India's International Trade of Four Specific Commodities in the Recent Past

Some Insights

Preface

The study uses trade indicators to analyse merchandise export and import data in a way that should be useful for the purpose of policy. The indicators provide a glimpse of the trade patterns of the world and the performance of India in comparison to various other countries. They have been used in the case of India's exports of **High Tenacity Yarn of Nylon and Iron Ors & Concentrates** and imports of **Hydroxylamine and Lathes** to indicate the possible directions policy may take.

The data used in this study has been sourced from the Export Import Data Bank of the DGCI&S, Department of Commerce, and Government of India and from the United Nations Comtrade Database. Introduction notes of each commodities has been sourced from the various sights –viz Wikipedia, Britannica, The Economic Times etc.

Computations are based on data at ITC-HS four-digit level (ITC-HS Code-5402 & 2601 for export and 2928 & 8458 for import) and the latest finalized data available on the UN Comtrade Database up to year 2021 and on the DGCI&S Database up to February 2023. So, trends from 2019 to 2022 have been shown when we extract the data from UN Comtrade and from 2018 to 2021 have been shown when we extract the data from DGCIS Data base.

In this report, we will see various analysis and aspects of India's Precious as well as International export trade of High Tenacity Yarn of Nylon and Iron Ors & Concentrates and imports of Hydroxylamine and Lathes**.** We will use both the 4 digit Commodity codes, for our analysis, as appropriate.

Trends in India's as well as International Trade i.e. Exports and Imports of above four Commodities are given below in different tables :

- Table1 : India's top 10 Export destination of High Tenacity Yarn of Nylon with their shares in percentage.
- Table 2 : World's top 10 Exporters of High Tenacity Yarn of Nylon with their shares in percentage.
- Table 3 : World's top 10 Importers of High Tenacity Yarn of Nylon with their shares in percentage.
- Annex- I : Top 3 sources of High Tenacity Yarn of Nylon of World's top 3 Importers.
- Table 4 : India's top 10 Export destination of Iron Ors with their shares in percentage.
- Table 5 : World's top 10 Exporters of Iron Ors with their shares in percentage.
- Table 6 : World's top 10 Importers of Iron Ors with their shares in percentage.
- Annex-II : Top 3 sources of Iron Ors of World's top 3 Importers.
- Table 7 : India's top10 Sources of Hydroxylamine with their shares in percentage.
- Table 8: World's top10 Importers of Hydroxylamine with their shares in percentage.
- Table 9 : India's top 10 Sources of Lathes with their shares in percentage.
- Table 10 : World's top 10 Importers of Lathes with their shares in percentage.

EXPORT

High Tenacity Yarn of Nylon

Nylon is a generic designation for a family of synthetic polymers composed of polyamides (repeating units linked by amide links). Nylon is a silk-like thermoplastic, generally made from petroleum, that can be melt-processed into fibers, films, or shapes. Nylon polymers can be mixed with a wide variety of additives to achieve many different property variations. Nylon polymers have found significant commercial applications in fabric and fibers (apparel, flooring and rubber reinforcement), in shapes (molded parts for cars, electrical equipment, etc.), and in films (mostly for food packaging).

Nylon was the first commercially successful synthetic thermoplastic polymer. DuPont began its research project in 1927. The first example of nylon, (nylon 66), was synthesized using diamines on February 28, 1935, by Wallace Hume Carothers at DuPont's research facility at the DuPont Experimental Station. In response to Carothers' work, Paul Schlack at IG Farben developed nylon 6, a different molecule based on caprolactam, on January 29, 1938.

Nylon was first used commercially in a nylon-bristled toothbrush in 1938, followed more famously in women's stockings or "nylons" which were shown at the 1939 New York World's Fair and first sold commercially in 1940, whereupon they became an instant commercial success with 64 million pairs sold during their first year on the market. During World War II, almost all nylon production was diverted to the military for use in parachutes and parachute cord. Wartime uses of nylon and other plastics greatly increased the market for the new materials

Mono Filament Yarn can be obtained by direct spinning or by splitting the Mother Yarn. It has exceptional resistance and hence it is utilized for fuel and chemicals. This type of monofilaments is widely used in the production of filter fabrics and automotive utilities. A polyester Monofilament yarn is also used in knitting and weaving. It can be availed in Semi Dull, Bright & also in Dope Dyed finishes.

High tenacity nylon yarns showed load-extension behavior, characterized by the secant modulus aft some 100 stabilization cycles, that can be represented as a linear function of mean load and load range. Mean load is the dominant factor, the influence of load range being one order of magnitude smaller. It is reasonable to expect that high efficiency ropes made with these yarns show modulus between0.75 and 0.8 of the modulus of the yarns used. This approximation can be used for preliminary design analyses. All nylon yarns showed asymptotic behavior as loading approaches zero, as opposed to the typical behavior of PET yarns. Considering that rope constructional stretch adds tensile compliance to the yarn it can be concluded the high efficiency nylon ropes should not show impact when loaded from the slack condition. This characteristic is very interesting in the application of connecting two units moored in deep-water.

Nylon 6.6 & 6 high strength multifilament yarn are used in industrial applications i.e. tire cord fabrics, UV protected Fabrics, fishing Net, Airbags etc.

N6 UV protected white yarn, high strength multifilament yarn, used for manufacturing fishing nets, ropes,braid,canvas.

Available Deniers : 210D/36F,420D/ 70F,630D/ 105F,840D/ 140F,1050D/ 175F,1260D /210F,1680D/ 280F,1890D/280F. N6 industrial filament yarn, multifilament yarn with high tenacity,

UV protected, mainly used for manufacturing tyre cord fabric, canvas , ropes . 840D/ 140F,1260D/ 210F,1680D/ 280F,1890D/ 280F

N6 high strength multifilament yarn, UV protected ,black yarn, mainly used for manufacturing fishing nets,ropes,braid,canvas.840D/ 140F, 1260D/ 210F,1680D/ 280F,1890D/ 280F.

N6.6 industrial yarn, high strength multifilament yarn, mainly used for manufacturing conveyer belt, ropes, braid, canvas .

These are broadly classified under **H.S. Code-5402**.

Table - 1

India's Top 10 destination of High Tenacity Yarn of Nylon (H.S Code-5402)

