

# **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 **Natural Honey & Petroleum Jelly, Wax, Paraffin Wax etc.** and imports of **Petroleum Coke and Bitumen and Other Residues and Carbon Electrodes and Other Articles of Carbon used for Electrical purpose** 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-0409 & 2712 for export and 2713 & 8545 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 January'2023. So, trends from 2018 to 2021 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 Natural Honey & Petroleum Jelly, Wax, Paraffin Wax etc.. and imports of Petroleum Coke and Bitumen and Other Residues and Carbon Electrodes and Other Articles of Carbon used for Electrical purpose. 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 Natural Honey with their shares in percentage.
- Table 2 : World's top 10 Exporters of Natural Honey with their shares in percentage.
- Table 3 : World's top 10 Importers of Natural Honey with their shares in percentage.
- Annex- I : Top 3 sources of Natural Honey of World's top 3 Importers.
- Table 4 : India's top 10 destination of Petroleum Jelly, Wax, Paraffin Wax etc.. with their shares in percentage.
- Table 5 : World's top 10 Exporters of Petroleum Jelly, Wax, Paraffin Wax etc.. with their shares in percentage.
- Table 6 : World's top 10 Importers of Petroleum Jelly, Wax, Paraffin Wax etc.. with their shares in percentage.
- Annex-II : Top 3 sources of Petroleum Jelly, Wax, Paraffin Wax etc.. of World's top 3 Importers.
- Table 7 : India's top10 Sources of Petroleum Coke and Bitumen with their shares in percentage.
- Table 8 : World's top 10 Importers of Petroleum Coke and Bitumen with their shares in percentage.
- Table 9 : India's top 10 Sources of Carbon Electrodes and Other Articles of Carbon used for Electrical purpose with their shares in percentage.
- Table 10 : World's top 10 Importers of Carbon Electrodes and Other Articles of Carbon used for Electrical purpose with their shares in percentage.

## EXPORT

### Natural Honey

**Honey** is a sweet and viscous substance made by several bees, the best-known of which are honey bees. Honey is made and stored to nourish bee colonies. Bees produce honey by gathering and then refining the sugary secretions of plants (primarily floral nectar) or the secretions of other insects, like the honeydew of aphids. This refinement takes place both within individual bees, through regurgitation and enzymatic activity, as well as during storage in the hive, through water evaporation that concentrates the honey's sugars until it is thick and viscous.

Honey bees stockpile honey in the hive. Within the hive is a structure made from wax called honeycomb. The honeycomb is made up of hundreds or thousands of hexagonal cells, into which the bees regurgitate honey for storage. Other honey-producing species of bee store the substance in different structures, such as the pots made of wax and resin used by the stingless bee.

Honey for human consumption is collected from wild bee colonies, or from the hives of domesticated bees. The honey produced by honey bees is the most familiar to humans, thanks to its worldwide commercial production and availability. The husbandry of bees is known as beekeeping or apiculture, with the cultivation of stingless bees usually referred to as meliponiculture.

Honey is sweet because of its high concentrations of the monosaccharides fructose and glucose. It has about the same relative sweetness as sucrose (table sugar). One standard tablespoon (15 mL) of honey provides around 190 kilojoules (46 kilocalories) of food energy. It has attractive chemical properties for baking and a distinctive flavor when used as a sweetener. Most microorganisms cannot grow in honey and sealed honey therefore does not spoil.

Honey is produced by bees who have collected nectar or honeydew. Bees value honey for its sugars, which they consume to support general metabolic activity, especially that of their flight muscles during foraging, and as a food for their larvae. To this end bees stockpile honey to provide for themselves during ordinary foraging as well as during lean periods, as in overwintering. During foraging bees use part of the nectar they collect to power their flight muscles. The majority of nectar collected is not used to directly nourish the insects but is instead destined for regurgitation, enzymatic digestion, and finally long-term storage as honey. During cold weather or when other food sources are scarce, adult and larval bees consume stored honey, which is many times as energy-dense as the nectar from which it is made.

Human beings have semi-domesticated several species of honeybee by taking advantage of their swarming stage. Swarming is the means by which new colonies are established when there is no longer space for expansion in the colony's present hive. The old queen lays eggs that will develop into new queens and then leads as many as half the colony to a site for a new hive. Bees generally swarm before a suitable location for another hive has been discovered by scouts sent out for this purpose. Until such a location is found the swarm will simply conglomerate near the former hive, often from tree branches. These swarms are unusually docile and amenable to transport by humans. When provided with a suitable nesting site, such as a commercial Langstroth hive, the swarm will readily form a new colony in artificial surroundings. Honey is collected from wild bee colonies or from domesticated beehives. On average, a hive will produce about 29 kilograms (65 lb) of honey per year. Wild bee nests are sometimes located by following a honeyguide bird.

