

India's International Trade of Four Specific Commodities in the Recent Past Some Insight 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 **Ginger, Saffron, Turmeric, Thyme, Bay leaves, Curry & Other Spices & Structures and Parts of Structures of Iron & Steel** and imports of **Activated Carbon and Electrical Capacitors** 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-0910 & 7308 for export and 3802 & 8532 for import) and the latest finalized data available on the UN Comtrade Database up to year 2022 and on the DGCI&S Database up to August'2023. So, trends from 2019 to 2022 have been shown when we extract the data from UN Comtrade and from 2019 to 2022 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 Ginger, Saffron, Turmeric, Thyme, Bay leaves, Curry & Other Spices & Structures and Parts of Structures of Iron & Steel and imports of Activated Carbon and Electrical Capacitors. We will use both the 4 digit Commodity codes.

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

- Table 1 : India's top 10 Export destination of Ginger, Saffron, Turmeric, Thyme, Bay leaves, Curry & Other Spices with their shares in percentage.
- Table 2 : World's top 10 Exporters of Ginger, Saffron, Turmeric, Thyme, Bay leaves, Curry & Other Spices with their shares in percentage.
- Table 3 : World's top 10 Importers of Ginger, Saffron, Turmeric, Thyme, Bay leaves, Curry & Other Spices with their shares in percentage.
- Annex- I : Top 3 sources of Ginger, Saffron, Turmeric, Thyme, Bay leaves, Curry & Other Spices of World's top 3 Importers.
- Table 4 : India's top 10 destination Structures and Parts of Structures of Iron & Steel with their shares in percentage.
- Table 5 : World's top 10 Exporters Structures and Parts of Structures of Iron & Steel with their shares in percentage.
- Table 6 : World's top 10 Importers of Structures and Parts of Structures of Iron & Steel with their shares in percentage.
- Annex-II : Top 3 sources of Structures and Parts of Structures of Iron & Steel of World's top 3 Importers.
- Table 7 : India's top10 Sources of Activated Carbon with their shares in percentage.
- Table 8 : World's top 10 Importers of Activated Carbon with their shares in percentage.
- Table 9 : India's top 10 Sources of Electrical Capacitors with their shares in percentage.
- Table 10 : World's top 10 Importers of Electrical Capacitors with their shares in percentage.

EXPORT

Ginger, Saffron, Turmeric, Thyme, Bay leaves, Curry & Other Spices

Ginger is a flowering plant whose rhizome, **ginger root** or ginger, is widely used as a spice and a folk medicine. It is a herbaceous perennial which grows annual pseudo stems about one meter tall, bearing narrow leaf blades. The inflorescences bear flowers having pale yellow petals with purple edges, and arise directly from the rhizome on separate shoots.

Ginger is one of the first spices to have been exported from Asia, arriving in Europe with the spice trade, and was used by ancient Greeks and Romans.

Though it is grown in many areas across the globe, ginger is "among the earliest recorded spices to be cultivated and exported from southwest India". India holds the seventh position in ginger export worldwide, however is the "largest producer of ginger in the world". Regions in southwest and Northeast India are most suitable for ginger production due to their warm and humid climate, average rainfall and land space.

Ginger is a fragrant kitchen spice. Young ginger rhizomes are juicy and fleshy with a mild taste. They are often pickled in vinegar or sherry as a snack or cooked as an ingredient in many dishes. They can be steeped in boiling water to make ginger herb tea, to which honey may be added. Ginger can be made into candy or ginger wine. Used in traditional medicine in China, India and Japan for centuries, and as a dietary supplement, research shows that ginger may be helpful for mild nausea and vomiting associated with pregnancy, although its safety has not been demonstrated.

Saffron is a plant. The dried thread-like parts of the flower are used to make saffron spice, food coloring, and medicine. Saffron contains chemicals that might alter mood, kill cancer cells, decrease swelling, and act like antioxidants. It can take 75,000 saffron blossoms to produce a single pound of saffron spice. Saffron is largely cultivated in Iran and harvested by hand. It's one of the world's most expensive spices. People commonly use saffron for depression, anxiety, Alzheimer disease, menstrual cramps, premenstrual syndrome (PMS), and many other conditions, but there is no good scientific evidence to support many of these uses.

Turmeric is a perennial herbaceous plant that reaches up to 1 m (3 ft 3 in) tall. It has highly branched, yellow to orange, cylindrical, aromatic rhizomes. The leaves are alternate and arranged in two rows. They are divided into leaf sheath, petiole, and leaf blade. From the leaf sheaths, a false stem is formed. The petiole is 50 to 115 cm long. The simple leaf blades are usually 76 to 115 cm long and rarely up to 230 cm. They have a width of 38 to 45 cm and are oblong to elliptical, narrowing at the tip. From India, it spread to Southeast Asia along with Hinduism and Buddhism, as the yellow dye is used to color the robes of monks and priests. Turmeric has also been found in Tahiti, Hawaii and Easter Island before European contact.

Turmeric is one of the key ingredients in many Asian dishes, imparting a mustard-like, earthy aroma and pungent, slightly bitter flavor to foods. It is used mostly in savory dishes, but also is used in some sweet dishes, such as the cake sfouf. In India, turmeric leaf is used to prepare special sweet dishes, patoleo, by layering rice flour and coconut-jaggery mixture on the leaf, then closing and steaming it in a special utensil. Most turmeric is used in the form of rhizome powder to impart a golden yellow color. Although long used in Ayurvedic medicine, where it is also known as *haridra*, there is no high-quality clinical evidence that consuming turmeric or curcumin is effective for treating any disease.

The **bay leaf** is an aromatic leaf commonly used as a herb in cooking. It can be used whole, either dried or fresh, in which case it is removed from the dish before consumption, or less commonly used in ground form. The flavor that a bay leaf imparts to a dish has not been universally agreed upon, but most agree it is a subtle addition. It has been used for thousands of years for food flavoring, essential oil applications, and in traditional medicine.

These are broadly classified under **H.S. Code-0910**.

Table - 1

India's Top 10 destination of Ginger, Saffron, Turmeric & Other Spices (H.S Code-0910)