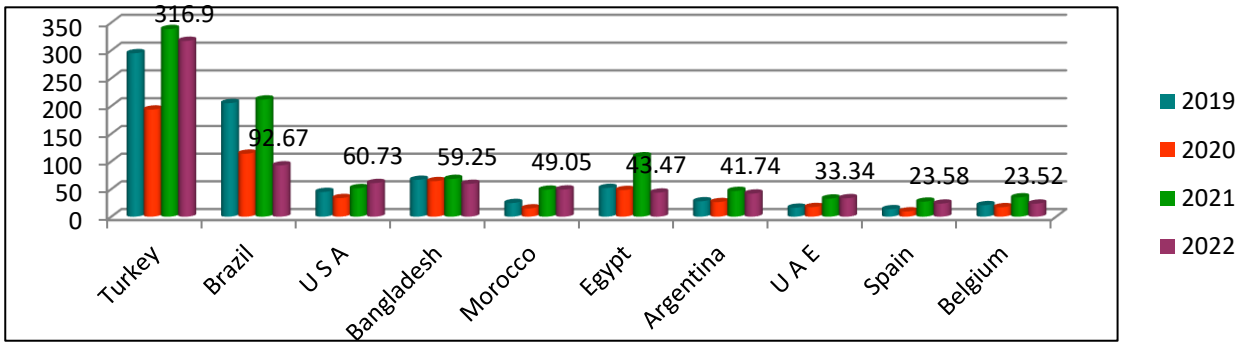
Rank	Countries	2019		2020		2021		2022	
		Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)
1.	Turkey	294.75	26.02	193.49	24.88	338.13	24.79	316.90	30.51
2.	Brazil	205.05	18.10	113.83	14.63	211.53	15.51	92.67	8.92
3.	U S A	44.67	3.94	33.61	4.32	51.54	3.78	60.73	5.85
4.	Bangladesh	66.59	5.88	64.25	8.26	68.21	5.00	59.25	5.70
5.	Morocco	24.65	2.18	14.90	1.92	48.71	3.57	49.05	4.72
6.	Egypt	51.90	4.58	48.18	6.19	109.04	8.00	43.47	4.18
7.	Argentina	27.79	2.45	26.33	3.39	46.50	3.41	41.74	4.02
8.	U A E	16.12	1.42	17.35	2.23	32.70	2.40	33.34	3.21
9.	Spain	13.43	1.18	9.50	1.22	27.12	1.99	23.58	2.27
10.	Belgium	20.71	1.83	17.09	2.20	34.87	2.56	23.52	2.26
	Others	367.35	32.42	239.30	30.77	395.48	29.00	294.53	28.35
	Total	1133.00	100	777.81	100	1363.83	100	1038.78	100

Source: DGCI&S.

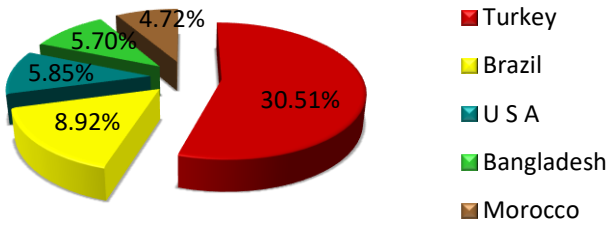
Note : India's Export including re-export

Country wise import of High Tenacity Yarn of Nylon export from India for 2018-2021**(in million US $)**

Data label given on the basis of 2022



India's top 5 destinations of High Tenacity Yarn of Nylon by percentage India in 2022:



India has shown significant role in export of High Tenacity Yarn of Nylon. In the year 2019 the total value of High Tenacity Yarn of Nylon export was US $ 1.13 Billion. Whereas the data of 2022 states the export value of US $ 1.04 billion and it was down by 31.29% from the year 2021. In the year 2022 US $ 316.90 Million value of High Tenacity Yarn of Nylon was exported to Turkey which was accounted 30.51% share of total export of India. Other major countries where High Tenacity Yarn of Nylon was exported in that year were Brazil (8.92%), USA (5.85%), Bangladesh (5.70%) and Morocco (4.72%) of India's total export.

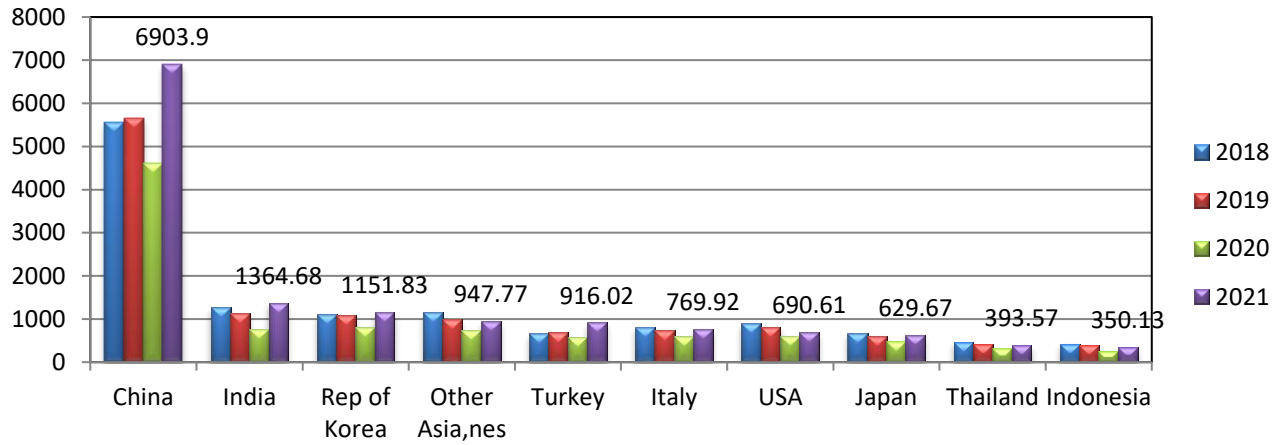
Table-2

World's Top 10 exporter of High Tenacity Yarn of Nylon (H.S Code-5402)

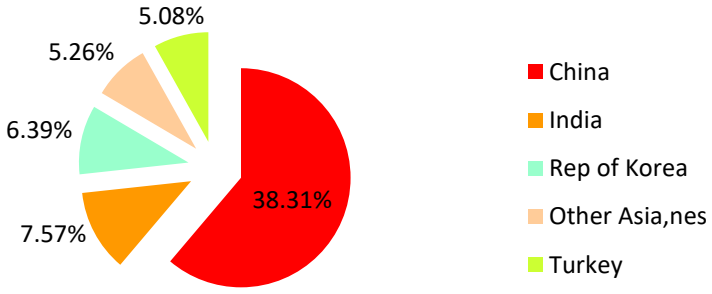
Rank	Countries	2018		2019		2020		2021	
		Value (million $)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)
1.	China	5562.27	31.05	5658.61	33.55	4606.50	34.43	6903.90	38.31
2.	**India**	**1265.36**	**7.06**	**1133.05**	**6.72**	**775.10**	**5.79**	**1364.68**	**7.57**
3.	Rep of Korea	1115.41	6.23	1076.07	6.38	814.94	6.09	1151.83	6.39
4.	Other Asia,nes	1151.58	6.43	990.68	5.87	738.00	5.52	947.77	5.26
5.	Turkey	664.37	3.71	680.40	4.03	585.07	4.37	916.02	5.08
6.	Italy	810.68	4.52	726.53	4.31	591.47	4.42	769.92	4.27
7.	USA	893.99	4.99	817.34	4.85	613.09	4.58	690.61	3.83
8.	Japan	670.27	3.74	607.26	3.60	478.07	3.57	629.67	3.49
9.	Thailand	470.53	2.63	413.44	2.45	323.57	2.42	393.57	2.18
10.	Indonesia	422.53	2.36	402.05	2.38	257.76	1.93	350.13	1.94
	Others	4888.94	27.29	4359.70	25.85	3597.54	26.89	3902.87	21.66
	Total	17915.93	100	16865.13	100	13381.09	100	18020.97	100

Source: UN Comtrade

Leading High Tenacity Yarn of Nylon exporter of world from 2018 to 2021 **(Values in US$ million)**
Data label given on the basis of 2021



Country wise world's leading exporter of High Tenacity Yarn of Nylon by percentage in 2021



China has the highest export volume of Nylon Yarn of any country, at about US $ 6.90 Billion, accounted 38.31% share of world export as of 2021. The second largest sugar exporter**, India**, exported the same in that year at about US $ 1.36 Billion. Rep. of Korea was the 3rd largest exporter of Nylon Yarn in the world with 6.39% share. In that year totalled export of Nylon Yarn of these three largest country together was almost 52.27% of world export. Global Nylon Yarn exports amounted to approximately US $ 18 Billion in 20201, up from US $ 13.38 Billion in 2020.