To safely collect honey from a hive, beekeepers typically pacify the bees using a bee smoker. The smoke triggers a feeding instinct (an attempt to save the resources of the hive from a possible fire), making them less aggressive, and obscures the pheromones the bees use to communicate. The honeycomb is removed from the hive and the honey may be extracted from it either by crushing or by using a honey extractor. The honey is then usually filtered to remove beeswax and other debris.

Because of its composition and chemical properties, honey is suitable for long-term storage, and is easily assimilated even after long preservation. Honey, and objects immersed in honey, have been preserved for centuries. The key to preservation is limiting access to humidity. In its cured state, honey has a sufficiently high sugar content to inhibit fermentation.

These are broadly classified under **H.S. Code-0409**.

Table - 1

**India's Top 10 destination of Natural Honey (H.S Code-0409)**

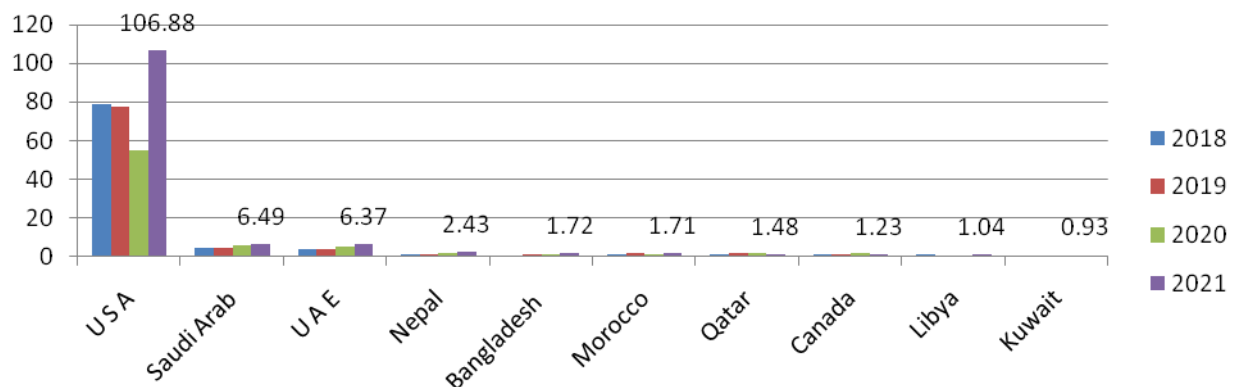
Rank	Countries	2018		2019		2020		2021	
		Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)
1.	U S A	78.79	76.92	77.40	76.67	54.92	66.06	106.88	78.11
2.	Saudi Arab	4.85	4.74	4.89	4.84	5.75	6.92	6.49	4.74
3.	U A E	3.98	3.88	4.23	4.19	5.12	6.16	6.37	4.65
4.	Nepal	1.20	1.17	1.21	1.20	1.77	2.12	2.43	1.78
5.	Bangladesh	0.86	0.84	1.14	1.13	1.65	1.98	1.72	1.26
6.	Morocco	1.21	1.18	1.70	1.69	1.61	1.93	1.71	1.25
7.	Qatar	1.40	1.37	1.78	1.76	1.86	2.23	1.48	1.08
8.	Canada	1.18	1.15	1.61	1.59	1.96	2.35	1.23	0.90
9.	Libya	1.02	1.00	0.72	0.71	0.92	1.11	1.04	0.76
10.	Kuwait	0.68	0.66	0.65	0.65	0.99	1.19	0.93	0.68
	Others	7.25	7.08	5.62	5.57	6.60	7.93	6.55	4.78
	<b>Total</b>	102.44	100	100.96	100	83.13	100	136.84	100

Source: DGCI&S.

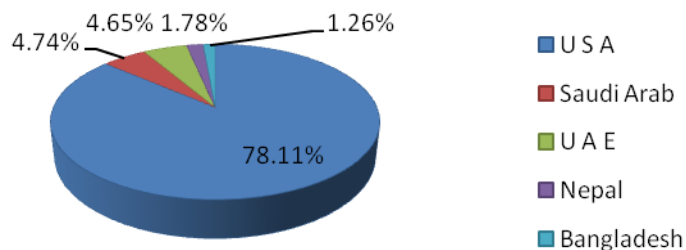
Note : India's Export including re-export

Leading importers of Natural Honey from India from 2018-2021(Values in million \$)

Data label given on the basis of 2021



India's top 5 destinations of Natural Honey by percentage India in 2021:



Honey is traded all around the world. The combined value of total export is US \$ **139.84** million in 2021. In 2021 Overall the export of Honey from India gain of 33.58% from 2018 when Honey export shipments from India were valued at US \$ 102.44 million and the export trends from 2018 to 2020 was decreasing. The export reached an all time high of US \$ 138.84 Million during the year 2021. India's Honey export value to USA is around US \$ 106.88, which holds the top position with the share of 78.11% of the total India's export. With the value of US \$ 6.49 million Saudi Arab takes 1<sup>st</sup> runner up and with 4.65% share, U A E takes 2<sup>nd</sup> runner up position in the global importers of Honey from India.