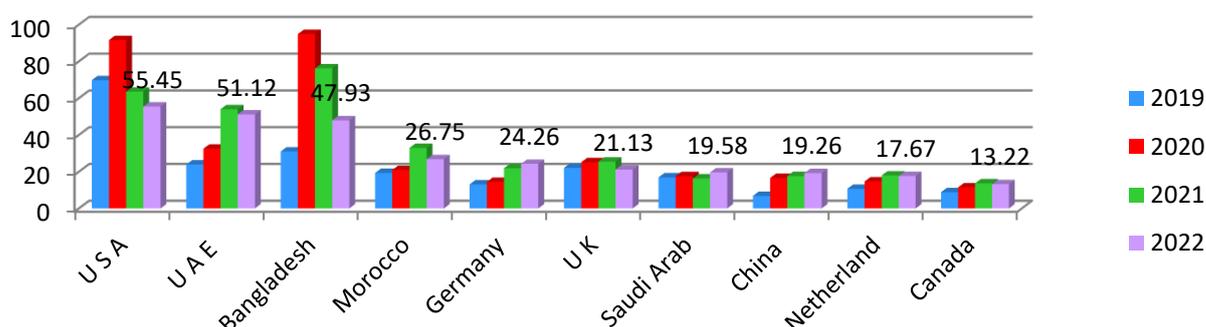
Rank	Countries	2019		2020		2021		2022	
		Value (M \$)	Share (%)						
1.	U S A	69.77	17.49	91.59	17.00	63.50	11.49	55.45	10.90
2.	U A E	23.88	5.99	32.54	6.04	53.96	9.76	51.12	10.04
3.	Bangladesh	30.99	7.77	94.87	17.61	76.24	13.80	47.93	9.42
4.	Morocco	19.31	4.84	20.93	3.88	32.92	5.96	26.75	5.26
5.	Germany	13.07	3.28	14.43	2.68	21.87	3.96	24.26	4.77
6.	U K	22.08	5.54	25.12	4.66	25.48	4.61	21.13	4.15
7.	Saudi Arab	16.90	4.24	17.59	3.26	16.33	2.95	19.58	3.85
8.	China	6.81	1.71	16.60	3.08	17.64	3.19	19.26	3.78
9.	Netherland	10.66	2.67	14.68	2.73	17.92	3.24	17.67	3.47
10.	Canada	8.84	2.22	11.46	2.13	13.64	2.47	13.22	2.60
	Others	176.56	44.27	198.96	36.93	213.14	38.57	212.56	41.77
	Total	398.88	100	538.79	100	552.64	100	508.93	100

Source: DGCI&S.

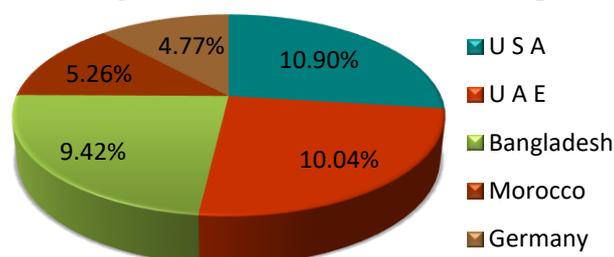
Note : India's Export including re-export

India's top destinations of Ginger, Saffron, Turmeric etc. from 2019-2022 (in million \$)

Data label given on the basis of 2022



India's top 5 destinations of Ginger, Saffron, Turmeric & Other Spices by percentage in 2022:



India exported about US \$ 508.93 million worth of Ginger, Saffron, Turmeric etc. and other spices to the world in 2022, decreased at 8% over US \$ 552.64 million in 2021. USA is the largest destination for ginger, saffron, turmeric etc. and other spices export from India. In 2022, USA imported US \$ 55.45 million worth of the commodity from India, which was accounted 10.90% share of India's total export in that year. UAE (US \$ 51.12 M) and Bangladesh (US \$ 47.93 M) became the 2nd and 3rd largest importer of Ginger, Saffron, Turmeric etc. and other spices from India with 10.04% and 9.42% share of India's total in 2022

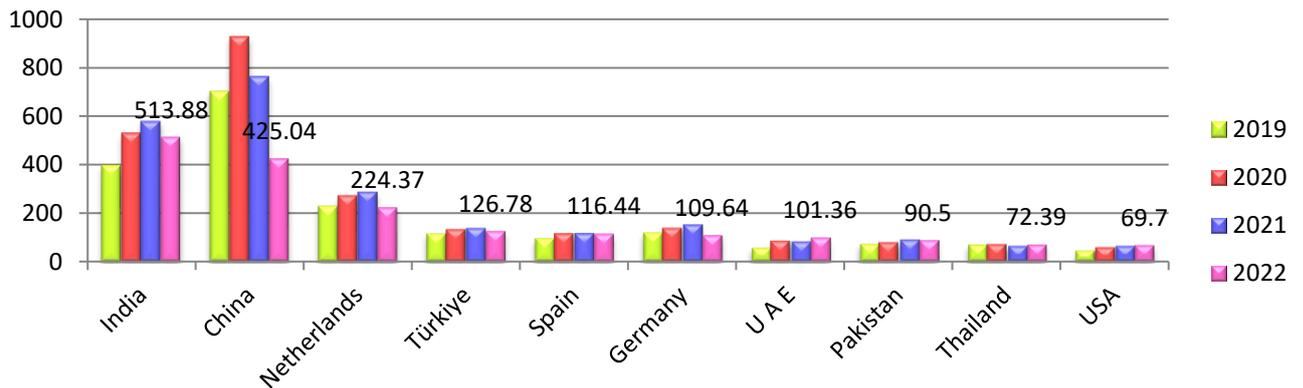
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Table-2

World's Top 10 exporter of Ginger, Saffron, Turmeric & Other Spices(H.S Code-0910)

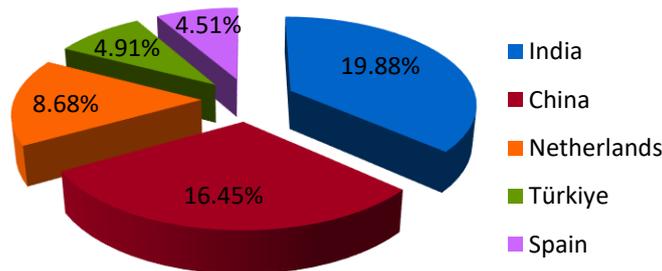
Rank	Countries	2019		2020		2021		2022	
		Value (M \$)	Share (%)	Value (M \$)	Share (%)	Value (M \$)	Share (%)	Value M \$)	Share (%)
1.	India	398.31	13.66	534.60	15.31	577.32	16.94	513.88	19.88
2.	China	703.24	24.12	928.46	26.59	760.80	22.33	425.04	16.45
3.	Netherlands	231.29	7.93	276.01	7.90	288.79	8.48	224.37	8.68
4.	Türkiye	117.68	4.04	136.09	3.90	139.95	4.11	126.78	4.91
5.	Spain	98.30	3.37	119.94	3.43	119.36	3.50	116.44	4.51
6.	Germany	122.47	4.20	142.43	4.08	155.61	4.57	109.64	4.24
7.	U A E	58.98	2.02	88.56	2.54	85.71	2.52	101.36	3.92
8.	Pakistan	73.95	2.54	82.05	2.35	93.70	2.75	90.50	3.50
9.	Thailand	71.83	2.46	74.89	2.14	67.29	1.97	72.39	2.80
10.	USA	46.75	1.60	61.43	1.76	66.34	1.95	69.70	2.70
	Others	992.68	34.05	1047.37	30.00	1052.49	30.89	734.24	28.41
	Total	2915.49	100	3491.83	100	3407.35	100	2584.32	100

Source: UN Comtrade

Leading Exporters of Ginger, saffron, turmeric, etc. and other spices from 2019 to 2022(in million \$)
Data label given on the basis of 2022



World's leading exporter of Ginger, saffron, turmeric, etc. and other spices by percentage in 2022 :



In 2022, the world exports of Ginger, saffron, turmeric, etc. and other spices exceeded US \$ 2.58 billion. It was US \$ 3.40 billion in the previous year. The global total exports of the commodity group decreased by 24.16% compared to 2021. The world's largest exporter of this commodity group in 2022 was **India**, exported US \$ 513.88 million worth value of Ginger, saffron, turmeric, etc. and other spices, accounted 19.88% share of world total. Which was followed by China (US \$ 425.04 M) and Netherlands (US \$ 224.37 M) with 16.45% and 8.68% share of global total export of Ginger, saffron, turmeric, etc. and other spices respectively in 2022.