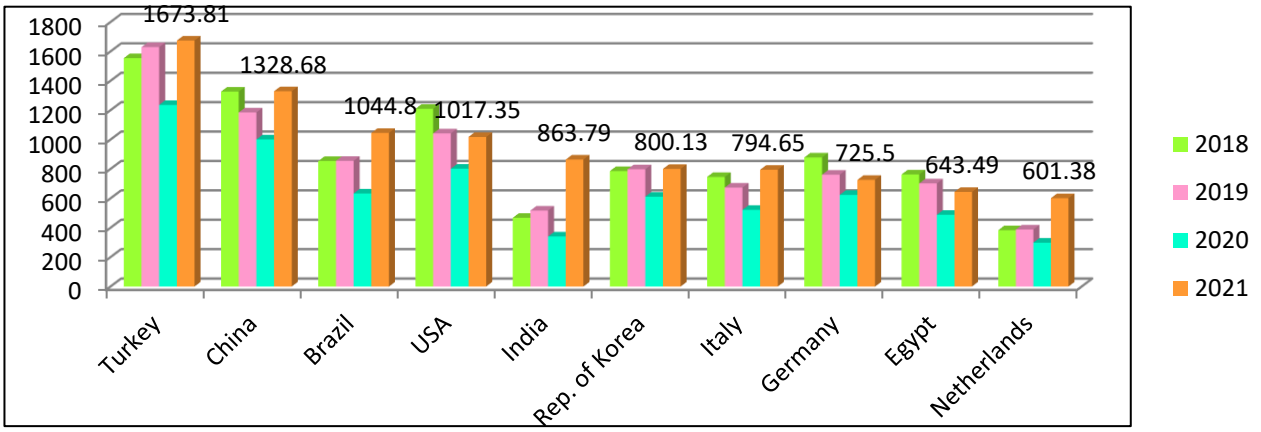
Table-3

World's top 10 Importers of High Tenacity Yarn of Nylon (H.S Code-5402)

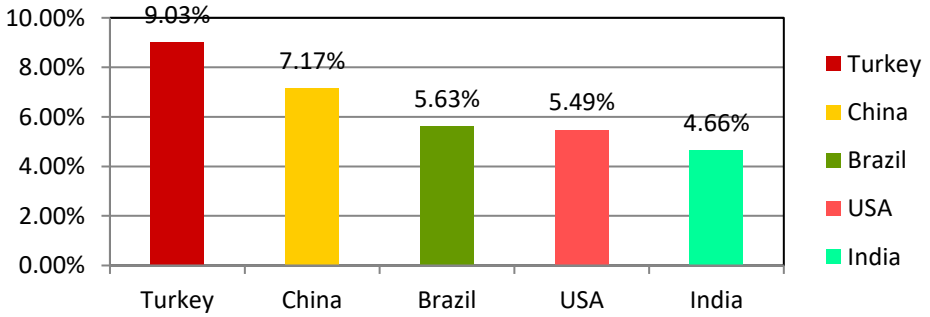
Rank	Countries	2018		2019		2020		2021	
		Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)
1.	Turkey	1553.97	8.39	1628.99	9.28	1235.18	8.91	1673.81	9.03
2.	China	1325.90	7.16	1184.14	6.75	1000.80	7.22	1328.68	7.17
3.	Brazil	854.00	4.61	855.18	4.87	633.33	4.57	1044.80	5.63
4.	USA	1209.27	6.53	1041.54	5.94	801.49	5.78	1017.35	5.49
5.	**India**	**467.68**	**2.53**	**516.93**	**2.95**	**340.26**	**2.46**	**863.79**	**4.66**
6.	Rep. of Korea	785.47	4.24	797.45	4.54	611.21	4.41	800.13	4.32
7.	Italy	745.56	4.03	673.48	3.84	521.51	3.76	794.65	4.29
8.	Germany	877.99	4.74	760.82	4.34	623.16	4.50	725.50	3.91
9.	Egypt	762.27	4.12	701.66	4.00	487.80	3.52	643.49	3.47
10.	Netherlands	383.42	2.07	388.02	2.21	298.33	2.15	601.38	3.24
	Others	9546.68	51.57	8999.82	51.29	7304.09	52.71	9048.19	48.80
	Total	18512.21	100	17548.03	100	13857.16	100	18541.77	100

Source : UN Comtrade

Leading Nylon Yarn importers of world from 2018 to 2021 **(Values in million USD)**
Data label given on the basis of 2021



Country wise world's leading importers of Nylon Yarn by percentage in 2021

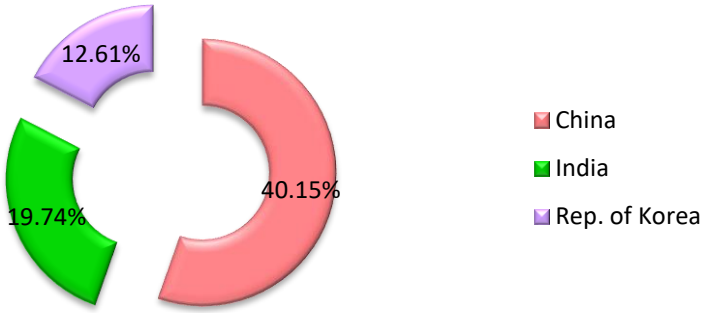


Global purchases of imported Nylon Yarn cost a total US $ 18.54 billion in 2021. In that year, imported Nylon Yarn appreciated by an average 33.86% from US $ 13.85 billion during 2020. From a major importing countries perspective, Turkey consumed the highest dollar worth of imported Nylon Yarn during 2021 with purchases valued at US $ 1.67 billion or 9.03% of the world total. In second and third place were China and Brazil at 7.17% and 5.63% of globally imported Nylon Yarn in 2021. In that year **India** was at 5th position in ranking in the world with share of 4.66% of world total import value of Nylon Yarn.

Annexure-1

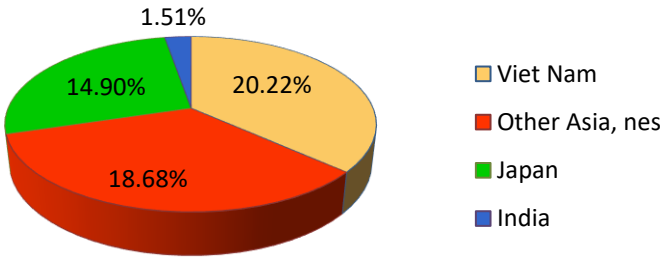
Major sources of world's top three importers of High Tenacity Yarn of Nylon (H.S Code-5402)

i) Top 3 Sources of High Tenacity of Yarn of Nylon to Turkey in 2021 by percentage:



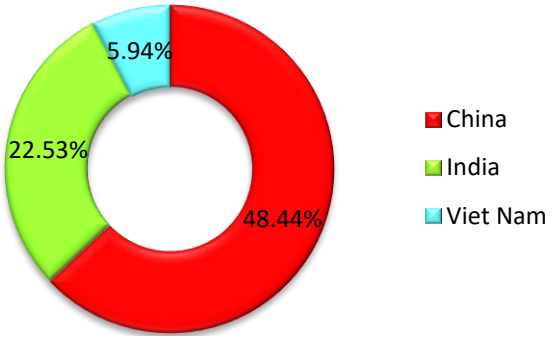
In the year 2021 Turkey imported 40.15% share of its requirement of High Tenacity Yarn of Nylon from China, 2nd largest source of High Tenacity Yarn of Nylon to Turkey was **India** with 19.74% share of Turkey's total import in 2021 and 12.61% of High Tenacity Yarn of Nylon sold by Rep. of Korea to Turkey.. **Source : UN Comtrade)**

ii) Top 3 Sources of High Tenacity Yarn of Nylon to China in 2021 by percentage***:***