Table-2

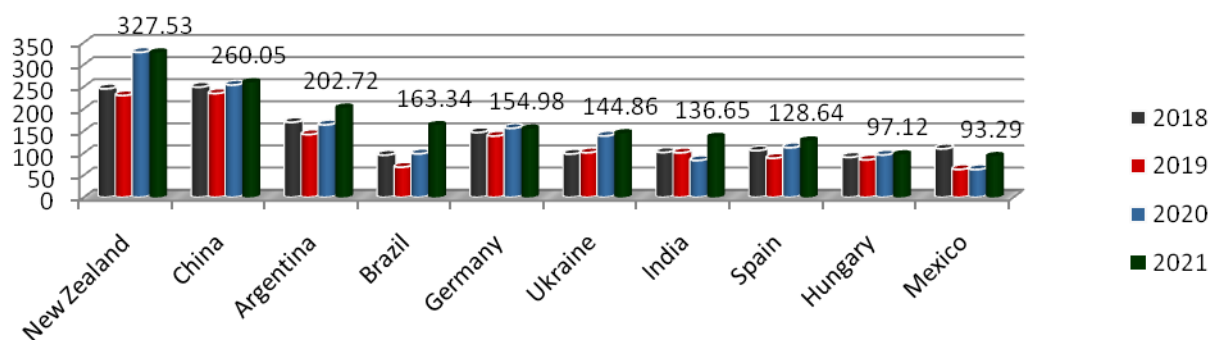
**World's Top 10 exporter of Natural Honey (H.S Code-0409)**

Rank	Countries	2018		2019		2020		2021	
		Value ( million \$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)
1.	New Zealand	245.49	11.20	230.18	11.91	328.04	14.59	327.53	12.49
2.	China	249.26	11.37	235.01	12.16	254.00	11.29	260.05	9.92
3.	Argentina	169.75	7.74	142.09	7.35	164.09	7.30	202.72	7.73
4.	Brazil	95.41	4.35	68.38	3.54	98.56	4.38	163.34	6.23
5.	Germany	146.68	6.69	138.68	7.17	156.18	6.94	154.98	5.91
6.	Ukraine	97.98	4.47	101.08	5.23	138.91	6.18	144.86	5.52
7.	<b>India</b>	<b>101.77</b>	<b>4.64</b>	<b>100.87</b>	<b>5.22</b>	<b>83.41</b>	<b>3.71</b>	<b>136.65</b>	<b>5.21</b>
8.	Spain	105.65	4.82	88.47	4.58	112.44	5.00	128.64	4.91
9.	Hungary	90.62	4.13	84.81	4.39	95.99	4.27	97.12	3.70
10.	Mexico	109.81	5.01	63.23	3.27	62.87	2.80	93.29	3.56
	Others	780.19	35.58	680.33	35.19	754.50	33.55	913.41	34.83
	<b>Total</b>	<b>2192.61</b>	<b>100</b>	<b>1933.13</b>	<b>100</b>	<b>2248.99</b>	<b>100</b>	<b>2622.60</b>	<b>100</b>

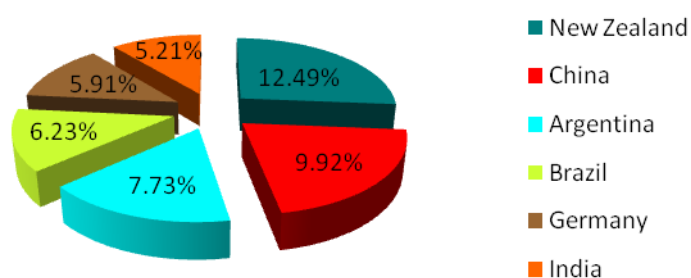
Source: UN Comtrade

Leading Exporters of Natural Honey of world from 2018 to 2021 (Values in million \$)

Data label given on the basis of 2021



Country wise world's leading exporter of Natural Honey by percentage in 2021 :



Global sales for natural honey exports by country totaled US\$2.62 billion in 2021. Overall, the value of natural honey exports rose by 16.44% for all exporting countries from 2018 when natural honey was valued at US \$ 2.25 billion. World leader New Zealand generated the highest export in the international export of natural honey in 2021 with amounting of US \$ 327.53 million or 12.49% share of world export, which was followed by China ( 9.92%) and Argentina (7.73%) respectively. **India** sold the dollar worth of natural honey exported during 2021 with amounting to US \$136.65 million or 5.21% of overall international honey export and hold the 7<sup>th</sup> position in ranking among the world largest natural honey exporters.