Table-3

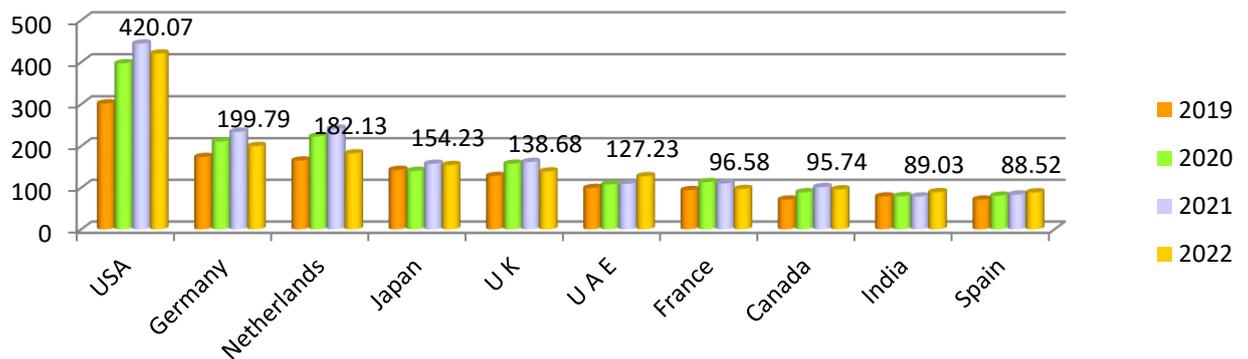
World's top 10 Importers of Ginger, Saffron, Turmeric & Other Spices(H.S Code-0910)

Rank	Countries	2019		2020		2021		2022	
		Value (M \$)	Share (%)						
1.	USA	301.40	11.07	397.00	11.85	444.04	12.61	420.07	15.34
2.	Germany	173.31	6.37	210.90	6.30	234.02	6.65	199.79	7.29
3.	Netherlands	164.82	6.05	222.84	6.65	241.35	6.86	182.13	6.65
4.	Japan	142.41	5.23	140.09	4.18	157.11	4.46	154.23	5.63
5.	U K	127.85	4.70	157.15	4.69	161.50	4.59	138.68	5.06
6.	U A E	98.98	3.64	107.73	3.22	108.91	3.09	127.23	4.65
7.	France	93.93	3.45	112.95	3.37	110.13	3.13	96.58	3.53
8.	Canada	71.28	2.62	88.77	2.65	101.29	2.88	95.74	3.50
9.	India	78.71	2.89	79.41	2.37	78.70	2.24	89.03	3.25
10.	Spain	71.26	2.62	80.60	2.41	83.36	2.37	88.52	3.23
	Others	1398.57	51.37	1752.40	52.31	1799.63	51.13	1147.13	41.88
	Total	2722.52	100	3349.84	100	3520.03	100	2739.13	100

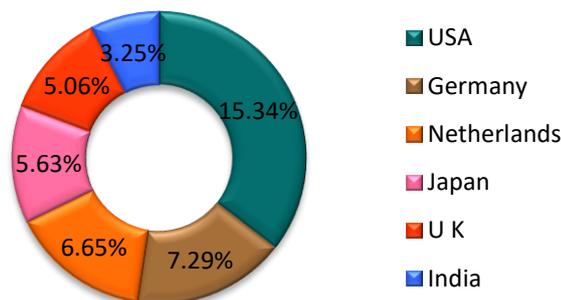
Source : UN Comtrade

Leading Ginger, Saffron, Turmeric & Other Spices importers from 2019 to 2022(in million USD)

Data label given on the basis of 2022



World's leading importers of Ginger, Saffron, Turmeric & Other Spices by percentage in 2022

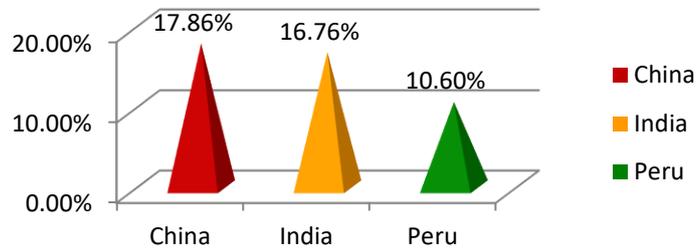


In 2022, the world imports of Ginger, Saffron, Turmeric etc. and other spices registered US \$ 2.74 billion which has been down by 22.19% from US \$ 3.52 billion in 2021. In 2022 USA imported around US \$ 420.07 million worth of Ginger, Saffron, Turmeric etc. and other spices, making it the leading importer of the commodity group world wide with 15.34% share of world total import, Germany (US \$ 199.79 M) followed in second place, importing 7.29% share of world import. It was followed by Netherlands (US \$ 182.13 M), imported 6.65% share. **India** registered (US \$ 89.03M) imports with 3.25% share of world import of Ginger, Saffron, Turmeric etc. and other spices and ranked in 9th position in that year.

Annexure-1

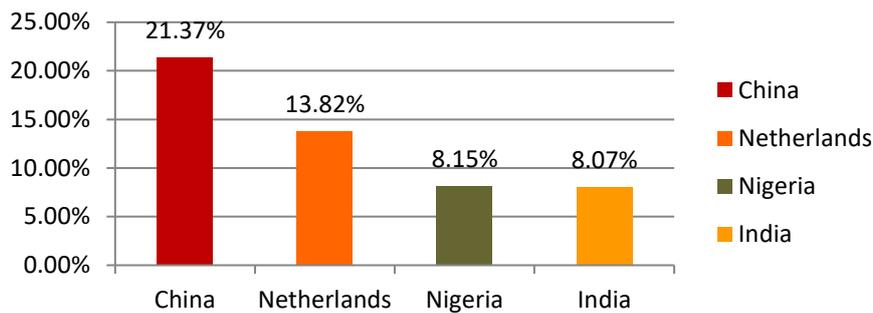
Sources of world's top 3 importers of Ginger, Saffron, Turmeric & other Spices (H.S Code-0910)

i) Top 3 Sources of Ginger, Saffron, Turmeric & Other Spices to USA in 2022 by percentage:



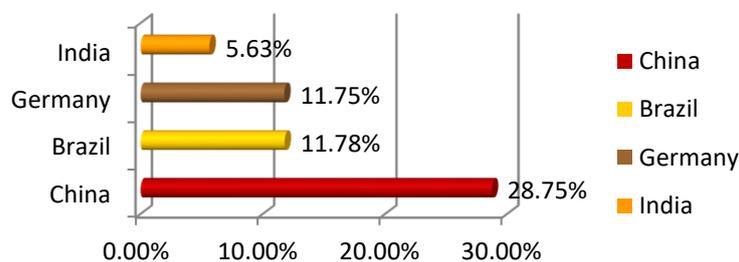
USA imported most of its requirement of Ginger, Saffron, Turmeric & Other Spices from China, 17.86% share of USA's total import value came from China in 2022. India was the 2nd largest source country to USA. 16.76% share of its total import of Ginger, Saffron, Turmeric & Other Spices came from India, which was followed by Peru. Peru has exported 10.60% share of the commodity to USA in 2022. (Source : UN Comtrade).

ii) Top 3 Sources of Ginger, Saffron, Turmeric & Other Spices to Germany in 2022 by percentage:



