET CHIPS	CHINA P RP	34538.18	33004.05
	TAIWAN	13945.91	13135.39
	U S A	11370.13	5147.65

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
	VIETNAM SOC REP	7859.80	8484.77
	BANGLADESH PR	6495.17	4384.03
	Product Total	74209.18	64155.89
POLYTETRAFLUOROETHYLENE(PTFE)	CHINA P RP	1545.62	11428.12
	RUSSIA	673.68	3617.54
	KOREA RP	296.71	1687.47
	TURKEY	287.58	1619.29
	U S A	282.17	4140.24
	Product Total	3085.76	22492.65
BUTADIENE	SAUDI ARAB	6759.30	7706.96
	SINGAPORE	1970.93	1319.58
	CHINA P RP	69.00	160.71
	GERMANY	3.96	44.91
	Product Total	8803.19	9232.16
ETHYLENE	U ARAB EMTS	34411.39	36169.03
	TAIWAN	15931.87	17053.28
	SINGAPORE	13906.45	14441.08
	MALAYSIA	6655.07	6464.34
	KOREA RP	3509.89	3771.76
	Product Total	74414.67	77899.49
PROPYLENE	SAUDI ARAB	6299.53	4752.69
	THAILAND	2332.49	2554.82
	CHINA P RP	68.46	303.30
	JAPAN	24.00	70.12
	ITALY	10.94	28.80
	Product Total	8735.42	7709.74
BENZENE	MALAYSIA	6066.95	4185.61
	GREECE	5005.80	3527.32
	GERMANY	0.11	5.80
	U S A	0.02	12.74
	CHINA P RP	0.02	28.66
	Product Total	11072.91	7760.13
MIXED XYLENE	TAIWAN	1902.35	1643.35
	U ARAB EMTS	140.54	160.76
	KOREA RP	27.14	37.53
	EGYPT A RP	6.13	6.63
	JAPAN	0.27	7.42
	Product Total	2076.42	1855.68
ORTHO-XYLENE	SINGAPORE	22910.51	21259.42
	TAIWAN	7644.75	7621.66
	THAILAND	6851.21	6830.42
	MALAYSIA	4098.25	4512.03
	CHINA P RP	2929.07	2736.64
	Product Total	44433.79	42960.18
TOLUENE	KOREA RP	220024.44	194466.12
	THAILAND	104139.14	93432.79
	CHINA P RP	95284.10	89027.46
	U ARAB EMTS	41335.86	36154.26
	MALAYSIA	34769.59	31101.80

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
	Product Total	495553.13	444182.43
PARAXYLENE	JAPAN	206727.70	186779.40
	SAUDI ARAB	102631.77	94142.40
	SINGAPORE	86280.19	81024.71
	OMAN	78811.72	69385.99
	KUWAIT	69387.00	64527.16
	Product Total	543838.39	495859.64
ETHYLENE DICHLORIDE	SAUDI ARAB	230375.04	80981.21
	U S A	187603.24	80056.20
	QATAR	119382.03	48398.24
	INDONESIA	30056.81	11722.04
	TAIWAN	22999.03	11532.47
	Product Total	590416.14	232690.16
BUTANOL	MALAYSIA	13469.30	11838.33
	SAUDI ARAB	7434.95	5479.15
	TAIWAN	6962.48	6089.32
	SOUTH AFRICA	6940.02	6834.20
	U S A	3153.20	3478.33
	Product Total	37959.95	33719.33
OXO ALCOHOL	THAILAND	965.09	3387.90
	SINGAPORE	475.68	1508.84
	INDONESIA	392.10	1336.97
	MALAYSIA	253.87	858.01
	CHINA P RP	102.68	493.61
	Product Total	2189.43	7585.34
2-ETHYL HEXANOL	TAIWAN	15805.34	18405.33
	MALAYSIA	13855.85	16924.29
	KOREA RP	10223.82	11662.68
	CHINA P RP	9602.26	11015.08
	U S A	2973.14	2743.32
	Product Total	52460.41	60750.71
VINYL CHLORIDE MONOMER	QATAR	327473.98	245497.87
	JAPAN	94483.01	75268.38
	INDONESIA	32401.98	25407.64
	FRANCE	31213.34	23746.07
	CHINA P RP	19140.72	14270.31
	Product Total	504713.03	384190.27
EPICHLHYDRINE	THAILAND	52024.33	85408.21
	CHINA P RP	9419.19	18275.60
	KOREA RP	5244.73	8309.18
	TAIWAN	3156.64	5683.15
	SAUDI ARAB	1007.92	2088.90
	Product Total	70852.80	119765.04
ISO BUTYLENE	CHINA P RP	12.86	52.11
	U S A	0.24	27.89
	POLAND	0.02	0.33
	PHILIPPINES	0.00	0.11
	JAPAN	0.00	0.06
	Product Total	13.12	80.50

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
METAXYLENE	JAPAN	1758.63	3082.89
	U S A	1274.01	1627.93
	GERMANY	0.04	2.15
	Product Total	3032.68	4712.97
METHYL ISOBUTYL KETONE	KOREA RP	24581.15	29596.90
	SOUTH AFRICA	6314.21	6757.37
	JAPAN	163.50	196.12
	SPAIN	76.24	81.33
	TAIWAN	26.40	28.17
	Product Total	31161.50	36659.89
PIB	KOREA RP	13775.83	21602.33
	MALAYSIA	2374.56	4082.01
	U ARAB EMTS	1919.48	2072.96
	FRANCE	701.01	1704.62
	JAPAN	308.62	1052.88
	Product Total	19079.50	30514.79
POLYCARBONATE	THAILAND	94785.58	198980.50
	KOREA RP	49718.81	117178.44
	SAUDI ARAB	20527.39	38012.34
	SPAIN	14827.25	38003.10
	CHINA P RP	12306.24	29863.85
	Product Total	192165.27	422038.23
PROPYLENE OXIDE	SAUDI ARAB	10989.78	13996.78
	SINGAPORE	7231.30	9476.34
	CHINA P RP	4036.94	6373.93
	THAILAND	1329.53	2536.58
	TAIWAN	944.53	1301.34
	Product Total	24532.08	33684.98
PROPYLENE GLYCOL	SINGAPORE	21645.49	32921.53
	SAUDI ARAB	18654.42	24828.75
	CHINA P RP	12757.97	18943.03
	THAILAND	7676.39	13500.36
	KOREA RP	5942.54	10329.28
	Product Total	66676.80	100522.94
POLYVINYL ACETATE RESIN	GERMANY	3053.95	5817.48
	CHINA P RP	1120.80	2888.37
	BELGIUM	470.10	1023.44
	NETHERLAND	384.38	786.29
	INDONESIA	110.85	177.81
	Product Total	5140.08	10693.39
UNSATURATED POLYSTER RESIN	CHINA P RP	30858.03	51461.03
	TAIWAN	10192.93	20914.99
	MALAYSIA	4923.86	11653.48
	KOREA RP	3086.22	8867.84
	GERMANY	1138.88	6964.94
	Product Total	50199.93	99862.28
ETHYL BENZENE	CHINA P RP	314.26	483.91
	U S A	273.30	410.56
	NETHERLAND	60.24	125.04