Table-3

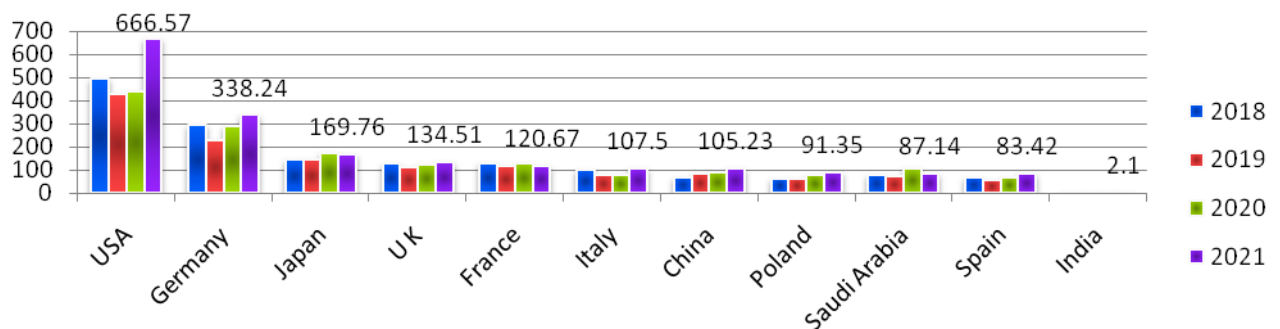
**World's top 10 Importers of Natural Honey (H.S Code-0409)**

Rank	Countries	2018		2019		2020		2021	
		Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)
1.	USA	497.71	22.34	430.08	21.63	441.41	19.83	666.57	25.15
2.	Germany	296.99	13.33	230.51	11.59	287.35	12.91	338.24	12.76
3.	Japan	145.41	6.53	144.51	7.27	173.69	7.80	169.76	6.41
4.	U K	128.61	5.77	111.10	5.59	121.31	5.45	134.51	5.08
5.	France	129.30	5.80	118.63	5.97	128.93	5.79	120.67	4.55
6.	Italy	100.94	4.53	79.85	4.02	81.00	3.64	107.50	4.06
7.	China	70.07	3.14	84.85	4.27	88.91	3.99	105.23	3.97
8.	Poland	62.42	2.80	61.77	3.11	79.04	3.55	91.35	3.45
9.	Saudi Arabia	76.98	3.45	72.99	3.67	105.07	4.72	87.14	3.29
10.	Spain	68.55	3.08	57.42	2.89	66.12	2.97	83.42	3.15
<b>51.</b>	<b>India</b>	<b>3.25</b>	<b>0.15</b>	<b>1.99</b>	<b>0.10</b>	<b>1.34</b>	<b>0.06</b>	<b>2.10</b>	<b>0.08</b>
	Others	648.14	29.09	594.52	29.90	651.70	29.28	743.46	28.06
	<b>Total</b>	<b>2228.36</b>	<b>100</b>	<b>1988.22</b>	<b>100</b>	<b>2225.87</b>	<b>100</b>	<b>2649.95</b>	<b>100</b>

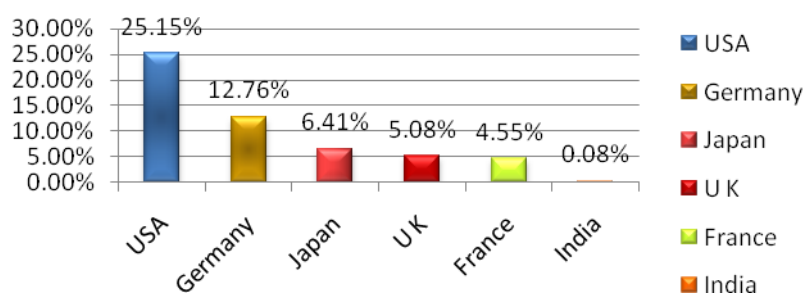
Source : UN Comtrade

Leading Natural Honey importers of world from 2018 to 2021 (Values in million \$)