China was the 2nd largest importer of Nylon Yarn in2021. China's 3 major source countries of Nylon Yarn in 2021 were Viet Nam (20.22%), Other Asia, nes (18.68%) and Japan (14.90%). In the same year **India** exported 1.51% of Nylon Yarn to China. S**ource: UN Comtrade)**

iii) Top 3 Sources of High Tenacity Yarn of Nylon to Brazil in 2021 by percentage***:***



Brazil imports 48.44% share of Nylon Yarn from China in 2021. **India** and Vietnam were 2nd and 3rd major source countries of the Nylon Yarn to Brazil in that year. **(Source: UN Comtrade)**

Iron Ores and Concentrates

Iron ores are rocks and minerals from which metallic iron can be economically extracted. The ores are usually rich in iron oxides and vary in color from dark grey, bright yellow, or deep purple to rusty red. The iron is usually found in the form of magnetite (Fe_3O_4, 72.4% Fe), hematite (Fe_2O_3, 69.9% Fe), goethite (FeO(OH), 62.9% Fe), limonite ($FeO(OH)\cdot n(H_2O)$, 55% Fe) or siderite ($FeCO_3$, 48.2% Fe).

Ores containing very high quantities of hematite or magnetite (greater than about 60% iron) are known as "natural ore" or "direct shipping ore", meaning they can be fed directly into iron-making blast furnaces. Iron ore is the raw material used to make pig iron, which is one of the main raw materials to make steel—98% of the mined iron ore is used to make steel. In 2011 the *Financial Times* quoted Christopher LaFemina, mining analyst at Barclays Capital, saying that iron ore is "more integral to the global economy than any other commodity, except perhaps oil".

Metallic iron is virtually unknown on the surface of the Earth except as iron-nickel alloys from meteorites and very rare forms of deep mantle xenoliths. Some iron meteorites are thought to have originated from accreted bodies 1,000 km in diameter or larger The origin of iron can be ultimately traced to the formation through nuclear fusion in stars, and most of the iron is thought to have originated in dying stars that are large enough to collapse or explode as supernovae. Although iron is the fourth-most abundant element in the Earth's crust, composing about 5%, the vast majority is bound in silicate or, more rarely,x carbonate minerals (for more information, see iron cycle). The thermodynamic barriers to separating pure iron from these minerals are formidable and energy-intensive; therefore, all sources of iron used by human industry exploit comparatively rarer iron oxide minerals, primarily hematite.

Prior to the industrial revolution, most iron was obtained from widely available goethite or bog ore, for example, during the American Revolution and the Napoleonic Wars. Prehistoric societies used laterite as a source of iron ore. Historically, much of the iron ore utilized by industrialized societies has been mined from predominantly hematite deposits with grades of around 70% Fe. These deposits are commonly referred to as "direct shipping ores" or "natural ores". Increasing iron ore demand, coupled with the depletion of high-grade hematite ores in the United States, led after World War II to the development of lower-grade iron ore sources, principally the utilization of magnetite and taconite.

Iron ore mining methods vary by the type of ore being mined. There are four main types of iron ore deposits worked currently, depending on the mineralogy and geology of the ore deposits. These are magnetite, titanomagnetite, massive hematite and pisolitic ironstone deposits.

Iron is the world's most commonly used metal—steel, of which iron ore is the key ingredient, representing almost 95% of all metal used per year. It is used primarily in structures, ships, automobiles, and machinery.

Iron-rich rocks are common worldwide, but ore-grade commercial mining operations are dominated by the countries listed in the table aside. The major constraint to economics for iron ore deposits is not necessarily the grade or size of the deposits, because it is not particularly hard to geologically prove enough tonnage of the rocks exist. The main constraint is the position of the iron ore relative to market, the cost of rail infrastructure to get it to market and the energy cost required to do so.

World production averages two billion metric tons of raw ore annually. The world's largest producer of iron ore is the Brazilian mining corporation Vale, followed by Australian companies Rio Tinto Group and BHP. A further Australian supplier, Fortescue Metals Group Ltd, has helped bring Australia's production to first in the world.

The total recoverable reserves of iron ore in India are about 9,602 million tonnes of hematite and 3,408 million tonnes of magnetite Chhattisgarh, Madhya Pradesh, Karnataka, Jharkhand, Odisha, Goa, Maharashtra, Andhra Pradesh, Kerala, Rajasthan and Tamil Nadu are the principal Indian producers of iron ore. World consumption of iron ore grows 10% per annumon average with the main consumers being China, Japan, Korea, the United States and the European Union.

China is currently the largest consumer of iron ore, which translates to be the world's largest steel producing country. It is also the largest importer, buying 52% of the seaborne trade in iron ore in 2004. China is followed by Japan and Korea, which consume a significant amount of raw iron ore and metallurgical coal. In 2006, China produced 588 million tons of iron ore, with an annual growth of 38%.

These are broadly classified under **H.S. Code-2601**.

Table - 4

India's Top 10 destination of Iron Ores and Concentrates (HS Code –2601)

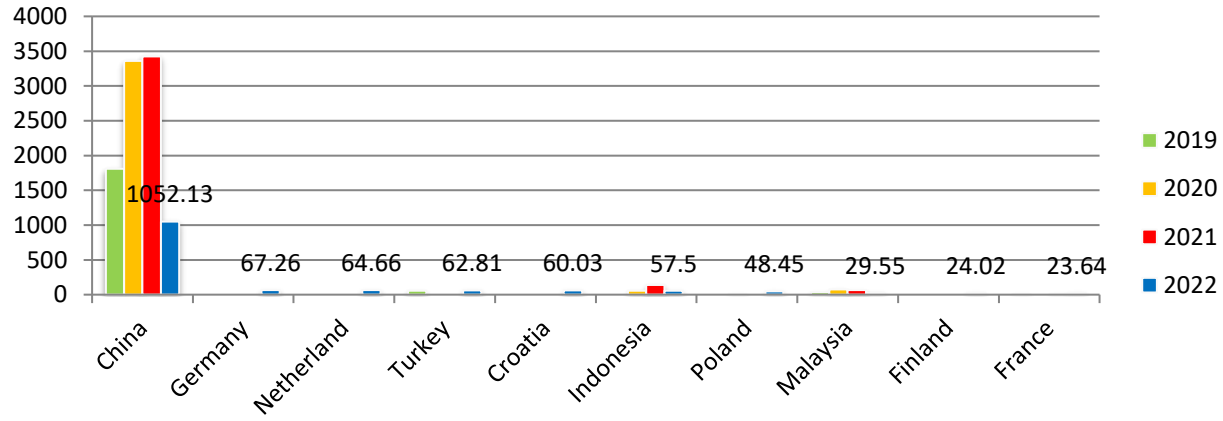
Rank	Countries	2019		2020		2021		2022	
		Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)
1.	China	1810.66	76.72	3358.01	87.11	3423.81	81.88	1052.13	64.96
2.	Germany	0.00	0.00	0.00	0.00	0.00	0.00	67.26	4.15
3.	Netherland	0.00	0.00	0.00	0.00	0.00	0.00	64.66	3.99
4.	Turkey	54.19	2.30	0.00	0.00	0.00	0.00	62.81	3.88
5.	Croatia	0.00	0.00	0.00	0.00	0.00	0.00	60.03	3.71
6.	Indonesia	0.00	0.00	58.15	1.51	138.20	3.30	57.50	3.55
7.	Poland	0.00	0.00	7.94	0.21	0.00	0.00	48.45	2.99
8.	Malaysia	39.46	1.67	74.70	1.94	66.66	1.59	29.55	1.82
9.	Finland	0.00	0.00	0.00	0.00	0.00	0.00	24.02	1.48
10.	France	6.17	0.26	0.00	0.00	10.05	0.24	23.64	1.46
	Others	449.58	19.05	356.01	9.24	542.97	12.98	129.56	8.00
	Total	2360.05	100	3854.81	100	4181.69	100	1619.60	100