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
	KOREA RP	18.21	26.42
	U K	0.30	3.07
	Product Total	666.30	1049.00
CELLULOSE ACETATE BUTYRATE	U S A	2.99	248.91
	CHINA P RP	0.60	4.80
	Product Total	2.99	248.91
CELLULOSE ACETATE SHEET	CHINA P RP	851.25	1093.85
	ITALY	666.61	342.91
	HONG KONG	46.84	100.71
	TAIWAN	6.83	45.91
	U S A	0.18	66.12
	Product Total	1571.70	1649.50
CELLULOSE NITRATE SHEET	CHINA P RP	134.30	273.49
	NETHERLAND	0.19	2.01
	U K	0.00	0.19
	GERMANY	0.00	0.01
	U S A	0.00	0.01
	Product Total	134.49	275.70
MELAMINE MOULDING POWDER	CHINA P RP	6458.22	9052.81
	THAILAND	4871.94	7892.32
	JAPAN	865.10	1778.81
	TAIWAN	844.64	1659.20
	INDONESIA	680.90	1965.97
	Product Total	13720.79	22349.11
POLYACETAL RESIN	MALAYSIA	16779.35	30848.45
	KOREA RP	15284.97	33050.07
	THAILAND	10895.00	22138.76
	U S A	5287.70	9793.94
	CHINA P RP	2679.40	4902.99
	Product Total	50926.42	100734.20
PHTHALIC ANHYDRIDE	TAIWAN	29691.00	28608.98
	CHINA P RP	24218.09	20745.30
	KOREA RP	18588.00	18358.83
	THAILAND	9454.10	9177.21
	JAPAN	5640.02	5379.24
	Product Total	87591.21	82269.56
STYRENE	SINGAPORE	399556.67	339123.69
	KUWAIT	217485.35	197832.84
	SAUDI ARAB	178047.13	166306.96
	KOREA RP	140259.23	143071.39
	CHINA P RP	75135.84	85958.48
	Product Total	1010484.23	932293.35
VINYL ACTATE MONOMER	SINGAPORE	107589.92	148864.76
	SAUDI ARAB	70845.98	88707.29
	CHINA P RP	25410.32	33730.95
	KOREA RP	6335.56	8860.95
	TAIWAN	1538.96	1393.21
	Product Total	211720.73	281557.16
	CHINA P RP	79001.65	65294.20

PRODUCT	COUNTRY	QUANTITY (MT)	VALUE (RS. LAKHS)
(1)	(2)	(3)	(4)
ISOPROPANOL	TAIWAN	24670.60	21731.79
	KOREA RP	15833.82	12924.26
	U S A	14666.08	12420.65
	SOUTH AFRICA	6888.00	5604.81
	Product Total	141060.15	117975.70

Source: DGCIS, Kolkata, M/o Commerce and Industry

Table 29: Exchange Rates of Indian Rupee vis-a-vis US\$

MONTH	RS./US\$
(1)	(2)
March 2023	82.29
February 2023	82.61
January 2023	81.90
December 2022	82.46
November 2022	81.81
October 2022	82.34
September 2022	80.23
August 2022	79.56
July 2022	79.60
Jun 2022	78.07
May 2022	77.32
April 2022	76.17
March 2022	76.24
February 2022	75.00
January 2022	74.44
December 2021	75.37
November 2021	74.50
October 2021	74.92
September 2021	73.56
August 2021	74.18
July 2021	74.53
June 2021	73.56
May 2021	73.27
April 2021	74.47
March 2021	72.79
February 2021	72.76
January 2021	73.11
December 2020	73.59
November 2020	74.22
October 2020	73.46
September 2020	73.48
August 2020	74.67
July 2020	74.99
June 2020	75.73
May 2020	75.66
April 2020	76.24

Note: Worked out on the basis of average daily exchange rates, as notified by RBI.

Source: 1. <https://www.rbi.org.in/scripts/ReferenceRateArchive.aspx>

2. <https://www.fbil.org.in>

Table 30: World Exports of Chemicals by top 10 countries - 2022

Trade value in Million US\$													
Export			Rank										World Export
			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	
HS Code	28	Country	China	USA	Germany	Rep. of Korea	Chile	Japan	Australia	Netherlands	Canada	France	
		Trade Value	39407	16838	15648	15643	11357	10342	7216	7066	5523	5473	214357
	29	Country	China	USA	Ireland	Germany	Switzerland	Rep. of Korea	Netherlands	India	Belgium	Japan	
		Trade Value	101887	51063	46390	34788	30960	24724	24129	21877	17817	17145	502470
	30	Country	Germany	Switzerland	USA	Belgium	Ireland	Italy	France	Netherlands	Spain	United Kingdom	
		Trade Value	126671	98031	83493	76203	75564	47643	37530	28574	28098	27852	814011
	31	Country	Canada	China	USA	Morocco	Germany	Netherlands	Qatar	Egypt	Belgium	Israel	
		Trade Value	13717	11380	8472	7688	4688	4002	3577	3533	3354	3075	97926
	32	Country	Germany	China	USA	Netherlands	Japan	Italy	India	Spain	France	United Kingdom	
		Trade Value	13505	10522	8643	4990	4540	3814	3608	3556	3482	3401	90119
	38	Country	China	USA	Germany	Netherlands	France	Japan	Belgium	Italy	Rep. of Korea	Indonesia	
		Trade Value	47496	41189	36203	22648	14973	14257	9349	9237	8908	8534	319157
	39	Country	China	USA	Germany	Rep. of Korea	Netherlands	Italy	Japan	France	Belgium	Other Asia, nes	
		Trade Value	143529	83283	73482	41158	32600	27026	26882	25391	24129	22890	771148
	4002	Country	Rep. of Korea	Thailand	USA	Japan	Viet Nam	Germany	China	Other Asia, nes	France	Singapore	
		Trade Value	3113	3014	2938	2431	2157	1849	1722	1235	986	985	26510
	54	Country	China	Other Asia, nes	Rep. of Korea	Italy	India	Türkiye	Japan	USA	Viet Nam	Germany	
		Trade Value	29584	2573	2508	2062	2061	1883	1855	1633	1554	1412	58637
	55	Country	China	USA	Indonesia	Türkiye	India	Rep. of Korea	Thailand	Austria	Germany	Italy	
		Trade Value	14513	2320	2103	1946	1887	1491	1389	1298	1297	1063	38977
All Chemicals@		Country	China	Germany	USA	Belgium	Switzerland	Ireland	Netherlands	Rep. of Korea	France	Italy	
		Trade Value	414045.8186	309541	299873	141077	139883	130923	126270	107389	104834	103228	2933311
All Chemicals excluding Pharmaceuticals		Country	China	USA	Germany	Rep. of Korea	Netherlands	Japan	France	Belgium	Italy	Ireland	
		Trade Value	400040.9222	216380	182871	100757	97696	78658	67305	64873	55585	55359	2119300

@-Includes all products covered under the HS code 28, 29, 30, 31, 32, 38, 39, 4002, 54 and

Chapter 28: Inorganic Chemicals; Organic or Inorganic Compounds of Precious Metals, of Rare-Earth Metals, of Radioactive Elements or of Isotopes;

Chapter 29: Organic Chemicals; **Chapter 30:** Pharmaceutical products; **Chapter 31:** Fertilizers ;

Chapter 32: Tanning or Dyeing Extracts; Tannins and their Derivatives; Dyes, Pigments and Other Colouring Matter; Paints and Varnishes; Putty and other Mastics Inks;

Chapter 38: Miscellaneous Chemical Products; **Chapter 39:** Plastics and articles thereof;

4002: Synthetic rubber and factice derived from oils, in primary forms or in plates, sheets or strip; mixtures of any pro;

Chapter 54: Man-made Filaments and **Chapter 55:** Man-made staple fibres

Source: <http://comtrade.un.org/> (UN Comtrade Database)