China was the primary source of Ginger, Saffron, Turmeric & Other Spices to Germany. Germany imported 21.37% of Ginger, Saffron, Turmeric & Other Spices from China in 2022, followed by Netherlands (13.82%) & Nigeria (8.15%). **India** has exported 8.07% share of Germany's total import of Ginger, Saffron, Turmeric & Other in 2022. (Source : UN Comtrade)

iii) Top 3 Sources of Ginger, Saffron, Turmeric & Other Spices to Netherlands in 2022 by %



Netherlands's 3 major source countries of Ginger, Saffron, Turmeric & Other Spices in 2022 were China (28.75%), Brazil (11.78%) and Germany (11.75%). In the same year **India** has exported 5.63% share of Ginger, Saffron, Turmeric & Other Spices to Netherlands (Source: UN Comtrade)

Structures and Parts of Structures of Iron & Steel

The development of construction methods in iron and steel was the most important innovation in architecture since ancient times. These methods provide far stronger and taller structures with less expenditure of material than stone, brick, or wood and can produce greater unsupported spans over openings and interior or exterior spaces. The evolution of steel frame construction in the 20th century entirely changed the concept of the wall and the support.

In architecture before 1800, metals played an auxiliary role. They were used for bonding masonry (dowels and clamps), for tension members (chains strengthening domes, tie rods across arches to reinforce the vaults), and for roofing, doors, windows, and decoration. Cast iron, the first metal that could be substituted for traditional structural materials, was used in bridge building as early as 1779. Its ability to bear loads and to be produced in an endless variety of forms, in addition to its resistance to fire and corrosion, quickly encouraged architectural adaptations, first as columns and arches and afterward in skeletal structures. Because cast iron has much more compressive than tensile strength (for example, it works better as a small column than as a beam), it was largely replaced in the late 19th century by steel, which is more uniformly strong, elastic, and workable, and its high resistance in all stresses can be closely calculated.

Reinforced concrete was developed to add the tensile strength of steel to the compressive strength of mass concrete. The metal is embedded by being set as a mesh into the forms before pouring, and in the hardened material the two act uniformly. The combination is much more versatile than either product; it serves not only for constructing rigid frames but also for foundations, columns, walls, floors, and a limitless variety of coverings, and it does not require the addition of other structural materials. Although the making of forms is a slow and costly process, the technique competes economically with steel frame construction because the mesh, composed of thin, bendable metal rods or metal fabric, employs far less steel, and concrete is itself inexpensive.

The steel reinforcement is employed to take full advantage of the plastic, or sculptural, character of concrete. It can be jointed or bent to unify supporting members with the floors and the coverings they carry. Furthermore, stresses produced in floors, domes, and vaults may be distributed within the slabs themselves to reduce load, and the diminished load may be concentrated at desired points so that the number and size of supports is greatly reduced.

Steel framing is based on the same principles but is much simplified by the far greater strength of the material, which provides more rigidity with fewer members. The load-bearing capacity of steel is adequate for buildings many times higher than those made of other materials. Because the column and beam are fused by riveting or welding, stresses are distributed between them, and both can be longer and lighter than in structures in which they work independently as post-and-lintel. Thus, large cubic spaces can be spanned by four columns and four beams, and buildings of almost any size can be produced by joining cubes in height and width. Since structural steel must be protected from corrosion, the skeleton is either covered by curtain walls or surfaced in concrete or, more rarely, painted. The steel frame is used also in single-story buildings where large spans are required. The simple cube then can be abandoned for covering systems employing arches, trusses, and other elements in a limitless variety of forms in order to suit the functions of the building.

Differences between reinforced-concrete and steel framing are discussed in the section on materials. The greater rigidity and continuity of concrete frames give them more versatility, but steel is favoured for very tall structures for reasons of economy in construction and space. An example is the system called box frame construction, in which each unit is composed of two walls bearing a slab (the other two walls enclosing the unit are nonbearing curtain walls); this type of construction extends the post-and-lintel principle into three dimensions. Here, again, concrete crosses the barriers that separated traditional methods of construction.

These are broadly classified under **H.S. Code-7308**.

Table – 4

India's Top 10 destination of Structures and Parts of Structures of Iron (H.S Code-7308)

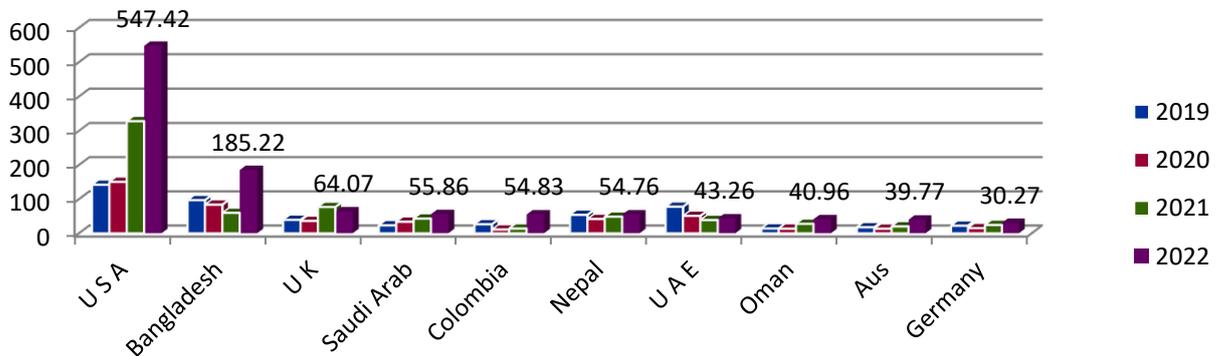
Rank	Countries	2019		2020		2021		2022	
		Value (M \$)	Share (%)						
1.	U S A	141.89	13.43	150.47	15.10	328.00	26.00	547.42	32.66
2.	Bangladesh	96.96	9.18	83.81	8.41	59.76	4.74	185.22	11.05
3.	U K	39.28	3.72	36.22	3.64	76.87	6.09	64.07	3.82
4.	Saudi Arab	23.40	2.21	33.88	3.40	43.01	3.41	55.86	3.33
5.	Colombia	26.39	2.50	10.87	1.09	13.72	1.09	54.83	3.27
6.	Nepal	53.90	5.10	41.86	4.20	48.50	3.84	54.76	3.27
7.	U A E	77.65	7.35	50.87	5.11	38.78	3.07	43.26	2.58
8.	Oman	14.00	1.32	13.58	1.36	27.71	2.20	40.96	2.44
9.	Aus	17.67	1.67	13.38	1.34	20.22	1.60	39.77	2.37
10.	Germany	22.14	2.10	15.07	1.51	24.40	1.93	30.27	1.81
	Others	543.43	51.43	546.17	54.83	580.47	46.02	559.85	33.40
	Total	1056.71	100	996.17	100	1261.44	100	1676.28	100

Source: DGCI&S

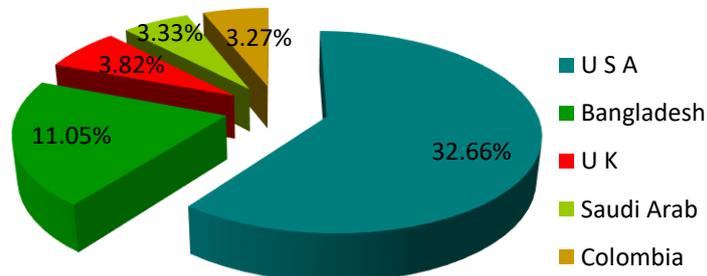
Note : India's Export including re-export

India's major destination Structures, Parts of Structures of Iron or Steel from 2019-2022(in million \$)

Data label given on the basis of 2022



India's top 5 destinations of Structures, Parts of Structures of Iron or Steel by percentage in 2022:



India's total export for Structures, Parts of Structures of Iron or Steel, was worth US \$ 1.68 Billion in 2022, which when compared to the previous year's exports increased by 32.88%. In 2022 USA was the top most destination of Structures, Parts of Structures of Iron or Steel for India. It has imported US \$ 547.42 million worth or 32.66 % of it from India which was followed by Bangladesh (US \$ 185.22 M) and UK (US \$ 64.07 M) with the 11.05% and 3.82% of India's total export of Structures, Parts of Structures of Iron or Steel respectively.