Data label given on the basis of 2021



Country wise world's leading importers of Natural Honey by percentage in 2021

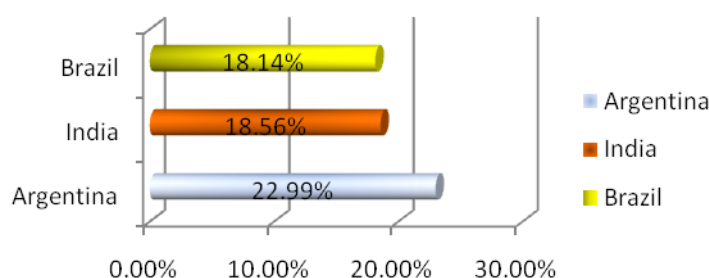


The Natural Honey imports world wide skyrocketed to US \$ 2.65 Billion in 2021. It was strongly growth from 2020 to 2021: increased by 19.36%. Over the period under review, global imports hit record highs at US \$ 2.65 Billion in this year. Among the top importing countries, USA imported highest worth of Natural Honey in 2021 valued at US \$ 666.57 million. In the that year China Germany and Japan stood at 2<sup>nd</sup> and 3<sup>rd</sup> position with import value of US \$ 338.24 Million and 169.75 Million of Natural Honey respectively. In the same year India imported only 0.08% share of world import of Natural Honey and holds on 51<sup>st</sup> position in world.

## Annexure-1

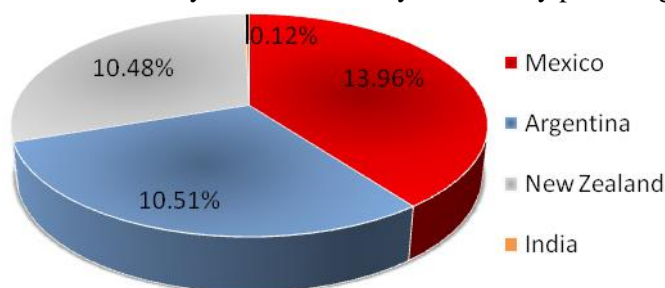
**Sources of world's top 3 importers of Natural Honey (H.S Code-0409)**

i) Top 3 Sources of Natural Honey to USA in 2021 by percentage:



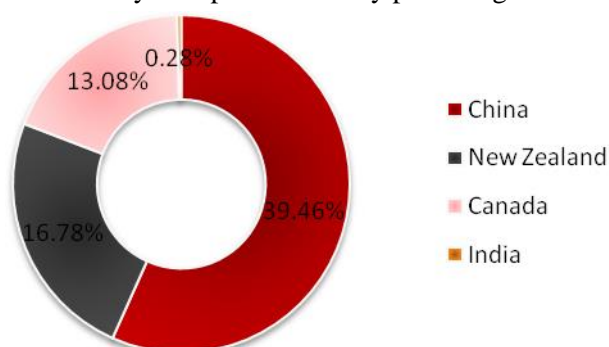
Among the top exporting country of Natural Honey exports to USA, Argentina export almost 23% share of USA's total export of natural honey in 2021. India(18.56%) and Brazil(18.14%) were the 2<sup>nd</sup> and 3<sup>rd</sup> largest source of Natural Honey to USA in the same year. USA imported almost 60% of its requirement of Honey from these three countries in 2021. **(Source : UN Comtrade).**

ii) Top 3 Sources of Natural Honey Zinc to Germany in 2021 by percentage:



Mexico was the primary source of Natural Honey to Germany. Germany imported 13.96% of Natural Honey from Mexico in 2021, followed by Argentina (10.51%) & New Zealand (10.48%). In that year India exported 0.12% share of Germany's total import of Natural Honey. **(Source : UN Comtrade)**

iii) Top 3 Sources of Natural Honey to Japan in 2021 by percentage:



Japan's 3 major source countries of Natural Honey in 2021 were China (39.46%), New Zealand (16.78%) and Canada (13.08%) in 2021. In the same year **India** has exported only 0.28% share of Natural Honey to Germany. **(Source: UN Comtrade)**

## Petroleum Jelly, Wax, Paraffin Wax etc...

**Petroleum jelly**, petrolatum, white petrolatum, soft paraffin, or multi-hydrocarbon, CAS number 8009-03-8, is a semi-solid mixture of hydrocarbons (with carbon numbers mainly higher than 25), originally promoted as a topical ointment for its healing properties. Vaseline has been a well known American brand of petroleum jelly since 1870.

After petroleum jelly became a medicine-chest staple, consumers began to use it for cosmetic purposes and for many ailments including toenail fungus, genital rashes (non-STI), nosebleeds, diaper rash, and common colds. Its folkloric medicinal value as a "cure-all" has since been limited by better scientific understanding of appropriate and inappropriate uses.