Table 31: World Imports of Chemicals by top 10 countries - 2022

Trade value in Million US\$													
Import			Rank										World Import
			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	
HS Code	28	Country	China	Rep. of Korea	USA	India	Japan	Germany	France	Canada	Poland	Netherlands	Total 28
		Trade Value	25924	20021	19422	12714	11999	10815	6888	5773	5758	5568	221811
	29	Country	USA	Germany	China	India	Belgium	Italy	Brazil	Ireland	Netherlands	France	Total 29
		Trade Value	75919	67007	58074	29810	26172	23168	19232	19164	19075	18839	586973
	30	Country	USA	Germany	Switzerland	Belgium	China	Japan	Italy	United Kingdom	France	Netherlands	Total 30
		Trade Value	164993	81747	48686	48339	39909	39038	34710	32883	32360	24197	826356
	31	Country	Brazil	India	USA	China	France	Australia	Indonesia	Mexico	Canada	Thailand	Total 31
		Trade Value	26759	17260	13248	4954	4801	4432	3665	3514	3219	3121	148376
	32	Country	Germany	USA	China	France	Italy	Netherlands	Mexico	Canada	Türkiye	India	Total 32
		Trade Value	7033	5909	5195	4205	3501	3189	3101	2897	2751	2658	90200
	38	Country	USA	China	Germany	Netherlands	France	Italy	Japan	Brazil	United Kingdom	Mexico	Total 38
		Trade Value	29508	27871	25081	17690	13463	10470	10015	9996	9949	9568	327770
	39	Country	USA	China	Germany	Mexico	France	Italy	India	United Kingdom	Canada	Netherlands	Total 39
		Trade Value	89880	75189	57145	32721	30971	30258	22716	22634	22472	21367	791669
	4002	Country	China	USA	Germany	India	Thailand	Türkiye	Viet Nam	Malaysia	Brazil	Italy	Total 4002
		Trade Value	8927	2103	1494	1429	1350	1063	1008	979	877	863	31239
	54	Country	Viet Nam	Türkiye	USA	China	Indonesia	Italy	Brazil	India	Germany	Egypt	Total 54
		Trade Value	4056	2882	2723	2293	1944	1935	1788	1684	1663	1388	46223
	55	Country	Viet Nam	Türkiye	USA	Germany	China	Italy	India	Cambodia	Brazil	Indonesia	Total 55
		Trade Value	2625	2256	2143	1753	1561	1333	1244	1200	1155	1148	35751
All Chemicals@		Country	USA	Germany	China	France	Italy	Belgium	Japan	India	Netherlands	United Kingdom	
		Trade Value	405847	256403	249898	113756	111752	107202	102622	100355	94332	90872	3106368
All Chemicals excluding Pharmaceuticals		Country	USA	China	Germany	India	France	Brazil	Italy	Netherlands	Mexico	Rep. of Korea	
		Trade Value	240853	209989	174656	97624	81396	77592	77042	70135	69531	65908	2280012

@-Includes all products covered under the HS code 28, 29, 30, 31, 32, 38, 39, 4002, 54 and 55

Chapter 28: Inorganic Chemicals; Organic or Inorganic Compounds of Precious Metals, of Rare-Earth Metals, of Radioactive Elements or of Isotopes;

Chapter 29: Organic Chemicals; **Chapter 30:** Pharmaceutical products; **Chapter 31:** Fertilizers ;

Chapter 32: Tanning or Dyeing Extracts; Tannins and their Derivatives; Dyes, Pigments and Other Colouring Matter; Paints and Varnishes; Putty and other Mastics Inks;

Chapter 38: Miscellaneous Chemical Products; **Chapter 39:** Plastics and articles thereof;

4002: Synthetic rubber and factice derived from oils, in primary forms or in plates, sheets or strip; mixtures of any pro;

Chapter 54: Man-made Filaments and **Chapter 55:** Man-made staple fibres

Source: <http://comtrade.un.org/> (UN Comtrade Database)

Table 32: India's share in World Exports and Imports of Chemicals - 2022

Value in Million US\$

HS Code	Commodity	Export				Import			
		Trade Value		% of World Export	Rank in the World	Trade Value		% of World Import	Rank in the World
		India	World			India	World		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
28	INORGANIC CHEMICALS	3180	214357	1.5	17	12714	221811	5.7	4
29	ORGANIC CHEMICALS	21877	502470	4.4	8	29810	586973	5.1	4
30	PHARMACEUTICAL PRODUCTS	19753	814011	2.4	12	2730	826356	0.3	40
31	FERTILISERS.	117	97926	0.1	56	17260	148376	11.6	2
32	TANNING OR DYEING	3608	90119	4.0	7	2658	90200	2.9	10
38	MISCELLANEOUS CHEMICAL PRODUCTS.	8068	319157	2.5	12	8110	327770	2.5	14
39	PLASTIC AND ARTICLES THEREOF	8236	771148	1.1	23	22716	791669	2.9	7
4002	SYNTHETIC RUBBER AND FACTICE	143	26510	0.5	25	1429	31239	4.6	4
54	MAN-MADE FILAMENTS	2061	58637	3.5	5	1684	46223	3.6	8
55	MAN-MADE STAPLE FIBRES	1887	38977	4.8	5	1244	35751	3.5	7
All Chemicals @		68929	2933311	2.3	14	100355	3106368	3.2	8
Chemicals (excluding Pharmaceutical Products)		49177	2119300	2.3	11	97624	2280012	4.3	4
Total of All HS Code Commodities		452684	22736027	2.0	17	732566	23941685	3.1	7

Section - IV

Foreign Direct Investment (FDI)

Table 33: Sectors Attracting Highest FDI Equity Inflows during 2020-21 to 2022-23

Amount in Rupees Crores/ in USD Million

Ranks	Sector	Amt. in Rupees Crores/ Amt. in USD Million	2020-21	2021-22	2022-23
(1)	(2)	(3)	(4)	(5)	(6)
1	SERVICES SECTOR **	Rupees Crores	37,542	53,165	69,852
		USD Million	5,060	7,131	8,707
2	COMPUTER SOFTWARE & HARDWARE	Rupees Crores	194,291	1,07,762	74,718
		USD Million	26,145	14,461	9,394
3	TRADING	Rupees Crores	19,349	33,779	38,060
		USD Million	2,608	4,538	4,792
4	TELECOMMUNICATIONS	Rupees Crores	2,884	4,980	5,469
		USD Million	392	668	713
5	AUTOMOBILE INDUSTRY	Rupees Crores	12,115	51,624	15,184
		USD Million	1,637	6,994	1,902
6	CONSTRUCTION (INFRASTRUCTURE) ACTIVITIES	Rupees Crores	58,240	24,178	13,588
		USD Million	7,875	3,248	1,703
7	CONSTRUCTION DEVELOPMENT: Townships, housing, built-up infrastructure and construction-development projects	Rupees Crores	3,117	932	1,196
		USD Million	422	125	146
8	DRUGS & PHARMACEUTICALS	Rupees Crores	11,015	10,552	16,654
		USD Million	1,490	1,414	2,058
9	CHEMICALS (OTHER THAN FERTILIZER)	Rupees Crores	6,300	7,202	14,662
		USD Million	847	966	1,850
10	METALLURGICAL INDUSTRIES	Rupees Crores	10,002	16,783	1,764
		USD Million	1,340	2,272	219

*Note: (i) ** Services sector includes Financial, Banking, Insurance, Non-Financial / Business, Outsourcing, R&D, Courier, Tech. Testing and Analysis, Other*

(ii) %age worked out in USD terms & FDI inflow received through Government Route + Automatic Route + acquisition of existing shares only.

(iii) FDI Sectoral data has been revalidated / reconciled in line with the RBI, which may reflect minor changes in the FDI figures (increase/decrease) as compared to the earlier published sectoral data.

(iv) Figures are provisional.