Table - 5

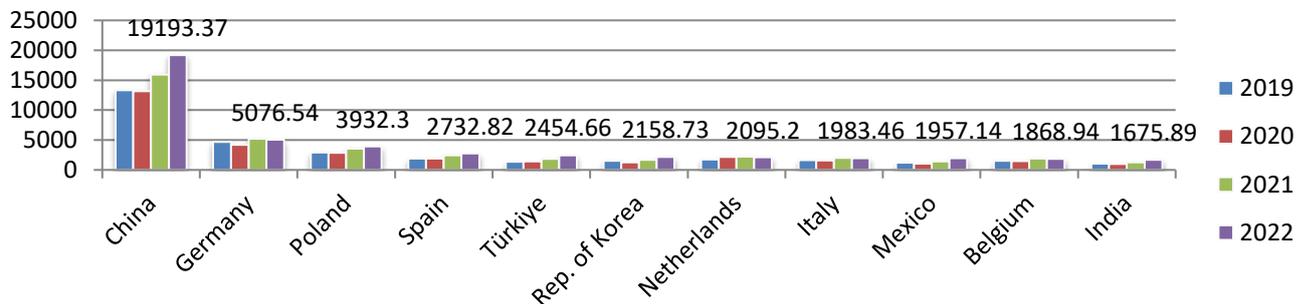
World's Top 10 exporter of Structures and Parts of Structures of Iron (H.S Code-7308)

Rank	Countries	2019		2020		2021		2022	
		Value (M \$)	Share (%)						
1.	China	13343.69	25.91	13183.53	26.71	15954.86	25.82	19193.37	29.02
2.	Germany	4667.06	9.06	4173.43	8.45	5199.41	8.41	5076.54	7.68
3.	Poland	2939.31	5.71	2874.94	5.82	3568.66	5.77	3932.30	5.95
4.	Spain	1910.24	3.71	1919.25	3.89	2443.86	3.95	2732.82	4.13
5.	Türkiye	1377.22	2.67	1406.21	2.85	1837.63	2.97	2454.66	3.71
6.	Rep. of Korea	1531.78	2.97	1244.17	2.52	1702.84	2.76	2158.73	3.26
7.	Netherlands	1730.71	3.36	2148.46	4.35	2202.69	3.56	2095.20	3.17
8.	Italy	1635.80	3.18	1562.21	3.16	1997.11	3.23	1983.46	3.00
9.	Mexico	1205.67	2.34	1040.10	2.11	1445.56	2.34	1957.14	2.96
10.	Belgium	1547.78	3.01	1471.18	2.98	1894.65	3.07	1868.94	2.83
14.	India	1056.35	2.05	990.98	2.01	1261.70	2.04	1675.89	2.53
	Others	18558.46	36.03	17350.39	35.15	22292.57	36.07	21011.71	31.77
	Total	51504.07	100	49364.84	100	61801.55	100	66140.78	100

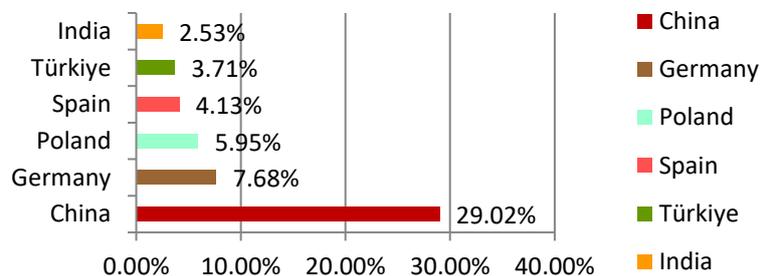
Source: UN Comtrade

Top world exporters of Structures and Parts of Structures Iron & Steel from 2019 to 2022 (in million \$)

Data label given on the basis of 2022



World's leading Structures and Parts of Structures Iron & Steel exporters by percentage in 2022:



Global export of Structures and Parts of Iron & Steel was totaled US \$ 66.14 Billion in 2022, which was highest in this year. In 2022 the total export value increased at an rate of 7.02% from 2021. China represented the major exporter of Structures and Parts of Iron & Steel in the world, exported US \$ 19.19 billion worth or 29.02% share of world export in 2022. Germany (US \$ 5.08 B) and Poland(US \$ 3.93 B) constitutes the 2nd and 3rd largest exporter of Structures and Parts of Iron & Steel in that year with 7.68% and 5.95% share of world export respectively. **India** represented the 14th largest exporter of the commodity group in the world exported US \$ 1.67 Billion worth of it which was represent 2.53% share of global total in 2022.

Table - 6

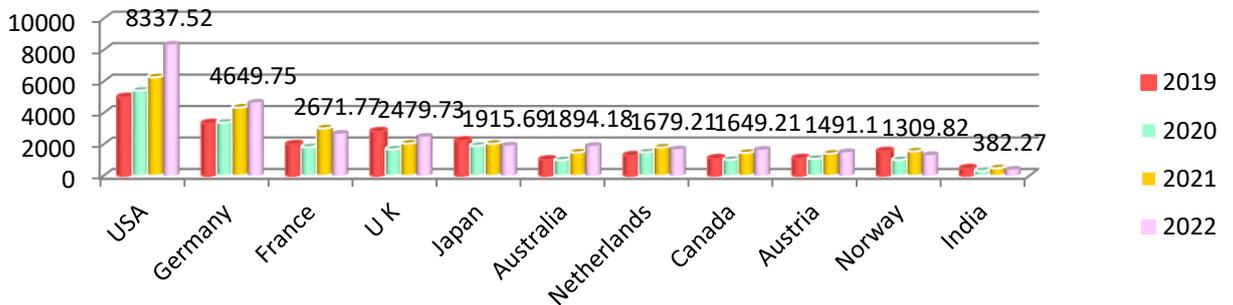
World's top 10 Importers of Structures and Parts of Structures of Iron (H.S Code-7308)