Petroleum jelly is a mixture of hydrocarbons, with a melting point that depends on the exact proportions. The melting point is typically between 40 and 70 °C (105 and 160 °F). It is flammable only when heated to liquid; then the fumes will light, not the liquid itself, so a wick material is needed to ignite petroleum jelly. It is colorless (or of a pale yellow color when not highly distilled), translucent, and devoid of taste and smell when pure. It does not oxidize on exposure to the air and is not readily acted on by chemical reagents. It is insoluble in water. It is soluble in dichloromethane, chloroform, benzene, diethyl ether, carbon disulfide and turpentine. Petroleum jelly is slightly soluble in alcohol

Most uses of petroleum jelly exploit its lubricating and coating properties, including use on dry lips and dry skin. Below are some examples of the uses of petroleum jelly. Vaseline brand First Aid Petroleum Jelly, or carbolated petroleum jelly containing phenol to give the jelly additional antibacterial effect, has been discontinued. During World War II, a variety of petroleum jelly called *red veterinary petrolatum*, or Red Vet Pet for short, was often included in life raft survival kits. Acting as a sunscreen, it provides protection against ultraviolet rays. Most petroleum jelly today is used as an ingredient in skin lotions and cosmetics, providing various types of skin care and protection by minimizing friction or reducing moisture loss, or by functioning as a grooming aid.

**Paraffin wax** (or **petroleum wax**) is a soft colorless solid derived from petroleum, coal, or oil shale that consists of a mixture of hydrocarbon molecules containing between 20 and 40 carbon atoms. It is solid at room temperature and begins to melt above approximately 37 °C (99 °F), and its boiling point is above 370 °C (698 °F). Common applications for paraffin wax include lubrication, electrical insulation, and candles, dyed paraffin wax can be made into crayons. It is distinct from kerosene and other petroleum products that are sometimes called paraffin.

Paraffin wax is mostly found as a white, odorless, tasteless, waxy solid, with a typical melting point between about 46 and 68 °C (115 and 154 °F), and a density of around 900 kg/m<sup>3</sup>. It is insoluble in water, but soluble in ether, benzene, and certain esters. Paraffin is unaffected by most common chemical reagents but burns readily. Its heat of combustion is 42 MJ/kg. Paraffin wax is an excellent material for storing heat, with a specific heat capacity of 2.14–2.9 J g<sup>-1</sup> K<sup>-1</sup> (joules per gram kelvin) and a heat of fusion of 200–220 J g<sup>-1</sup>. Paraffin wax phase-change cooling coupled with retractable radiators was used to cool the electronics of the Lunar Roving Vehicle during the crewed missions to the Moon in the early 1970s. Wax expands considerably when it melts and this allows its use in wax element thermostats for industrial, domestic and, particularly, automobile purposes.

In industrial applications, it is often useful to modify the crystal properties of the paraffin wax, typically by adding branching to the existing carbon backbone chain. The modification is usually done with additives, such as EVA copolymers, microcrystalline wax, or forms of polyethylene. The branched properties result in a modified paraffin with a higher viscosity, smaller crystalline structure, and modified functional properties. Pure paraffin wax is rarely used for carving original models for casting metal and other materials in the lost wax process, as it is relatively brittle at room temperature and presents the risks of chipping and breakage when worked. Soft and pliable waxes, like beeswax, may be preferred for such sculpture, but "investment casting waxes," often paraffin-based, are expressly formulated for the purpose.

These are broadly classified under **H.S. Code - 2712**.