(v) Source: <https://dpiit.gov.in/publications/fdi-statistics>

Section - V

Index of Industrial Production (IIP)

Table 34: Monthly Production Growth in 'Chemicals and Chemical Products' vis-a-vis Manufacturing Sector during April 2022 to March 2023 (Based on Index of Industrial Production with Base year: 2011-12)

Period	Chemicals and chemical products	Manufacturing	General
Weight	7.87	77.63	100.00
Index of Industrial Production (Base Year : 2011-12=100)			
Mar / 2022	121.1	145.3	148.8
Apr / 2022	123.3	131.6	134.5
May / 2022	135.6	134.6	137.8
Jun / 2022	133.5	136.8	138.3
Jul / 2022	137.2	135.0	134.4
Aug / 2022	131.9	131.3	131.5
Sep / 2022	131.2	134.6	133.8
Oct / 2022	122.1	128.5	129.5
Nov / 2022	124.6	137.5	137.7
Dec / 2022	129.5	144.9	145.9
Jan / 2023	130.2	145.5	147.4
Feb / 2023	122.8	137.6	139.3
Mar / 2023	130.1	147.5	151.7
Production Growth (%)			
Apr / 2022	1.8	-9.4	-9.6
May / 2022	10.0	2.3	2.5
Jun / 2022	-1.5	1.6	0.4
Jul / 2022	2.8	-1.3	-2.8
Aug / 2022	-3.9	-2.7	-2.2
Sep / 2022	-0.5	2.5	1.7
Oct / 2022	-6.9	-4.5	-3.2
Nov / 2022	2.0	7.0	6.3
Dec / 2022	3.9	5.4	6.0
Jan / 2023	0.5	0.4	1.0
Feb / 2023	-5.7	-5.4	-5.5
Mar / 2023	5.9	7.2	8.9

Source: Ministry of Statistics and Programme Implementation(MoSPI)

Table 35: Annual Production Growth in Chemicals and Chemical Products Vis -a-Vis Manufacturing Sector during 2016-17 to 2022-23 (Based on Index on Industrial Production with Base year: 2011-12)

Years	Chemicals and Chemical Products	Manufacturing	General
Weight	7.87	77.63	100.00
Index of Industrial Production (Base Year: 2011-12=100)			
2015-16	113.7	115.9	114.7
2016-17	116.5	121.0	120.0
2017-18	116.1	126.6	125.3
2018-19	119.0	131.5	130.1
2019-20	118.5	129.6	129.0
2020-21	116.0	117.2	118.1
2021-22	121.0	131.0	131.6
2022-23	129.3	137.1	138.5
Production Growth (%)			
2016-17	2.5	4.4	4.6
2017-18	-0.3	4.6	4.4
2018-19	2.5	3.9	3.8
2019-20	-0.4	-1.4	-0.8
2020-21	-2.1	-9.6	-8.4
2021-22	4.3	11.8	11.4
2022-23	6.9	4.7	5.2

Source: Ministry of Statistics and Programme Implementation

Table 36: Weights of Products Covered Under Chemical and Chemical Products (Industry Division 20 of NIC- 2008) in the Index of Industrial Production for Manufacturing Sector.

NIC 2008, 5-Digit	Item groups	Weights (in %)	Name of Source Agencies
(1)	(2)	(3)	(4)
20111	Oxygen	0.0423	DPIIT
20112	Acetic Acid	0.0191	DCPC
20112	Phosphoric acid	0.0157	DPIIT
20112	Purified Terephthalic Acid (PTA)	0.3512	DCPC
20112	Sulphuric Acid	0.0479	DPIIT
20114	Dyes and pigments	0.2355	DCPC
20115	ABS resin	0.0188	DCPC
20116	Calcium Carbonate	0.0572	DCPC
20116	Caustic soda (sodium hydroxide)	0.1638	DCPC
20116	Ethyl acetate	0.0571	DCPC
20116	Isopropyl alcohol	0.0178	DCPC
20116	Monoethylene glycol, MEG	0.0413	DCPC
20116	Soda ash/ washing soda	0.1200	DCPC
20116	Titanium dioxide	0.0362	DCPC
20116	Zinc sulphate	0.0150	DPIIT
20118	Aromatic Chemicals	0.0806	DPIIT
20119	Aniline	0.0154	DCPC
20119	Butadiene	0.0335	DCPC
20119	Catalyst, chemical	0.0415	DPIIT
20119	Expandable Polystyrene , EPS (thermocol)	0.0521	DCPC
20119	Fatty Acid	0.0254	DPIIT
20119	Linear Alkyl Benzene	0.0563	DCPC
20119	Liquid chlorine	0.0595	DCPC
20119	Phthalic anhydride, PAN	0.0353	DCPC
20119	Polyol	0.0636	DCPC
20119	Sodium Silicate	0.0204	DPIIT
20121	Urea	0.5590	D/o Fertilizers
20122	NPK fertilizers	0.3897	D/o Fertilizers
20123	Ammonia	0.2101	DPIIT
20123	Ammonium nitrate	0.0118	DPIIT
20123	Ammonium sulphate	0.0261	DPIIT
20123	Formaldehyde	0.0121	DCPC
20123	Nitric Acid	0.0181	DPIIT
20129	Diammonium Phosphate (DAP)	0.0761	D/o Fertilizers
20129	Superphosphate	0.0332	D/o Fertilizers
20131	Polyester chips or Polyethylene terephthalate(PET) chips	0.1108	DCPC
20131	Polymers (incl. Polyethylene, PVC, Poly propylene)	0.5954	DCPC
20131	PTFE (TEFLON)	0.0244	DCPC
20132	Caprolactam	0.0457	DCPC
20132	Synthetic rubber (incl. PBR, SBR)	0.0295	DCPC
20211	Detergent powder and washing powder	0.2578	DPIIT
20211	Pesticides-technical grade	0.2116	DCPC
20221	Paints (all types)	0.3874	DPIIT
20221	Varnish (all types)	0.0209	DPIIT
20223	Printing ink	0.0795	DPIIT
20229	Thinner	0.0110	DPIIT
20231	Toilet soap (excl. baby soap)- incl. liquid soap and foam	0.6078	DPIIT
20232	Organic surface active agents/ surfactants, except soap (incl. dishwashing soaps, wetting and cleansing agents)	0.1378	DPIIT
20233	Detergent cake, washing soap cake/ bar	0.4607	DPIIT

NIC 2008, 5-Digit	Item groups	Weights (in %)	Name of Source Agencies
(1)	(2)	(3)	(4)
20235	Tooth paste	0.3223	DPIIT
20236	Hair dye	0.0468	DPIIT
20236	Hair oil	0.0556	DPIIT
20236	Hair shampoo	0.0929	DPIIT
20237	Creams and lotions for topical application	0.1255	DPIIT
20238	Agarbatti	0.1706	DPIIT
20291	Safety matches (match box)	0.0638	DPIIT
20292	Fire works/pyrotechnic articles	0.0366	DPIIT
20292	Gun powder, detonators/ prepared explosives	0.0397	DPIIT
20293	Fragrances & Oil essentials	0.1967	DPIIT
20295	Adhesive formulations other than natural gum	0.3985	DPIIT
20295	Gelatin	0.0233	DPIIT
20297	Methanol	0.0291	DCPC
20299	Hydrogen Peroxide	0.0500	DCPC
20299	Mosquito coil	0.0215	DPIIT
20302	Man-made fibres (incl. Viscose and Artificial Fibres)	0.1614	DCPC & O/o Textile Commissioner

Source: Ministry of Statistics and Programme Implementation

DPIIT: Department for Promotion of Industry and Internal Trade

DCPC: Department of Chemicals and Petrochemicals

Section - VI

Inflation Based on Wholesale Price Index (WPI)

Table 37: Annual Inflation of Chemicals & Chemical products vis-à-vis other commodities during 2016-17 to 2022-23 (Based on Wholesale Price Index with base year: 2011-12)

Year	All Commodities	Food Articles	Manufactured Products	Chemicals & Chemical Products
Weight (%)	100.00	15.26	64.23	6.47
Wholesale Price Index (Base Year: 2011-12=100)				
2015-16	109.70	134.90	109.20	112.60
2016-17	111.60	140.30	110.70	111.00
2017-18	114.90	143.20	113.80	112.50
2018-19	119.80	143.70	117.90	119.10
2019-20	121.80	155.80	118.30	117.50
2020-21	123.40	160.70	121.50	118.20
2021-22	139.40	167.30	135.00	133.50
2022-23	152.50	179.50	142.60	145.40
Inflation (%)				
2016-17	1.7	4.0	1.4	-1.4
2017-18	3.0	2.1	2.8	1.4
2018-19	4.3	0.3	3.6	5.9
2019-20	1.7	8.4	0.3	-1.3
2020-21	1.3	3.1	2.7	0.6
2021-22	13.0	4.1	11.1	12.9
2022-23	9.4	7.3	5.6	8.9

Source: Office of the Economic Advisor (<http://eaindustry.nic.in>)