Source: DGCI&S

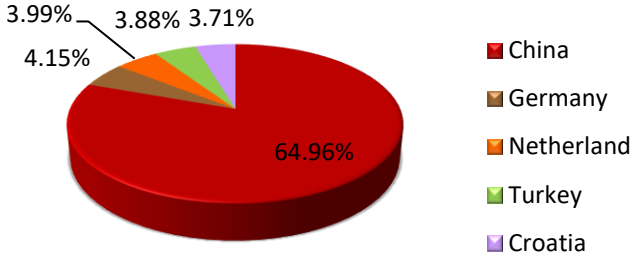
Note : India's Export including re-export

Leading Iron Ores and Concentrates importers from India from 2019-2022**(Values in million USD)**

Data label given on the basis of 2022



India's top 5 major destinations of Iron Ores and Concentrates by percentage India in 2022:



India exported Iron ores and concentrates to over 52 countries across the globe and worth over US $ 1.62 Billion in 2022 which has decreased from US $ 4.18 Billion at 2021. India has exported highest worth value of Iron ores and concentrates to China was US $ 1.05 Billion, making it the highest export partner for this commodity in the year 2022 with almost 65% share of India's export of Iron ores and concentrates in 2022. Germany and Netherland followed at about US 67.26 million and US $ 64.66 million in that year. These major three countries together imported almost 73.10 % of India's totalled export value of Iron ores and concentrates in 2022.

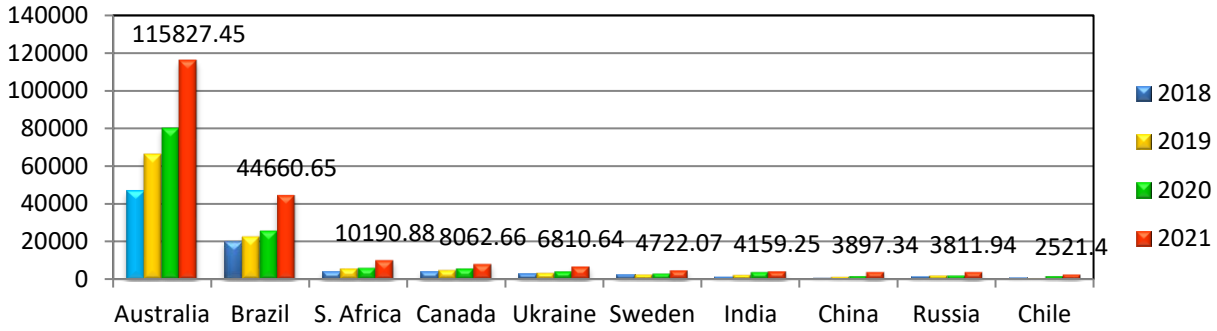
Table - 5

World's Top 10 exporters of Iron Ores and Concentrates (HS Code –2601)

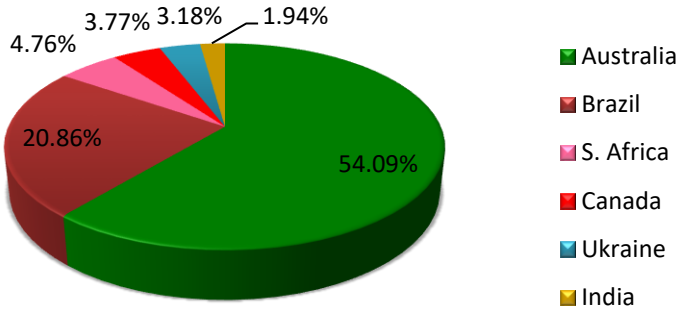
Rank	Countries	2018		2019		2020		2021	
		Value (million $)	Share (%)	Value (million$)	share (%)	Value (million$)	share (%)	Value (million$)	Share (%)
1.	Australia	47143.70	51.19	66496.41	55.38	80234.48	56.46	115827.45	54.09
2.	Brazil	20220.36	21.95	22682.39	18.89	25789.23	18.15	44660.65	20.86
3.	S. Africa	4297.96	4.67	5791.24	4.82	6118.15	4.31	10190.88	4.76
4.	Canada	4113.67	4.47	4947.72	4.12	5717.56	4.02	8062.66	3.77
5.	Ukraine	2869.02	3.11	3397.78	2.83	4239.32	2.98	6810.64	3.18
6.	Sweden	2381.41	2.59	2573.01	2.14	3079.87	2.17	4722.07	2.21
7.	**India**	**1253.31**	**1.36**	**2358.24**	**1.96**	**3874.95**	**2.73**	**4159.25**	**1.94**
8.	China	793.17	0.86	1418.75	1.18	1626.75	1.14	3897.34	1.82
9.	Russia	1598.06	1.74	2090.41	1.74	1977.72	1.39	3811.94	1.78
10.	Chile	964.63	1.05	640.29	0.53	1693.71	1.19	2521.40	1.18
	Others	6468.53	7.02	7676.55	6.39	7751.02	5.45	9472.60	4.42
	Total	92103.84	100	120072.79	100	142102.74	100	214136.89	100

Source: UN Comtrade

Leading Iron Ores and Concentrates exporters of world from 2018 to 2021 **(Values in million USD)**
Data label given on the basis of 2021



Country wise export trends in world's leading Iron Ores and Concentrates exporters by percentage in 2021:



In the year 2021 Iron ores and concentrates exports stood at US $ 214.13 Billion. The trend indicates that total export value of Iron ores and concentrates increased continuously from 2018 to 2021 at an average annual rate of more than 33.63% Global Iron ores and concentrates export peaked of US $ 214.13 Billion in 2021. Australia dominates in Iron ores and concentrates exports structure which was near 54.09% of global total exports in 2021. It was distantly followed by Brazil (20.86%) and South Africa (4.76%). In that year **India** exports 1.94% of total world exports of Iron ores and concentrates and stood at 7th position in ranking in the world.