Table - 4

**India's Top 10 destination of Petroleum Jelly, Wax, Paraffin Wax etc... (HS Code – 2712)**

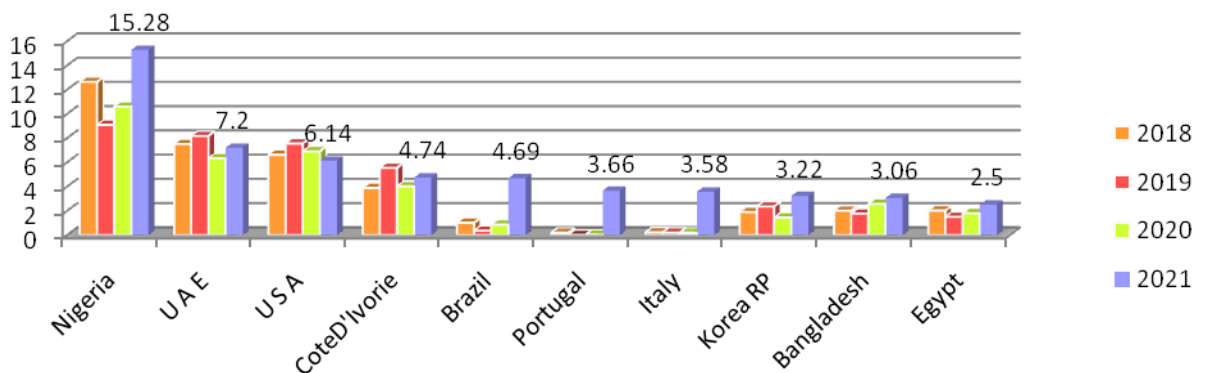
Rank	Countries	2018		2019		2020		2021	
		Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)
1.	Nigeria	12.64	14.33	9.10	11.94	10.60	14.91	15.28	16.00
2.	U A E	7.52	8.53	8.18	10.73	6.34	8.91	7.20	7.54
3.	U S A	6.63	7.52	7.56	9.92	6.91	9.72	6.14	6.43
4.	CoteD'Ivoire	3.89	4.41	5.55	7.29	4.02	5.65	4.74	4.96
5.	Brazil	1.02	1.16	0.37	0.48	0.86	1.21	4.69	4.92
6.	Portugal	0.19	0.22	0.02	0.03	0.03	0.04	3.66	3.83
7.	Italy	0.23	0.27	0.21	0.28	0.19	0.26	3.58	3.75
8.	Korea RP	1.90	2.16	2.36	3.10	1.44	2.03	3.22	3.38
9.	Bangladesh	2.01	2.28	1.77	2.33	2.58	3.63	3.06	3.21
10.	Egypt	2.03	2.30	1.51	1.98	1.81	2.54	2.50	2.62
	Others	50.12	56.84	39.59	51.93	36.32	51.08	41.38	43.35
	<b>Total</b>	88.18	100	76.24	100	71.10	100	95.45	100

Source: DGCI&amp;S

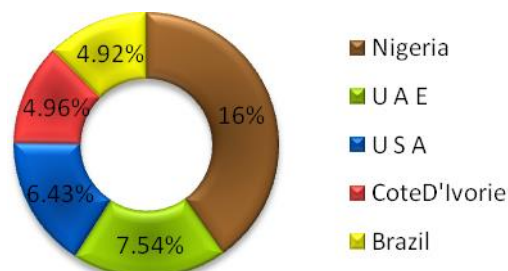
Note : India's Export including re-export

India's major destination Petroleum Jelly, Wax, Paraffin Wax etc.. from 2018-2021(in Million \$ )

Data label given on the basis of 2021



India's top 5 major destinations of Petroleum Jelly, Wax, Paraffin Wax etc.. by % India in 2021:



The value of exports of Petroleum jelly; paraffin wax etc... from India totalled US \$ 95.45 million in 2021. Sales of commodity group 2712 from India went up by 34% compared to 2020 or went up by US \$ 24.34 million. In the year 2021 India's Petroleum jelly; paraffin wax etc... export Value to Nigeria was US \$ 15.28 Million, which holds the top position with the share of 16 % of the total export value of India. With 7.54 % share UAE took runner up position in the global importers of Steel Petroleum jelly; paraffin wax etc... from India and USA was the 2<sup>nd</sup> runner up with 6.43 % share of India's total export.



Table - 5

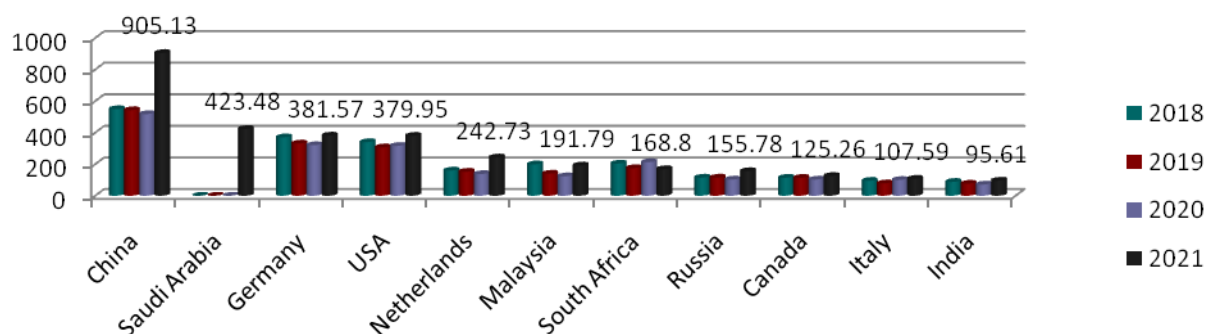
**World's Top 10 exporters of Petroleum Jelly, Wax, Paraffin Wax etc... (HS Code – 2712)**