Table 38:- Monthly Inflation of Chemicals & Chemical Products vis-a-vis Other Commodities during April-2022 to March-2023 (Based on Wholesale Price Index with base year: 2011-12)

Month	All Commodities	Food Articles	Manufactured Products	Chemicals & Chemical Products
Weight (%)	100.00	15.26	64.23	6.47
Wholesale Price Index (Base Year: 2011-12)				
Mar / 2022	148.9	169.6	142.3	142.3
Apr / 2022	152.3	175.3	144.7	145.7
May / 2022	155.0	178.4	145.0	147.0
Jun / 2022	155.4	182.5	143.9	148.3
Jul / 2022	154.0	178.9	143.2	147.8
Aug / 2022	153.2	182.0	143.2	146.6
Sep / 2022	151.9	182.2	142.2	146.0
Oct / 2022	152.9	186.1	141.9	146.3
Nov / 2022	152.5	181.0	141.3	145.2
Dec / 2022	150.5	174.9	141.1	144.0
Jan / 2023	150.7	176.6	141.4	143.3
Feb / 2023	150.9	176.9	141.6	142.8
Mar / 2023	151.0	178.8	141.3	142.2
Inflation (%)				
Apr / 2022	2.3	3.4	1.7	2.4
May / 2022	1.8	1.8	0.2	0.9
Jun / 2022	0.3	2.3	-0.8	0.9
Jul / 2022	-0.9	-2.0	-0.5	-0.3
Aug / 2022	-0.5	1.7	0.0	-0.8
Sep / 2022	-0.8	0.1	-0.7	-0.4
Oct / 2022	0.7	2.1	-0.2	0.2
Nov / 2022	-0.3	-2.7	-0.4	-0.8
Dec / 2022	-1.3	-3.4	-0.1	-0.8
Jan / 2023	0.1	1.0	0.2	-0.5
Feb / 2023	0.1	0.2	0.1	-0.3
Mar / 2023	0.1	1.1	-0.2	-0.4

Source: Office of the Economic Advisor (<http://eaindustry.nic.in>)

Table 39 :- WPI (Base year 2011-12) of Chemicals & Chemical Products (Group Wise) during 2017-18 to 2022-23

Description	Weight	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Chemicals and Chemical Products	6.47	112.50	119.10	117.50	118.20	133.50	145.40
(a) Basic Chemicals	1.43	111.20	125.00	119.90	118.60	143.80	159.20
(b) Fertilizers and Nitrogen Compounds	1.48	117.10	121.10	123.10	123.60	129.60	144.80
(c) plastic and synthetic rubber in primary form	1.00	113.00	117.60	112.40	116.70	140.30	143.20
(d) Pesticides and Other Agrochemical Products	0.45	115.30	120.20	122.60	124.40	132.10	143.40
(e.) paints, Varnishes and Similar Coatings, Printing Ink and Mastics	0.49	108.60	112.70	114.70	114.90	130.40	145.00
(f) Soap and Detergents, Cleaning and Polishing Preparations, Perfumes and Toilet Preparations	0.61	115.20	116.80	118.60	120.60	128.10	140.80
(g) Other Chemical Products	0.69	110.10	116.60	114.20	115.10	130.30	142.10
(h) Man-Made Fibres	0.30	97.50	104.00	97.90	93.70	106.60	110.70

Source: Office of the Economic Advisor (<http://eaindstry.nic.in>)

Section - VII

Miscellaneous

Table 40: Growth Rates of Core Industries from 2017-18 to 2022-23 (Base Year: 2011-12)

Sector	Weight (%)	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Coal (%)	10.33	2.6	7.4	-0.4	-1.9	8.5	14.8
Crude Oil (%)	8.98	-0.9	-4.1	-5.9	-5.2	-2.6	-1.7
Natural Gas (%)	6.88	2.9	0.8	-5.6	-8.2	19.2	1.6
Refinery Products (%)	28.04	4.6	3.1	0.2	-11.2	8.9	4.8
Fertilizers (%)	2.63	0.0	0.3	2.7	1.7	0.7	11.3
Steel (%)	17.92	5.6	5.1	3.4	-8.7	16.9	9.3
Cement (%)	5.37	6.3	13.3	-0.9	-10.8	20.8	8.7
Electricity (%)	19.85	5.3	5.2	0.9	-0.5	8.0	8.9
Overall Index	100.00	4.3	4.4	0.4	-6.4	10.4	7.8

Source: Office of the Economic Advisor (<http://eaindstry.nic.in>)

Table 41: Index of Core Industries from 2017-18 to 2022-23 (Base year 2011-12)

Sector	Weight (%)	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Coal	10.33	124.9	134.1	133.6	131.1	142.3	163.5
Crude Oil	8.98	93.7	89.8	84.5	80.1	77.9	76.6
Natural Gas	6.88	68.4	69.0	65.1	59.8	71.3	72.4
Refinery Products	28.04	125.2	129.1	129.4	114.9	125.1	131.2
Fertilizers	2.63	106.6	107.0	109.8	111.6	112.4	125.1
Steel	17.92	140.5	147.7	152.6	139.4	163.0	178.1
Cement	5.37	129.7	147.0	145.7	130.0	156.9	170.6
Electricity	19.85	149.2	156.9	158.4	157.6	170.1	185.2
Overall Index	100.00	125.7	131.2	131.6	123.2	136.1	146.7

Source: Office of the Economic Advisor (<http://eaindustry.nic.in>)

Table 42: Consumption of Naphtha, Natural Gas and Fuel Oil from 2018-19 to 2022-23

Name of Product	Description	Unit	2018-19	2019-20	2020-21	2021-22	2022-23*
(1)	(2)	(3)	(5)	(6)	(7)	(8)	(9)
Naphtha	Production	K Tonnes	19786	20679	19403	19994	17036
	Import	K Tonnes	2082	1662	1199	237	897
		Value in Rs. Crore	9665	6678	3844	1499	4781
	Export	K Tonnes	6963	8897	6509	6861	5714
		Value in Rs. Crore	28893	31509	18643	37231	33357
	Availability	K Tonnes	14904	13444	14093	13370	12219
	Consumption	K Tonnes	14131	14268	14100	13246	12158
Natural Gas¹	Gross Production	MMSCM	32873	31184	28673	34024	34450
	Net Production	MMSCM	32054	30257	27784	33116	33648
	Import \$	MMSCM	28547	32352	33198	31028	26304
		Value in Rs. Crore	73888	68467	58329	100521	137210
	Availability	MMSCM	60796	64144	60981	64159	59969
	Consumption **	MMSCM	53840	56492	56117	61491	58702
Fuel Oil	Production	K Tonnes	10032	8609	7242	8327	9242
	Import	K Tonnes	1419	4583	6454	8980	8563
		Value in Rs. Crore	4782	11791	14312	32815	33474
	Export	K Tonnes	2197	1527	1177	1757	1841
		Value in Rs. Crore	6537	3811	2318	6633	7834
	Availability	K Tonnes	9255	11665	12519	15550	15964
	Consumption	K Tonnes	6564	6302	5587	6262	6954
Naphtha	Fertilizers Sector	K Tonnes	352	150	66	0	0
	Petrochemical Sector	K Tonnes	10602	10874	11339	11904	10434
Natural Gas²	Fertilizer Industries	MMSCM	14987	16115	17781	18079	19400
	Petrochemicals Industry	MMSCM	3386	3569	3072	2864	1959
Fuel Oil (Furnace Oil + LSHS)	Chemicals & allied	K Tonnes	309	253	237	239	205

* Provisional

** Sectorial Sales

\$ Imports of LNG

¹ Data of Natural gas is reconciled due to change in nomenclature, rationalisation and classification of reporting.² The reasons for the variation between the consolidated availability and the consumption can be attributed to stock changes, conversion factor (volume/energy), Flaring/Losses (in case of Natural gas) and the provisional data reported by the companies.**Net Production=Gross Production - Flared/Losses****Source:** Ministry of Petroleum and Natural Gas(M/o PNG)