Table - 6

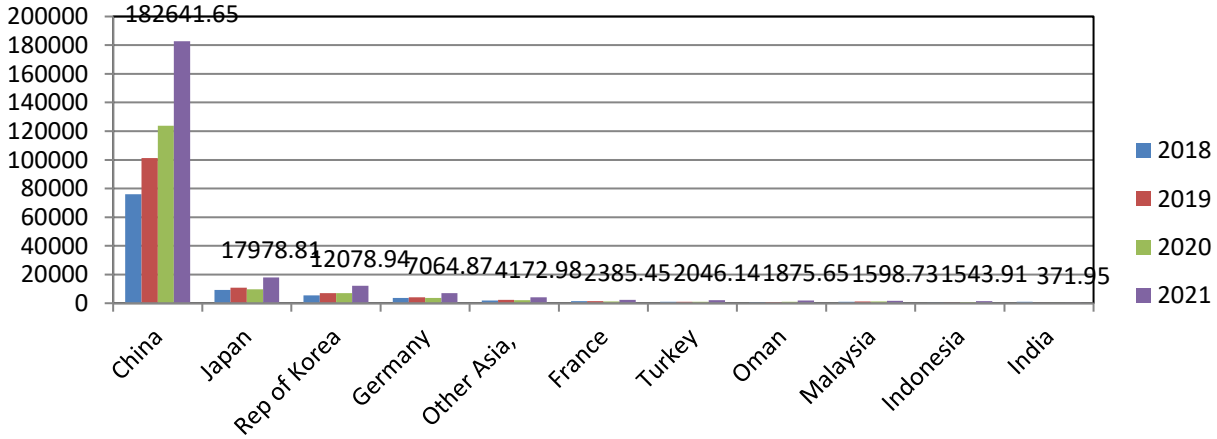
World's Top 10 Importers of Iron Ores and Concentrates (HS Code –2601)

Rank	Countries	2018		2019		2020		2021	
		Value (million $)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)
1.	China	75922.18	65.32	101331.4	69.63	123732.4	75.45	182641.65	72.12
2.	Japan	9318.96	8.02	10901.57	7.49	9655.05	5.89	17978.81	7.10
3.	Rep of Korea	5402.64	4.65	6952.01	4.78	6931.10	4.23	12078.94	4.77
4.	Germany	3627.44	3.12	4022.84	2.76	3659.58	2.23	7064.87	2.79
5.	Other Asia,	1942.07	1.67	2260.71	1.55	2175.58	1.33	4172.98	1.65
6.	France	1339.63	1.15	1412.41	0.97	1170.42	0.71	2385.45	0.94
7.	Turkey	993.69	0.85	1101.53	0.76	1051.08	0.64	2046.14	0.81
8.	Oman	543.64	0.47	867.27	0.60	993.84	0.61	1875.65	0.74
9.	Malaysia	1054.25	0.91	1298.79	0.89	1163.19	0.71	1598.73	0.63
10.	Indonesia	403.70	0.35	430.50	0.30	681.93	0.42	1543.91	0.61
29.	**India**	**1033.40**	**0.89**	**189.66**	**0.13**	**109.53**	**0.07**	**371.95**	**0.15**
	Others	14655.26	12.61	14752.70	10.14	12664.04	7.72	19502.88	7.70
	Total	116236.86	100	145521.4	100	163987.7	100	253261.95	100

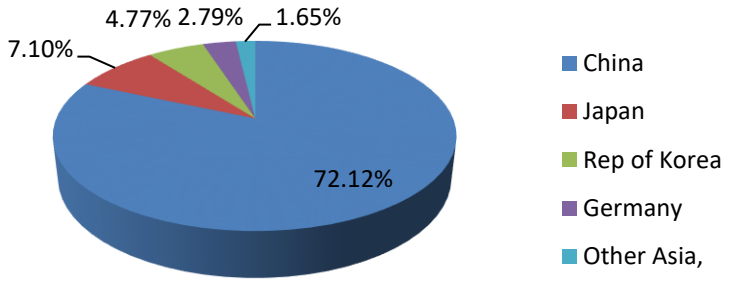
Source :UNComtrade

Leading Iron ores and concentrates importers of world from 2018 to 2021 **(Values in million USD)**

Data label given on the basis of 2021



Country wise import trends in world's Iron ores and concentrates importers by percentage in 2021 :

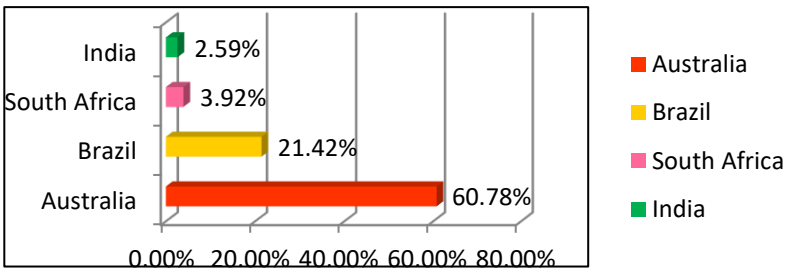


Global Iron ores and concentrates imports totaled US $ 253.26 Billion in 2021, which was rise by 54.44% against the previous year. Over the period under review, global Iron ores and concentrates imports attained its maximum level of US $ 253.26 Billion in 2021. In the year 2021 the largest Iron ores and concentrates importers worldwide were China (US $ 18.26 B), Japan (US $ 17.97 B) and Rep of Korea (US $ 12.07 B), together comprising 84 % of global imports. . India stood at 29th rank in the world import of Iron ores and concentrates with 0.15% share in 2021

Annexure-II

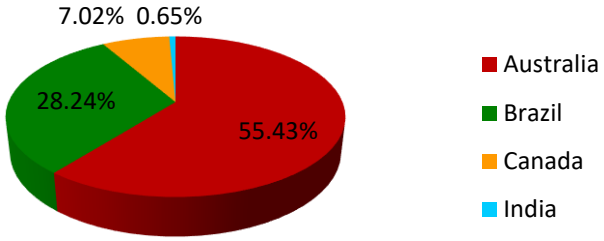
Major sources of world's top three importers of Iron Ores and Concentrates (H . S. Code-2601)

i) Top 3 Sources of Iron Ores and Concentrates to China in 2021 by percentage:



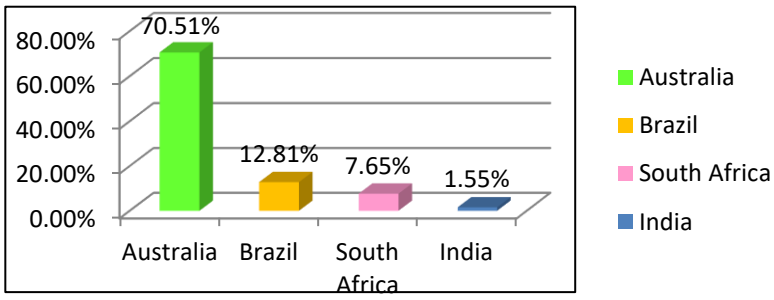
Australia dominates in Iron ores and concentrates imports structure of China's market which was near 61% of China's total imports in 2021,It was distantly followed byBrazil (21.42%) and South Africa(3.92%). And **India (2.59%). Source: UN Comtrade)**

ii) Top 3 Sources of Iron Ores and Concentrates to Japan in 2021 by percentage**:**



Japan's 3 major source countries of Iron Ores and Concentrates in 2021 were Australia (55.43%), Brazil (28.24%), and Canada (7.02%). Germany imported 0.65% of Germany's total import of Iron Ores and Concentrates in 2021 from **India**. **(Source: UN Comtrade)**

iii) Top 3 Sources of Iron Ores and Concentrates to Rep. of Korea in 2021 by percentage**:**



Rep. of Korea imports 70.51% share of Iron Ores and Concentrates from Australia in 2021. The 2nd largest source of the commodity to Rep. of Korea was Brazil with 12.81% share of Rep. of Korea's total import in that year. Iron Ores and Concentrates imported from India in 2021 to Rep. of Korea was 1.55% share of Rep. of Korea's total Iron Ores and Concentrates import. **(Source : UN Comtrade)**

IMPORT

Hydroxylamine

Hydroxylamine is an inorganic compound with the formula NH_2OH. The material is a white crystalline, hygroscopic compound. Hydroxylamine is almost always provided and used as an aqueous solution. It is consumed almost exclusively to produce Nylon-6. It is also an intermediate in biological nitrification. The oxidation of NH_3 to hydroxylamine is a step in biological nitrification.