Rank	Countries	2019		2020		2021		2022	
		Value (M \$)	Share (%)						
1.	USA	4981.01	10.55	5415.31	12.82	6263.48	11.95	8337.52	14.98
2.	Germany	3321.88	7.04	3369.48	7.98	4333.93	8.27	4649.75	8.35
3.	France	1983.55	4.20	1810.22	4.29	3008.41	5.74	2671.77	4.80
4.	U K	2803.58	5.94	1671.03	3.96	2042.16	3.90	2479.73	4.45
5.	Japan	2218.56	4.70	1901.23	4.50	2035.19	3.88	1915.69	3.44
6.	Australia	1008.53	2.14	985.46	2.33	1472.89	2.81	1894.18	3.40
7.	Netherlands	1274.44	2.70	1482.87	3.51	1798.16	3.43	1679.21	3.02
8.	Canada	1085.80	2.30	1006.21	2.38	1448.58	2.76	1649.21	2.96
9.	Austria	1095.39	2.32	1074.26	2.54	1396.01	2.66	1491.10	2.68
10.	Norway	1546.64	3.28	992.77	2.35	1549.09	2.95	1309.82	2.35
33.	India	451.68	0.96	302.38	0.72	477.16	0.91	382.27	0.69
	Others	25434.25	53.88	22230.77	52.63	26603.81	50.74	27207.86	48.88
	Total	47205.31	100	42241.99	100	52428.87	100	55668.12	100

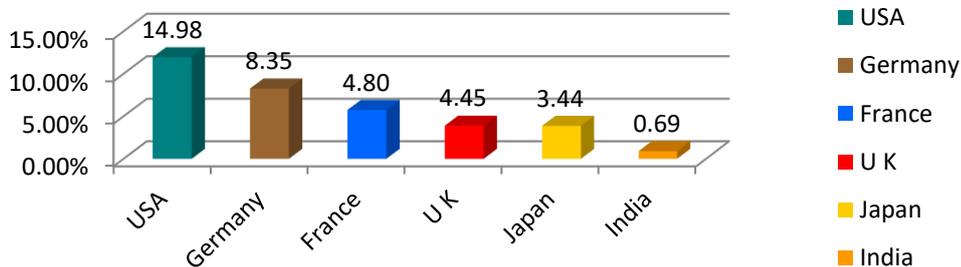
Source :UN Comtrade

Top world importers of Structures and Parts of Structures Iron & Steel from 2019 to 2022 (in million \$)

Data label given on the basis of 2022



leading global Importer of Structures and Parts of Structures Iron & Steel by percentage in 2022

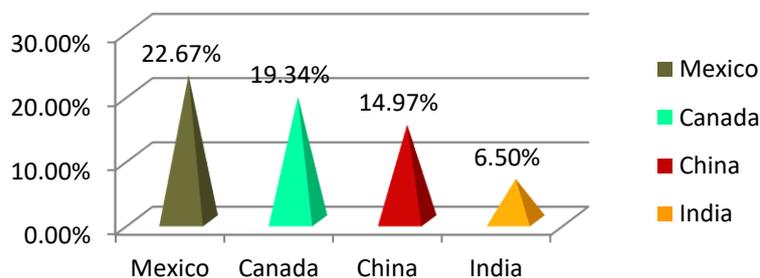


Global export of Structures and Parts of Iron & Steel was totaled US \$ 55.67 Billion in 2022 which was increased at a rate of 6.18% from 2021. USA imported around US \$ 8.34 billion worth of the commodity in 2022, making it the leading importer of it worldwide with 14.98% share of world import that year. Germany (US \$ 4.65 B) followed in the second place, importing around 8.35% share of world import of Structures and Parts of Structures Iron & Steel. It was followed by France (US\$ 2.67 B), imported 4.80% share of global total. **India's** (US \$ 382.27 M) share was 0.69% share of world import and making it the 33rd largest importer worldwide in that year.

Annexure-II

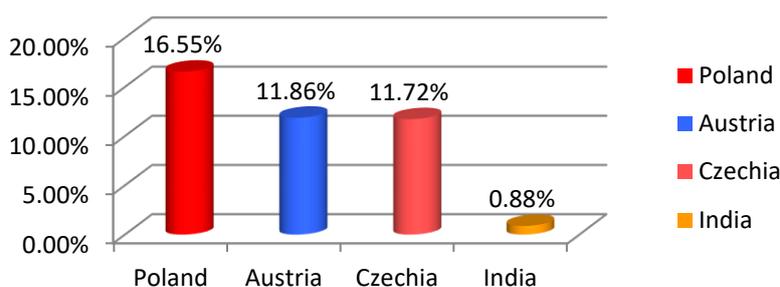
**Sources of world's top three importers of Structures and Parts of Structures of Iron & Steel
(H.S Code-7308)**

i) Top 3 Sources of Structures and Parts of Structures Iron & Steel to USA in 2022 by percentage:



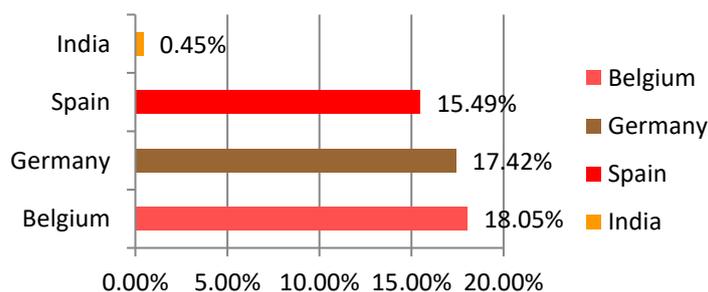
In the year 2022 USA, imports largest value of Structures and Parts of Structures Iron & Steel from Mexico, 22.67% share imported from Mexico, which was followed by Canada (19.34%) and China (14.97%). In that year **India** has exported 6.50% share of USA's total import of Structures and Parts of Structures Iron & Steel. (Source: UN Comtrade)

ii) Top 3 Sources of Structures and Parts of Structures Iron & Steel to Germany in 2022 by percentage:



Poland was the number one source of Structures and Parts of Structures Iron & Steel to Germany. Germany imports 16.55% share of the commodity from Poland, 11.86% from Austria and 11.72% share from Czechia in 2022. In the same year **India** has exported 0.88% share of Structures and Parts of Structures Iron & Steel to Germany. (Source: UN Comtrade)

iii) Top 3 Sources of Structures and Parts of Structures Iron & Steel to France in 2022 by percentage:



Belgium was the largest source country of Structures and Parts of Structures Iron & Steel to France in 2022, it imports, more than 18% share of its import of Structures and Parts of Structures Iron & Steel from Belgium which was followed by Germany (17.42%) and Spain (15.49%). In that year France has imported 0.45% share of its requirement of Structures and Parts of Structures Iron & Steel from **India**. (Source : UN Comtrade)

IMPORT

Activated Carbon

Activated carbon, also called **activated charcoal**, is a form of carbon commonly used to filter contaminants from water and air, among many other uses. It is processed (activated) to have small, low-volume pores that increase the surface area available for adsorption (which is not the same as absorption) or chemical reactions. Activation is analogous to making popcorn from dried corn kernels: popcorn is light, fluffy, and its kernels have a high surface-area-to-volume ratio. *Activated* is sometimes replaced by *active*.

Due to its high degree of micro porosity, one gram of activated carbon has a surface area in excess of 3,000 m² (32,000 sq ft) as determined by gas adsorption. Charcoal, before activation, has a specific surface area in the range of 2.0–5.0 m²/g. An activation level sufficient for useful application may be obtained solely from high surface area. Further chemical treatment often enhances adsorption properties.

Activated carbon is usually derived from waste products such as coconut husks; waste from paper mills has been studied as a source. These bulk sources are converted into charcoal before being 'activated'. When derived from coal it is referred to as **activated coal**. **Activated coke** is derived from coke. Activated carbon is used in methane and hydrogen storage, air purification, capacitive deionization, super capacitive swing adsorption, solvent recovery, decaffeination, gold purification, metal extraction, water purification, medicine, sewage treatment, air filters in respirators, filters in compressed air, teeth whitening, production of hydrogen chloride, edible electronics, and many other applications.