Table 43: Important indicators of Industry Division 20 & 21 (Unincorporated Sector) in 2015-16 (July 2015 - June 2016)

Description	Rural	Urban	Rural + Urban
(1)	(2)	(3)	(4)
Estimated number of workers in Industry Division 20 (Unincorporated) of NIC 2008	204480	167540	372020
Estimated number of workers in Industry Division 21 (Unincorporated) of NIC 2008	12692	9454	22146
Estimated number of workers in Unincorporated Manufacturing sector	18655607	17385712	36041319
Estimated number of workers in Unincorporated sector (All activities) #	49867273	61403553	111270826
Estimated number of enterprises in Industry Division 20 (Unincorporated) of NIC 2008	105985	66721	172706
Estimated number of enterprises in Industry Division 21 (Unincorporated) of NIC 2008	2935	3410	6345
Estimated number of enterprises in Unincorporated manufacturing sector	11414431	8250444	19664875
Estimated number of enterprises in Unincorporated sector (All activities) #	32489670	30902305	63391974
Estimated GVA of Industry Division 20 (Unincorporated) (in Rs. Crore)	780	1552	2332
Estimated GVA of Industry Division 21 (Unincorporated) (in Rs. Crore)	130	143	273
Estimated GVA of Manufacturing Sector (Unincorporated) (in Rs. Crore)	89829	178233	268062
Estimated GVA of Unincorporated sector (All activities) (in Rs. Crore)	344872	807437	1152309
Share of GVA from Industry Division 20 (Unincorporated) in GVA Unincorporated sector (All activities) (in %)	0.2	0.2	0.2
Share of GVA from Industry Division 21 (Unincorporated) in GVA Unincorporated sector (All activities) (in %)	0.0	0.0	0.0
Share of GVA from Manufacturing sector (Unincorporated) in GVA Unincorporated sector (All activities) (in %)	26.0	22.1	23.3
GVA per worker of Industry Division 20 (Unincorporated) sector (in Rs.)	38146	92635	62685
GVA per worker of Industry Division 21 (Unincorporated) sector (in Rs.)	102427	151259	123273
GVA per worker of Manufacturing sector (Unincorporated) (in Rs.)	48151	102517	74376
GVA per worker of unincorporated sector (All Activities) in Rs.	69158	131497	103559
GVA per enterprise of Industry Division 20 (Unincorporated) sector (in Rs.)	73595	232610	135027
GVA per enterprise of Industry Division 21 (Unincorporated) sector (in Rs.)	442930	419355	430260
GVA per enterprise of Manufacturing Sector (Unicorporated) (in Rs.)	78698	216028	136315
GVA per enterprise of Unincorporated Sector (All activities) (in Rs.)	106148	261287	181775

including Manufacturing activities, Noncaptive electricity generation , trading activities and other services (non agricultural enterprises excluding constructions)

Source: NSS Report (No.582: Economic Characteristics of Unincorporated Non-Agricultural Enterprises (Excluding Construction) in India) of Ministry of Statistics & Programme Implementation

Table 44: Employment in Chemicals and Chemicals products (Industry Division 20, NIC-2008) during 2016-17 to 2021-22

S.No.	Industry	Number of Persons Engaged					
		2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Chemicals and Chemicals products (Industry Division 20, NIC 2008)	790263	828315	887240	932428	958839	1026380
2	Industries Other than Chemicals and Chemicals products	14120926	14786304	14120926	15691863	15130861	16188970
3	All Industries	14911189	15614619	16280211	16624291	16089700	17215350
4	Share in Employment (%)						
	(a) Share of Chemicals and Chemicals products	5.3	5.3	5.4	5.6	6.0	6.0
	(b) Share of Other than Chemicals and Chemicals products	94.7	94.7	86.7	94.4	94.0	94.0
5	Growth in Employment (%)						
	(a) Chemicals and Chemicals products	4.3	4.8	7.1	5.1	2.8	7.0
	(b) Industries Other than Chemicals and Chemicals products	2.9	4.7	-4.5	11.1	-3.6	7.0
	(c) All Industries	3.0	4.7	4.3	2.1	-3.2	7.0

Note: As per NIC - 2008, Chemical & Chemical products are covered under the Industry Division 20.

Source: Annual Survey of Industries (ASI) Results, Ministry of Statistics & Programme Implementation

Table 45: Gross Value Added from Chemical and Chemical products (Industry Division 20: NIC 2008) and Pharmaceutical; medicinal chemicals and botanical product (Industry Division 21: NIC 2008) vis-a-vis Manufacturing sector and all Economic Activities

At Current Prices

(Rs. in Crore)

Description	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Industry Division 20: Chemical and chemical products (Corporate)	207565	223172	247860	264075	283853	308932
Industry Division 20: Chemical and chemical products (Household)	1029	1423	2173	1673	1604	2271
Industry Division 20: Chemical and chemical products (Corporate +Household)	208593	224595	250032	265747	285458	311203
Growth over previous year (%)	7.6	7.7	11.3	6.3	7.4	9.0
Industry Division 21: Pharmaceutical; medicinal chemicals and botanical products (Corporate)	157237	165019	190831	202381	223911	256098
Industry Division 21: Pharmaceutical; medicinal chemicals and botanical products (Household)	667	585	606	726	851	1133
Total Pharmaceutical; medicinal chemicals and botanical products (Industry Division 21)	157904	165604	191437	203107	224762	257231
Total Chemical and chemical products including Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20 and 21)	366497	390199	441470	468854	510220	568434
Growth over previous year (%)	8.2	6.5	13.1	6.2	8.8	11.4
Manufacturing (Corporate)	2042040	2248880	2459081	2363718	2456813	2960021
Manufacturing (Household)	291682	317743	353479	341383	346681	432584
Manufacturing (Corporate +Household)	2333721	2566623	2812560	2705101	2803495	3392605
Growth over previous year (%)	8.7	10.0	9.6	-3.8	3.6	21.0
GVA at basic prices for All Economic activities	13965200	15505665	17175128	18381117	18210997	21635584
Growth over previous year (%)	11.1	11.0	10.8	7.0	-0.9	18.8
Share of GVA of Manufacturing sector in GVA for All Economic Activities	16.7	16.6	16.4	14.7	15.4	15.7
Share of GVA of Chemical and chemical products excluding Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20)in GVA for All Economic Activities	1.5	1.4	1.5	1.4	1.6	1.4
Share of GVA of Chemical and chemical products including Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20 and 21) in GVA for All Economic Activities	2.6	2.5	2.6	2.6	2.8	2.6
Share of GVA of chemical and chemical products (Industry Division 20)in GVA for Manufacturing Sector	8.9	8.8	8.9	9.8	10.2	9.2
Share of GVA of chemical and chemical products including Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20 and 21)in GVA for Manufacturing Sector	15.7	15.2	15.7	17.3	18.2	16.8

Source: National Accounts Statistics, Ministry of Statistics & Programme Implementation.