Hydroxylamine was first prepared as hydroxylammonium chloride in 1865 by the German chemist Wilhelm Clemens Lossen (1838-1906); he reacted tin and hydrochloric acid in the presence of ethyl nitrate. It was first prepared in pure form in 1891 by the Dutch chemist Lobry de Bruyn and by the French chemist Léon Maurice Crismer (1858-1944). The coordination complex $ZnCl_2(NH_2OH)_2$, known as Crismer's salt, releases hydroxylamine upon heating.

Hydroxylamine or its salts can be produced via several routes but only two are commercially viable. It is also produced naturally as discussed in a section on biochemistry.

Approximately 95% of hydroxylamine is used in the synthesis of cyclohexanone oxime, a precursor to Nylon 6. The treatment of this oxime with acid induces the Beckmann rearrangement to give caprolactam (**3**). The latter can then undergo a ring-opening polymerization to yield Nylon 6.

Hydroxylamine and its salts are commonly used as reducing agents in myriad organic and inorganic reactions. They can also act as antioxidants for fatty acids.

High concentrations of hydroxylamine are used by biologists to introduce mutations by acting as a DNA nucleobase amine-hydroxylating agent. In is thought to mainly act via hydroxylation of cytidine to hydroxyaminocytidine, which is misread as thymidine, thereby inducing C:G to T:A transition mutations. But high concentrations or over-reaction of hydroxylamine *in vitro* are seemingly able to modify other regions of the DNA & lead to other types of mutations. This may be due to the ability of hydroxylamine to undergo uncontrolled free radical chemistry in the presence of trace metals and oxygen, in fact in the absence of its free radical affects Ernst Freese noted hydroxylamine was unable to induce reversion mutations of its C:G to T:A transition effect & even considered hydroxylamine to be the most specific mutagen known. Practically, it has been largely surpassed by more potent mutagents such as EMS, ENU, or nitrosoguanidine, but being a very small mutagenic compound with high specificity, it found some specialized uses such as mutation of DNA packed within bacteriophage capsids, & mutation of purified DNA . An alternative industrial synthesis of paracetamol developed by Hoechst–Celanese involves the conversion of ketone to a ketoxime with hydroxylamine.

Some non-chemical uses include removal of hair from animal hides and photographic developing solutions. In the semiconductor industry, hydroxylamine is often a component in the "resist stripper", which removes photoresist after lithography.

Hydroxylamine may explode on heating. The nature of the explosive hazard is not well understood. At least two factories dealing in hydroxylamine have been destroyed since 1999 with loss of life. It is known, however, that ferrous and ferric iron salts accelerate the decomposition of 50% NH_2OH solutions. Hydroxylamine and its derivatives are more safely handled in the form of salts.

It is an irritant to the respiratory tract, skin, eyes, and other mucous membranes. It may be absorbed through the skin, is harmful if swallowed, and is a possible mutagen

Hydroxylamine Derivatives were the world's 804th most traded product, with a total import trade of $1.74Billion. Between 2020 and 2021 the imports of **Hydrazine or Hydroxylamine Derivatives** grew by 14.47%, from $1.52 Billion to $1.74 Billion in 2021. Trade in **Hydrazine or Hydroxylamine Derivatives** represent 0.0086% of total world trade.

In 2021 the top importers of **Hydrazine or Hydroxylamine Derivatives** were Brazil (US $299.20M), Switzerland (US $204.66 M), USA(US $ 204.66), Germany ($166M) and Italy ($163.20 M).

These are broadly classified under **H. S. Code 2928**.

Table - 7

India's Top 10 Sources of Hydroxylamine (HS Code :2928)

Rank	Countries	2019		2020		2021		2022	
		Value (million $)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)
1.	China	31.84	33.87	34.83	55.02	34.76	63.82	32.92	59.33
2.	Germany	6.17	6.56	8.55	13.50	5.01	9.19	5.78	10.41
3.	Japan	1.40	1.49	3.52	5.57	2.30	4.21	4.62	8.33
4.	Netherland	20.64	21.95	0.77	1.22	2.93	5.38	3.94	7.10
5.	U S A	4.87	5.18	3.83	6.05	2.20	4.05	3.22	5.80
6.	Spain	1.59	1.69	2.04	3.22	6.24	11.45	1.91	3.45
7.	Russia	3.60	3.83	4.81	7.60	0.00	0.00	1.02	1.84
8.	Belgium	21.13	22.47	0.54	0.85	0.01	0.02	0.65	1.16
9.	Switzerland	2.52	2.68	1.22	1.92	0.02	0.04	0.52	0.93
10.	Hong Kong	0.01	0.02	0.04	0.06	0.27	0.50	0.27	0.49
	Others	0.25	0.26	3.16	4.98	0.73	1.34	0.63	1.14
	Total	94.03	100	63.30	100	54.48	100	55.48	100

Source: DGCI&S

Note : India's Import including re-import

The Value of imports of Hydroxylamine into India totalled US $ 55.48 Million in 2022 which was 1.83% more than that in 2021. The import of Hydroxylamine into India reached highest worth value in 2019. China has been the top source of Hydroxylamine to India with its share of 59.33% in the year 2022 followed by Germany and Japan, they exported Hydroxylamine to India of US $ 5.78 million and US $ 4.62 million in that year. China has always been at a high in export of Hydroxylamine to India. Hydroxylamine imports of India attained its maximum level of US $ 94.03 Million in 2019.

Table - 8

World's Top 10 Importer of Hydroxylamine (HS Code :2928)

Rank	Countries	2018		2019		2020		2021	
		Value (million $)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)
1.	Brazil	263.42	18.86	327.17	21.51	230.37	15.15	299.20	17.13
2.	Switzerland	73.38	5.25	146.92	9.66	201.66	13.27	204.66	11.72
3.	USA	162.11	11.60	149.21	9.81	191.60	12.60	187.64	10.74
4.	Germany	198.53	14.21	156.05	10.26	179.63	11.82	165.99	9.51
5.	Italy	125.36	8.97	147.22	9.68	151.03	9.93	163.20	9.35
6.	China	53.10	3.80	47.23	3.11	31.55	2.08	106.49	6.10
7.	France	78.97	5.65	70.36	4.63	71.56	4.71	79.43	4.55
8.	Spain	43.74	3.13	41.56	2.73	43.48	2.86	66.05	3.78
9.	Netherlands	14.01	1.00	13.50	0.89	19.61	1.29	55.89	3.20
10.	**India**	**44.09**	**3.16**	**93.65**	**6.16**	**63.66**	**4.19**	**54.44**	**3.12**
	Others	340.30	24.36	327.80	21.56	336.07	22.11	363.38	20.81
	Total	1397.01	100	1520.65	100	1520.21	100	1746.37	100

Source :UNComtrade

The world imports of Hydroxylamine was totaled US $ 1.74 Billion in 2021. The total imports volume increased at an 16.40% over the year 2020. Over the period under review, global wire and cable imports attained its maximum level of US $ 1.74 Billion in 2021. Brazil has been the top importer of Hydroxylamine with its import share of 17.13% in the year 2021 followed by Switzerland and USA that imported Hydroxylamine of 11.72 % and 10.74 % respectively. In the same year India imports US $ 54.44 Million, accounted 3.12% share of world import and ranked at 10th in the world import of Hydroxylamine.