One major industrial application involves use of activated carbon in metal finishing for purification of electroplating solutions. For example, it is the main purification technique for removing organic impurities from bright nickel plating solutions. A variety of organic chemicals are added to plating solutions for improving their deposit qualities and for enhancing properties like brightness, smoothness, ductility, etc. Due to passage of direct current and electrolytic reactions of anodic oxidation and cathodic reduction, organic additives generate unwanted breakdown products in solution. Their excessive build up can adversely affect plating quality and physical properties of deposited metal. Activated carbon treatment removes such impurities and restores plating performance to the desired level.

Activated carbon is used to treat poisonings and overdoses following oral ingestion. Tablets or capsules of activated carbon are used in many countries as an over-the-counter drug to treat diarrhea, indigestion, and flatulence. However, activated charcoal shows no effect on intestinal gas and diarrhea, and is, ordinarily, medically ineffective if poisoning resulted from ingestion of corrosive agents, boric acid, or petroleum products, and is particularly ineffective against poisonings of strong acids or bases, cyanide, iron, lithium, arsenic, methanol, ethanol or ethylene glycol. Activated carbon will not prevent these chemicals from being absorbed into the human body. It is on the World Health Organization's List of Essential Medicines.

Activated carbon (charcoal) is an allowed substance used by organic farmers in both livestock production and wine making. In livestock production it is used as a pesticide, animal feed additive, processing aid, nonagricultural ingredient and disinfectant. In organic winemaking, activated carbon is allowed for use as a processing agent to adsorb brown color pigments from white grape concentrates. It is sometimes used as biochar.

Activated, food-grade charcoal became a food trend in 2016, being used as an additive to impart a "slightly smoky" taste and a dark coloring to products including hotdogs, ice cream, pizza bases and bagels. People taking medication, including birth control pills and antidepressants, are advised to avoid novelty foods or drinks that use activated charcoal coloring, as it can render the medication ineffective.

The reactivation or the regeneration of activated carbons involves restoring the adsorptive capacity of saturated activated carbon by desorbing adsorbed contaminants on the activated carbon surface.

These are broadly classified under **H. S. Code 3802**

Table - 7

India's Top 10 Sources of Activated Carbon (H.S. Code - 3802)

Rank	Countries	2019		2020		2021		2022	
		Value (M \$)	Share (%)	Value (M \$)	Share (%)	Value (M \$)	Share (%)	Value (M \$)	Share (%)
1.	China	29.77	35.20	25.51	37.64	34.10	40.51	44.35	41.91
2.	U S A	14.52	17.17	11.30	16.67	16.00	19.00	18.23	17.22
3.	Guinea	0.00	0.00	0.00	0.00	0.00	0.00	8.61	8.14
4.	Netherland	3.05	3.61	3.61	5.33	5.20	6.18	4.67	4.42
5.	Japan	3.36	3.97	2.81	4.15	3.45	4.10	3.98	3.76
6.	France	4.00	4.73	3.90	5.75	3.94	4.68	3.58	3.38
7.	Germany	2.48	2.93	3.45	5.09	2.99	3.55	3.44	3.25
8.	Australia	1.79	2.12	1.90	2.80	2.05	2.44	3.04	2.87
9.	Malaysia	2.25	2.66	1.97	2.90	2.68	3.19	2.80	2.65
10.	Canada	5.83	6.89	2.26	3.34	2.35	2.79	2.08	1.97
	Others	17.54	20.74	11.07	16.34	11.42	13.57	11.04	10.43
	Total	84.59	100	67.77	100	84.18	100	105.83	100

Source: DGCI&S

Note : India's Import including re-import

Imports of Activated Carbon to India increased to US \$ 105.83 Million in 2022 from US \$ 84.18 Million in 2021. Over the period under review, global Activated Carbon imports attained its maximum worth value of US \$ 105.83 Million in 2022. In 2022 India imported the highest dollar worth of Activated Carbon from China with valued at US \$ 44.35 Million, accounted 41.91% share of India's total import. In Second and Third source countries were USA and Gunea , from where India imported around US \$ 18.23 Million and US \$ 8.61 Million worth of Activated Carbon or 17.22% and 8.14% share respectively. In the same year. The top 10 countries shared 89.57% of the Activated Carbon import of India.

Table - 8

World's Top 10 Importer of Activated Carbon (H.S. Code - 3802)

Rank	Countries	2019		2020		2021		2022	
		Value (M \$)	Share (%)	Value (M \$)	Share (%)	Value (M \$)	Share (%)	Value (M \$)	Share (%)
1.	USA	252.30	9.19	217.55	8.21	265.87	8.67	373.85	10.70
2.	Germany	223.89	8.15	222.44	8.40	261.69	8.54	334.65	9.58
3.	China	176.92	6.44	168.39	6.36	221.04	7.21	221.53	6.34
4.	Rep. of Korea	173.32	6.31	171.65	6.48	194.84	6.36	209.92	6.01
5.	Japan	176.30	6.42	153.39	5.79	168.18	5.49	184.06	5.27
6.	Belgium	82.03	2.99	89.85	3.39	92.78	3.03	149.72	4.29
7.	Italy	79.41	2.89	82.67	3.12	100.89	3.29	128.85	3.69
8.	France	89.60	3.26	94.45	3.57	106.64	3.48	127.36	3.65
9.	Mexico	97.93	3.57	95.08	3.59	84.79	2.77	110.67	3.17
10.	Thailand	72.94	2.66	72.90	2.75	90.81	2.96	104.79	3.00
12.	India	84.63	3.08	67.95	2.56	84.14	2.75	97.91	2.80
	Others	1236.92	45.04	1212.85	45.78	1393.23	45.46	1449.96	41.51
	Total	2746.19	100	2649.16	100	3064.90	100	3493.27	100

Source :UNComtrade

In 2022 Global import of Activated Carbon totaled were US \$ 3.49 Billion, which was increased by more than 13.97% from the year of 2021. Global import of Activated Carbon peaked the highest dollar value of US \$ 3.49 Billion in 2022. In value terms, USA constitutes the largest market for imported Activated Carbon worldwide with worth value of US \$ 373.85 Million, making up 10.70% of global imports. The second position in the ranking was occupied by Germany (US \$ 334.65 M), with the share of 9.58 % of global imports. It was followed by the China (US \$ 221.53 M) with the share of 6.34%. In the same year **India (US \$ 97.91 M)** constitutes the 12th position in ranking with 2.80 % share of world import.

Electrical Capacitors

A **capacitor** is an electronic device that stores electrical energy in an electric field by accumulating electric charges on two closely spaced surfaces that are insulated from each other. It is a passive electronic component with two terminals.

The effect of a capacitor is known as capacitance. While some capacitance exists between any two electrical conductors in proximity in a circuit, a capacitor is a component designed to add capacitance to a circuit. The capacitor was originally known as the **condenser**, a term still encountered in a few compound names, such as the condenser microphone.