Table 46: Gross Value Added from Chemical and Chemical products (Industry Division 20: NIC 2008) and Pharmaceutical; medicinal chemicals and botanical product (Industry Division 21: NIC 2008) vis-a-vis Manufacturing sector and all Economic Activities

At Constant Price (2011-12)

(Rs. In Crore)

Description	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Industry Division 20: Chemical and chemical products (Corporate)	122965	126099	145051	172538	190147	231410
Industry Division 20: Chemical and chemical products (Household)	927	1265	1824	1424	1357	1701
Industry Division 20: Chemical and chemical products (Corporate +Household)	123892	127364	146876	173961	191504	233111
Growth over previous year (%)	2.9	2.8	15.3	18.4	10.1	21.7
Industry Division 21: Pharmaceutical; medicinal chemicals and botanical products (Corporate)	131359	136154	154519	158980	171055	188446
Industry Division 21: Pharmaceutical; medicinal chemicals and botanical products (Household)	557	483	491	570	650	834
Total Pharmaceutical; medicinal chemicals and botanical products (Industry Division 21)	131916	136637	155010	159550	171705	189280
Total Chemical and chemical products including Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20 and 21)	255808	264001	301885	333511	363210	422390
Growth over previous year (%)	10.7	3.2	14.4	10.5	8.9	16.3
Manufacturing (Corporate)	1803931	1941557	2039878	1981512	2049824	2244755
Manufacturing (Household)	250834	267871	289114	278193	279336	316278
Manufacturing (Corporate +Household)	2054764	2209428	2328992	2259706	2329160	2561033
Growth over previous year (%)	7.9	7.5	5.4	-3.0	3.1	10.0
GVA at basic prices for All Economic activities	11328285	12034171	12733798	13236100	12687345	13876840
Growth over previous year (%)	8.0	6.2	5.8	3.9	-4.1	9.4
Share of GVA of Manufacturing sector in GVA for All Economic Activities	18.1	18.4	18.3	17.1	18.4	18.5
Share of GVA of Chemical and chemical products excluding Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20) in GVA for All Economic Activities	1.1	1.1	1.2	1.3	1.5	1.7
Share of GVA of Chemical and chemical products including Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20 and 21) in GVA for All Economic Activities	2.3	2.2	2.4	2.5	2.9	3.0
Share of GVA of chemical and chemical products (Industry Division 20) in GVA for Manufacturing Sector	6.0	5.8	6.3	7.7	8.2	9.1
Share of GVA of chemical and chemical products, including Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20 and 21) in GVA for Manufacturing Sector	12.4	11.9	13.0	14.8	15.6	16.5

Source: National Accounts Statistics, Ministry of Statistics & Programme Implementation.

Table 47: Value of Output from Chemicals and Chemical products (Industry Division 20: NIC 2008) and Pharmaceutical; medicinal chemicals and botanical products (Industry Division 21: NIC 2008) vis-a-vis Manufacturing sector

At Current prices

(Rs. In crore)

Description	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Manufacturing (Corporate)	8162260	9032405	10845743	10827558	10637200	14481692
Manufacturing (Household)	824799	936733	1058116	1028602	1056610	1290560
Manufacturing (Corporate +Household)	8987059	9969138	11903859	11856161	11693810	15772252
Chemical and chemical products (Corporate) (Industry Division 20)	662125	729330	950939	968502	953211	1285083
Chemical and chemical products (Household) (Industry Division 20)	5137	7104	10848	8352	8011	11339
Total Chemical and chemical products excluding Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20)	667262	736434	961786	976854	961222	1296422
Pharmaceutical; medicinal chemicals and botanical products --Corporate (Industry Division 21)	318143	325755	399906	436614	503296	606488
Pharmaceutical; medicinal chemicals and botanical products --Household (Industry Division 21)	3330	2922	3026	3623	4250	5657
Total Pharmaceutical; medicinal chemicals and botanical products (Industry Division 21)	321472	328677	402932	440237	507547	612145
Total Chemical and chemical products including Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20 and 21)	988734	1065111	1364718	1417091	1468768	1908568

Source: National Accounts Statistics, Ministry of Statistics & Programme Implementation.

Table 48: Value of Output from Chemicals and Chemical products (Industry Division 20: NIC 2008) and Pharmaceutical; medicinal chemicals and botanical products (Industry Division 21: NIC 2008) vis-a-vis Manufacturing sector

At constant prices (2011-12)

(Rs. In crore)

Description	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Manufacturing (Corporate)	7675612	8200088	9401296	9407744	9065404	10869880
Manufacturing (Household)	712666	791191	865740	836055	845787	935942
Manufacturing (Corporate +Household)	8388278	8991280	10267035	10243798	9911191	11805823
Chemical and chemical products (Corporate) (Industry Division 20)	596509	648293	798437	824257	806439	962609
Chemical and chemical products (Household) (Industry Division 20)	4628	6315	9108	7108	6778	8494
Total Chemical and chemical products excluding Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20)	601137	654608	807545	831365	813216	971103
Pharmaceutical; medicinal chemicals and botanical products --Corporate (Industry Division 21)	265783	268775	323811	342981	384489	446275
Pharmaceutical; medicinal chemicals and botanical products --Household (Industry Division 21)	2782	2411	2450	2846	3247	4163
Total Pharmaceutical; medicinal chemicals and botanical products (Industry Division 21)	268565	271185	326261	345827	387736	450438
Total Chemical and chemical products including Pharmaceutical; medicinal chemicals and botanical products (Industry Division 20 and 21)	869702	925793	1133806	1177192	1200953	1421541

Source: National Accounts Statistics, Ministry of Statistics & Programme Implementation.

Table 49:- All India Estimate of Selected Characteristics of Factory Sector for Chemical and Chemical products (Industry Division 20: NIC 2008) , Pharmaceutical; medicinal chemicals and botanical product (Industry Division 21: NIC 2008) and Manufacture of Magnetic and Optical Media (industry Division 268)

Description	2017-18	2018-19	2019-20	2020-21	2021-22
(1)	(2)	(3)	(4)	(5)	(6)
Industry Division 20: Chemical and chemical products					
No of factories (no.)	12568	12902	13459	13770	13522
No of workers (no.)	614733	666623	693865	706478	767657
Total Output (Rs. crore)	661499	821126	793096	781482	1097908
Total Inputs (Rs. crore)	517336	661207	627208	595683	875273
Gross Value Added (Rs. crore)	144163	159919	165888	185799	222636
Industry Division 21: Pharmaceutical; medicinal chemicals and botanical products					
No of factories (no.)	5051	5161	5326	5319	5228
No of workers (no.)	454024	483238	516095	533391	577128
Total Output (Rs. crore)	285014	342227	348658	406291	486178
Total Inputs (Rs. crore)	182832	224274	226275	262166	314070
Gross Value Added (Rs. crore)	102182	117953	122382	144124	172108
Industry Division 268: Manufacture of Magnetic and Optical Media					
No of factories (no.)	10	15	15	4	7
No of workers (no.)	529	1970	1053	740	962
Total Output (Rs. Lakh)	75141	375859	87974	29890	67757
Total Inputs (Rs. Lakh)	61256	283135	79865	23594	44525
Gross Value Added (Rs. Lakh)	13885	92724	8109	6296	23232

Source : Annual Survey of Industries (ASI) Results, Ministry of Statistics & Programme Implementation

Table 50: State wise Estimate of Selected Characteristics of Factory Sector for Industry Division 20: NIC 2008: Chemicals and Chemical Products