Lathes

A **lathe** is a machine tool that rotates a workpiece about an axis of rotation to perform various operations such as cutting, sanding, knurling, drilling, deformation, facing, and turning, with tools that are applied to the workpiece to create an object with symmetry about that axis.

Lathes are used in woodturning, metalworking, metal spinning, thermal spraying, parts reclamation, and glass-working. Lathes can be used to shape pottery, the best-known design being the Potter's wheel. Most suitably equipped metalworking lathes can also be used to produce most solids of revolution, plane surfaces and screw threads or helices. Ornamental lathes can produce three-dimensional solids of incredible complexity. The workpiece is usually held in place by either one or two *centers*, at least one of which can typically be moved horizontally to accommodate varying workpiece lengths. Other work-holding methods include clamping the work about the axis of rotation using a chuck or collet, or to a faceplate, using clamps or dog clutch.

Examples of objects that can be produced on a lathe include screws, candlesticks, gun barrels, cue sticks, table legs, bowls, baseball bats, pens, musical instruments (especially woodwind instruments), and crankshafts.

The lathe is an ancient tool. There is also tenuous evidence for its existence at a Mycenaean Greek site, dating back as far as the 13th or 14th century BC. Clear evidence of turned artifacts have been found from the 6th century BC: fragments of a wooden bowl in an Etruscan tomb in Northern Italy as well as two flat wooden dishes with decorative turned rims from modern Turkey. During the Warring States period in China, c. 400 BC, the ancient Chinese used rotary lathes to sharpen tools and weapons on an industrial scale.[4] The first known painting showing a lathe dates to the 3rd century BC in ancient Egypt.

When a workpiece is fixed between the headstock and the tail-stock, it is said to be "between centers". When a workpiece is supported at both ends, it is more stable, and more force may be applied to the workpiece, via tools, at a right angle to the axis of rotation, without fear that the workpiece may break loose.

When a workpiece is fixed only to the spindle at the headstock end, the work is said to be "face work". When a workpiece is supported in this manner, less force may be applied to the workpiece, via tools, at a right angle to the axis of rotation, lest the workpiece rip free. Thus, most work must be done axially, towards the headstock, or at right angles, but gently.

When a workpiece is mounted with a certain axis of rotation, worked, then remounted with a new axis of rotation, this is referred to as "eccentric turning" or "multi-axis turning". The result is that various cross sections of the workpiece are rotationally symmetric, but the workpiece as a whole is not rotationally symmetric. This technique is used for camshafts, various types of chair legs.

Lathes are usually 'sized' by the capacity of the work that they may hold. Usually large work is held at both ends either using a chuck or other drive in the headstock and a centre in the tailstock. To maximise size, turning between centres allows the work to be as close to the headstock as possible and is used to determine the longest piece the lathe will turn: when the base of the tailstock is aligned with the end of the bed. The distance between centres gives the maximum length of work the lathe will officially hold. It is possible to get slightly longer items in if the tailstock overhangs the end of the bed but this is an ill-advised practice.

A variety of products can be made from the lathe machine and that are Nuts, bolts, piston, ram, pump part, electric motor parts, sleeves, Aircraft parts, gun barrels, candlesticks, train parts, cue sticks, wooden bowls, baseball bat, crankshaft and many more things.

These are broadly classified under **H. S. Code 8458**.

Table - 9

India's Top 10 Source Countries of Lathes (HS Code : 8458)

Rank	Countries	2019		2020		2021		2022	
		Value (million $)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)
1.	Japan	65.39	33.04	42.55	34.17	31.86	20.22	41.96	22.08
2.	Korea RP	25.82	13.04	18.49	14.85	22.90	14.53	27.34	14.38
3.	China	21.80	11.01	12.73	10.23	16.89	10.71	25.55	13.44
4.	Germany	14.04	7.09	7.50	6.02	10.32	6.55	14.22	7.48
5.	Taiwan	18.10	9.14	12.21	9.81	16.85	10.69	13.27	6.98
6.	Singapore	7.83	3.96	8.16	6.55	9.28	5.89	11.88	6.25
7.	Thailand	8.49	4.29	4.36	3.50	7.65	4.85	9.73	5.12
8.	Italy	7.88	3.98	5.41	4.34	12.29	7.80	9.71	5.11
9.	U S A	7.70	3.89	4.72	3.79	11.64	7.38	8.59	4.52
10.	Czech RP	1.32	0.67	0.18	0.14	0.14	0.09	6.52	3.43
	Others	19.58	9.89	8.22	6.60	17.80	11.29	21.29	11.20
	Total	197.95	100	124.53	100	157.61	100	190.05	100

Source: DGCI&S

Note : India's Import including Re-import

The value of imports of Lathes to India totalled US $ 190.05 million in 2022. Sales of Lathes to India increased by 20.58% in value terms compared to 2021.Major five source countries of Lathes to India in 2022 were Japan (US $ 41.96 Million), Korea RP (US $ 27.34 Million), China(US $ 25.55 Million), Germany (US $ 14.22 Million) and Taiwan (US $ 13.27 Million). These 5 countries in total exported US $ 122.34 Million value of Lathes to India which rounds up to 64.36% of the total Lathes import into India in 2022.

Table - 10

World Top 10 Importer of Lathes (HS Code : 8458)

Rank	Countries	2018		2019		2020		2021	
		Value (million $)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)	Value (million$)	Share (%)
1.	USA	1172.25	15.98	1208.95	17.64	828.82	17.25	859.23	14.83
2.	China	816.37	11.13	653.04	9.53	496.02	10.32	618.66	10.68
3.	Germany	689.42	9.40	621.83	9.07	348.84	7.26	427.10	7.37
4.	Italy	432.12	5.89	353.71	5.16	192.49	4.01	355.00	6.13
5.	Turkey	210.32	2.87	131.48	1.92	219.87	4.58	339.98	5.87
6.	Russia	240.04	3.27	273.96	4.00	239.56	4.99	251.38	4.34
7.	France	306.70	4.18	311.39	4.54	170.68	3.55	219.95	3.80
8.	Japan	216.09	2.95	198.22	2.89	117.46	2.44	192.42	3.32
9.	Mexico	270.01	3.68	225.51	3.29	133.93	2.79	167.24	2.89
10.	**India**	**203.29**	**2.77**	**197.65**	**2.88**	**124.57**	**2.59**	**157.57**	**2.72**
	Others	2777.51	37.87	2676.71	39.06	1933.00	40.23	2203.80	38.05
	Total	7334.12	100	6852.46	100	4805.24	100	5792.34	100

Source :UNComtrade

The imports of the five major importers of Lathes, namely USA, China, Germany, Italy and Turkey represented 44.88% of total world imports in 2021. In value terms, USA (US $ 859.23M), China (US $ 618.66 M), Germany (US $ 427.10 M), Italy (US $ 355M) and Turkey (US $ 340 M) constituted the countries with the highest levels of imports in 2021. **India** was also among the 10 major importing countries Lathes and ranked in 10th position in the world with 2.72% share of Global import of Lathes in 2021.