The earliest forms of capacitors were created in the 1740s, when European experimenters discovered that electric charge could be stored in water-filled glass jars that came to be known as Leyden jars. Today, capacitors are widely used in electronic circuits for blocking direct current while allowing alternating current to pass. In analog filter networks, they smooth the output of power supplies. In resonant circuits they tune radios to particular frequencies. In electric power transmission systems, they stabilize voltage and power flow. The property of energy storage in capacitors was exploited as dynamic memory in early digital computers,^[3] and still is in modern DRAM.

In October 1745, Ewald Georg von Kleist of Pomerania, Germany, found that charge could be stored by connecting a high-voltage electrostatic generator by a wire to a volume of water in a hand-held glass jar. Von Kleist's hand and the water acted as conductors and the jar as a dielectric (although details of the mechanism were incorrectly identified at the time). Von Kleist found that touching the wire resulted in a powerful spark, much more painful than that obtained from an electrostatic machine. The following year, the Dutch physicist Pieter van Musschenbroek invented a similar capacitor, which was named the Leyden jar, after the University of Leiden where he worked. He also was impressed by the power of the shock he received, writing, "I would not take a second shock for the kingdom of France.

A capacitor consists of two conductors separated by a non-conductive region. The non-conductive region can either be a vacuum or an electrical insulator material known as a dielectric. Examples of dielectric media are glass, air, paper, plastic, ceramic, and even a semiconductor depletion region chemically identical to the conductors. From Coulomb's law a charge on one conductor will exert a force on the charge carriers within the other conductor, attracting opposite polarity charge and repelling like polarity charges, thus an opposite polarity charge will be induced on the surface of the other conductor. The conductors thus hold equal and opposite charges on their facing surfaces, and the dielectric develops an electric field.

A capacitor can store electric energy when disconnected from its charging circuit, so it can be used like a temporary battery, or like other types of rechargeable energy storage system. Capacitors are commonly used in electronic devices to maintain power supply while batteries are being changed. (This prevents loss of information in volatile memory.)

A capacitor can facilitate conversion of kinetic energy of charged particles into electric energy and store it. Conventional capacitors provide less than 360 joules per kilogram of specific energy, whereas a conventional alkaline battery has a density of 590 kJ/kg. There is an intermediate solution: supercapacitors, which can accept and deliver charge much faster than batteries, and tolerate many more charge and discharge cycles than rechargeable batteries. They are, however, 10 times larger than conventional batteries for a given charge. On the other hand, it has been shown that the amount of charge stored in the dielectric layer of the thin film capacitor can be equal to, or can even exceed, the amount of charge stored on its plates.

In car audio systems, large capacitors store energy for the amplifier to use on demand. Also, for a flash tube, a capacitor is used to hold the high voltage. A light-emitting capacitor is made from a dielectric that uses phosphorescence to produce light. If one of the conductive plates is made with a transparent material, the light is visible. Light-emitting capacitors are used in the construction of electroluminescent panels, for applications such as backlighting for laptop computers. In this case, the entire panel is a capacitor used for the purpose of generating light.

These are broadly classified under the ITCHS Code-**8532**.

Table 9**India's Top 10 Sources of Electrical Capacitors (HS Code- 8532)**

Rank	Countries	2019		2020		2021		2022	
		Value (M \$)	Share (%)	Value (M \$)	Share (%)	Value (M \$)	Share (%)	Value (M \$)	Share (%)
1.	China	293.66	42.38	252.12	41.36	379.07	45.65	382.06	40.91
2.	Hong Kong	107.42	15.50	95.19	15.62	140.84	16.96	178.10	19.07
3.	Singapore	105.37	15.21	98.55	16.17	130.55	15.72	147.77	15.82
4.	Japan	40.24	5.81	29.86	4.90	31.92	3.84	49.41	5.29
5.	Korea RP	50.11	7.23	39.68	6.51	45.61	5.49	46.88	5.02
6.	Taiwan	7.57	1.09	12.36	2.03	17.70	2.13	33.67	3.61
7.	U S A	27.21	3.93	19.27	3.16	23.94	2.88	29.50	3.16
8.	Germany	14.86	2.15	12.80	2.10	15.23	1.83	16.25	1.74
9.	Malaysia	3.62	0.52	3.62	0.59	5.78	0.70	8.01	0.86
10.	Vietnam	2.10	0.30	4.51	0.74	6.34	0.76	6.88	0.74
	Others	40.69	5.87	41.56	6.82	33.35	4.02	35.31	3.78
	Total	692.84	100	609.51	100	830.33	100	933.84	100

Source: DGCI&S

Note : India's Import including re-import

There are so many countries India imports Electrical Capacitors from. The dollar value of Electrical Capacitors import in 2022 stood at US \$ 933.84 Million and US \$ 830.33 Million in 2021. Which shows a positive growth of 12.47 % from 2021. In 2022 India imported the highest dollar worth of Electrical Capacitors from China with valued at US \$ 382.06 Million, which was represented 40.91% of India's total imports. In Second and Third major sources were Hong Kong and China, from where India imported around US \$ 178.10 Million and US \$ 147.77 Million worth of Electrical Capacitors or 19.07% and 15.82% share respectively. In the same year The top 10 countries shared 96.22% of the import to India.

Table 10**World's top 10 Importers of Electrical Capacitors (HS Code- 8532)**

Rank	Countries	2019		2020		2021		2022	
		Value (M \$)	Share (%)						
1.	China	9726.28	29.05	11298.75	32.18	13502.80	30.36	10379.33	26.79
2.	Hong Kong	4800.31	14.34	5598.70	15.94	6861.60	15.43	5535.03	14.28
3.	Germany	2484.86	7.42	1993.33	5.68	2803.12	6.30	2786.76	7.19
4.	USA	1744.01	5.21	1464.61	4.17	2208.53	4.97	2720.20	7.02
5.	Other Asia nes	1252.53	3.74	1597.57	4.55	2321.34	5.22	2101.37	5.42
6.	Mexico	1487.99	4.44	1316.10	3.75	1770.40	3.98	2006.56	5.18
7.	Singapore	1209.66	3.61	1426.45	4.06	1998.24	4.49	1767.70	4.56
8.	Rep. of Korea	1207.74	3.61	1382.29	3.94	1688.96	3.80	1499.72	3.87
9.	Malaysia	914.37	2.73	1009.92	2.88	1232.46	2.77	1183.39	3.05
10.	Thailand	693.30	2.07	796.73	2.27	993.67	2.23	1014.68	2.62
11.	India	693.07	2.07	609.43	1.74	830.72	1.87	934.15	2.41
	Other	7267.14	21.71	6619.49	18.85	8259.17	18.57	6821.02	17.60
	Total	33481.27	100	35113.36	100	44471.02	100	38749.91	100

Source: UN Comtrade

Global imports of Electrical Capacitors amounted to US \$ 38.75 Billion in 2022, approximately decreasing by 12.87 % from the year 2021. Over the period under review, Electrical Capacitors imports attained its maximum worth value of US \$ 44.47 Billion in 2021. In 2022 China (US \$ 10.38 B) constitutes the largest market for imported Electrical Capacitors worldwide, making up 26.79 % of global imports. The second position in the ranking was occupied by Hong Kong (US \$ 5.53 B), with the share of 14.28 % of global imports It was followed by the Germany (US \$ 2.79B), with the share of 7.19 In the same year **India** has imported US \$ 934.15 Million of Electrical Capacitors from world and occupied 11th position in ranking with 2.41% share of world import of Electrical Capacitors.