State	No. of Factories				GVA (Rs. Lakh)				Total Output (Rs Lakh)			
	2018-19	2019-20	2020-21	2021-22	2018-19	2019-20	2020-21	2021-22	2018-19	2019-20	2020-21	2021-22
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Andhra Pradesh	394	499	450	473	446176	391354	680931	727361	2509301	2684412	2854817	3970052
Assam	133	173	180	137	223202	337713	453712	491976	757604	857461	1138784	1158120
Bihar	52	52	51	51	16415	27091	23409	21096	84900	128635	131254	158933
Chhattisgarh	110	124	139	153	8010	18916	32114	56648	201584	246128	187989	469208
Goa	36	39	51	36	72231	77919	98724	109356	747163	426077	490954	565023
Gujarat	2757	2861	3018	2993	5481852	5583012	6430276	8020952	29156214	27084554	25990446	38331607
Haryana	362	431	495	405	371391	397801	490844	502725	1831951	1930161	2191507	2528703
Himachal Pradesh	225	220	215	221	528976	685132	539098	470492	1480706	1675243	1595976	1561608
Jammu & Kashmir	134	135	143	105	235599	230321	528406	290756	975425	932792	1551604	972678
Jharkhand	88	94	84	95	82897	46901	55507	67167	317377	217142	265238	402994
Karnataka	659	657	640	641	464619	629721	549464	674908	2079037	3079683	2100452	3215584
Kerala	127	173	219	199	376499	317489	227448	263483	1019809	942693	892076	1111925
Madhya Pradesh	314	315	325	345	276016	266235	208689	385407	1451534	1909243	1614403	2538375
Maharashtra	1772	1827	1892	1974	2404081	2315109	2650282	3769611	13079364	11162926	12470588	17591190
Meghalaya	4	3	3	5	1171	1124	2195	1903	4997	2710	3979	4966
Mizoram	0	4	0	0	0	15	0	0	0	30	0	0
Odisha	97	99	114	101	553716	657505	312979	409146	1478344	1531407	1249776	2312431
Punjab	165	204	191	227	104209	142836	161014	258930	815753	877849	876109	1457698
Rajasthan	372	401	361	406	453739	509303	708173	761264	3441389	2875300	3354013	4211306
Sikkim	3	3	0	0	10771	8510	0	0	32609	16984	0	0
Tamil Nadu	2679	2704	2706	2626	694678	685097	820713	1010948	3582598	4091296	3792586	6338824
Tripura	9	8	7	7	1	44	179	635	78	427	314	4790
Uttar Pradesh	721	759	750	802	883256	934417	1025826	1157842	5049876	5448955	4704933	6931558
Uttarakhand	233	238	228	200	880498	895746	786279	769675	2563120	2319208	2145639	2316209
West Bengal	355	352	382	358	445340	440481	639647	658515	3360107	3568921	2770482	4034102
Dadra & N Haveli & Daman & Diu	370	315	342	342	504212	536944	694297	891629	4268552	3567053	3963429	5159314
Chandigarh	0	3	3	3	0	833	956	1107	0	7735	9298	10401
Delhi	95	69	86	57	21751	29318	19403	19183	192024	164725	130663	157075
Puducherry	99	106	114	114	270689	207665	226480	234201	606063	549701	557272	863531
Telangana	532	585	576	439	178966	214042	207106	227915	1016178	1009569	1100171	1388628
All India	12897	13453	13765	13515	15990961	16588594	18574151	22254831	82103657	79309020	78134752	109766833

Source : Annual Survey of Industries (ASI) Results, Ministry of Statistics & Programme Implementation

Table 51: Production, Import, Export, Consumption of Major Chemicals and Petrochemicals and Export as Percentage (%) of Production and Import as Percentage (%) of Consumption

<i>(In Thousand Tonnes)</i>									
Group	Description	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Major Chemicals	Production	9884	10234	11069	11589	11943	11243	12743	13039
Major Petrochemicals									
A. Basic major Petrochemicals		14905	15510	15670	16269	19041	17938	19371	18135
B. Intermediates		18690	18743	19063	19057	22119	21903	22686	19646
C. Other Petro-based Chemicals		2159	2174	2080	2192	2364	2318	2531	2511
Total Major Chemicals and Petrochemicals		45638	46661	47882	49108	55467	53402	57332	53331
Major Chemicals	Exports	1138	1484	1496	1579	1698	1905	2339	2313
Major Petrochemicals									
A. Basic major Petrochemicals		2743	2956	3293	4095	3719	2681	2505	1600
B. Intermediates		2430	2190	3915	5377	4842	5421	4818	2878
C. Other Petro-based Chemicals		129	144	193	147	238	171	212	189
Total Major Chemicals and Petrochemicals		6440	6773	8897	11198	10497	10179	9874	6981
Major Chemicals	Imports	5360	5400	5937	6379	6557	5983	6385	6878
Major Petrochemicals									
A. Basic major Petrochemicals		5681	5938	6408	6284	5356	4356	4597	6768
B. Intermediates		3245	3540	3180	2845	3323	2786	3843	4696
C. Other Petro-based Chemicals		2740	2651	3255	3227	3543	3069	3291	3426
Total Major Chemicals and Petrochemicals		17025	17529	18780	18735	18780	16194	18117	21768
Major Chemicals	Consumption ^{\$}	14106	14150	15510	16389	16802	15321	16789	17603
Major Petrochemicals									
A. Basic major Petrochemicals		17842	18492	18785	18458	20678	19613	21464	23303
B. Intermediates		19505	20094	18328	16525	20600	19268	21711	21464
C. Other Petro-based Chemicals		4770	4680	5142	5272	5670	5216	5610	5747
Total Major Chemicals and Petrochemicals		56223	57416	57765	56645	63751	59418	65575	68118
Major Chemicals	Exports as % of Production	11.5	14.5	13.5	13.6	14.2	16.9	18.4	17.7
Major Petrochemicals									
A. Basic major Petrochemicals		18.4	19.1	21.0	25.2	19.5	14.9	12.9	8.8
B. Intermediates		13.0	11.7	20.5	28.2	21.9	24.7	21.2	14.6
C. Other Petro-based Chemicals		6.0	6.6	9.3	6.7	10.0	7.4	8.4	7.5
Total Major Chemicals and Petrochemicals		14.1	14.5	18.6	22.8	18.9	19.1	17.2	13.1
Major Chemicals	Imports as % of Consumption	38.0	38.2	38.3	38.9	39.0	39.1	38.0	39.1
Major Petrochemicals									
A. Basic major Petrochemicals		31.8	32.1	34.1	34.0	25.9	22.2	21.4	29.0
B. Intermediates		16.6	17.6	17.4	17.2	16.1	14.5	17.7	21.9
C. Other Petro-based Chemicals		57.4	56.6	63.3	61.2	62.5	58.8	58.7	59.6
Total Major Chemicals and Petrochemicals		30.3	30.5	32.5	33.1	29.5	27.3	27.6	32.0

^{\$} Derived consumption as Production+ Imports-Exports

Table 52: Exports of all Chemicals as Percentage (%) of Value of output and Imports of all Chemicals as Percentage (%) of Consumption

(Rs. In Crore)

Item	Code	2017-18	2018-19	2019-20	2020-21	2021-22
(1)	(2)	(4)	(5)	(6)	(7)	(8)
Exports of Pharmaceutical products	HS code 30	85447	103240	115473	143738	144581
Exports of Fertilizers	HS code 31	685	1038	837	779	630
Exports of all Chemicals (including Pharmaceutical products and Fertilizers)	HS codes 28,29,30,31,32,38,39,4002,54 and 55	305413	387853	391604	423855	513807
Imports of Pharmaceutical products	HS code 30	12241	14581	16530	18934	25603
Imports of Fertilizers	HS code 31	30108	46457	47397	51034	95329
Imports of all Chemicals (including Pharmaceutical products and Fertilizers)	HS codes 28,29,30,31,32,38,39,4002,54 and 55	360205	455872	423587	443683	665047
Value of Output of Chemicals and Chemical products (at current prices)	Industry Division 20 and 21: NIC 2008	1065111	1364718	1417091	1468768	1908568
Consumption of Chemicals and Chemical products	Value of Output + Imports - Exports	1119903	1432737	1449075	1488597	2059807
Exports of all Chemicals as % of Value of Output		28.7	28.4	27.6	28.9	26.9
Imports of all Chemicals as % of Derived Consumption		32.2	31.8	29.2	29.8	32.3

Chapter 28: Inorganic Chemicals; Organic or Inorganic Compounds of Precious Metals, of Rare-Earth Metals, of Radioactive Elements or of Isotopes; **Chapter 29:** Organic Chemicals; **Chapter 30:** Pharmaceutical products; **Chapter 31:** Fertilizers; **Chapter 32:** Tanning or Dyeing Extracts; Tannins and their Derivatives; Dyes, Pigments and Other Colouring Matter; Paints and Varnishes; Putty and other Mastics; Inks; **Chapter 38:** Miscellaneous Chemical Products; **Chapter 39:** Plastics and articles thereof; **4002:** Synthetic rubber and factice derived from oils, in primary forms or in plates, sheets or strip; mixtures of any pro **Chapter 54:** Man-made Filaments and **Chapter 55:** Man-made staple fibres

Note: 1. Data source in respect of Imports, Exports (Chapter-wise) is DGCIS Portal.

2: Data Source in respect of value of output is National Account Statistics, Ministry of Statistics & Programme Implementation

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