Rank	Countries	2018		2019		2020		2021	
		Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)
1.	China	548.75	16.25	542.51	18.59	517.45	18.82	905.13	21.79
2.	Saudi Arabia	0.05	0.00	0.00	0.00	0.00	0.00	423.48	10.19
3.	Germany	370.26	10.97	330.92	11.34	320.67	11.66	381.57	9.18
4.	USA	339.63	10.06	306.40	10.50	315.96	11.49	379.95	9.14
5.	Netherlands	159.63	4.73	151.99	5.21	137.68	5.01	242.73	5.84
6.	Malaysia	198.97	5.89	140.02	4.80	123.42	4.49	191.79	4.62
7.	South Africa	203.90	6.04	175.28	6.01	212.79	7.74	168.80	4.06
8.	Russia	114.43	3.39	114.82	3.94	102.82	3.74	155.78	3.75
9.	Canada	113.99	3.38	113.47	3.89	102.38	3.72	125.26	3.01
10.	Italy	94.41	2.80	78.23	2.68	100.28	3.65	107.59	2.59
12.	<b>India</b>	<b>87.99</b>	<b>2.61</b>	<b>76.34</b>	<b>2.62</b>	<b>71.12</b>	<b>2.59</b>	<b>95.61</b>	<b>2.30</b>
	Others	1143.90	33.88	887.85	30.43	744.59	27.08	977.05	23.52
	<b>Total</b>	<b>3375.92</b>	<b>100</b>	<b>2917.83</b>	<b>100</b>	<b>2749.14</b>	<b>100</b>	<b>4154.74</b>	<b>100</b>

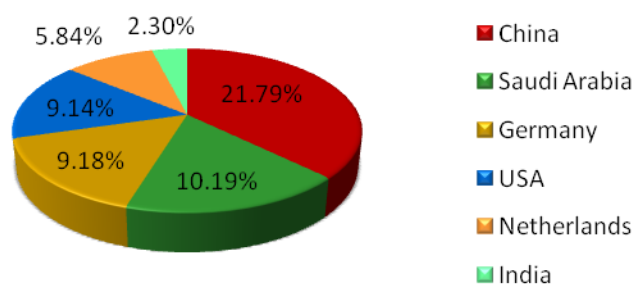
Source: UN Comtrade

Leading Petroleum Jelly, Wax, Paraffin Wax etc.. Exporters from 2018 to 2021 (in million \$)

Data label given on the basis of 2021



World's leading Petroleum Jelly, Wax, Paraffin Wax etc.. Exporters by percentage in 2021:



In value terms, the Petroleum jelly; paraffin wax etc... exports amounted to US \$ 4.15 Billion in 2021, went up by 51% over the last year. China was the main global supplier of Petroleum jelly; paraffin wax etc... with a worth value of US \$ 905.13 million which was accounted by 21.79% share of global exports in that year. It was followed by Saudi Arabia (10.19%), Germany (9.18%). **India** stood at 12<sup>th</sup> position in ranking in the world with 2.30% share of world export of Petroleum jelly; paraffin wax etc... in 2021. Which was 34.43% more from 2020.

Table - 6

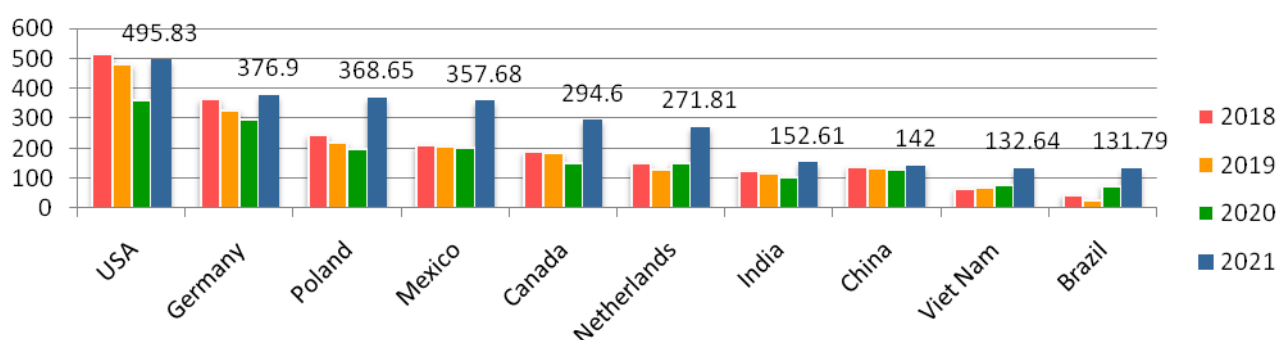
**World's Top 10 Importers of Petroleum Jelly, Wax, Paraffin Wax etc... (HS Code – 2712)**

Rank	Countries	2018		2019		2020		2021	
		Value ( million \$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)
1.	USA	512.41	14.23	478.17	14.29	358.79	11.68	495.83	11.16
2.	Germany	362.08	10.06	325.82	9.74	294.60	9.59	376.90	8.49
3.	Poland	244.10	6.78	217.59	6.50	197.89	6.44	368.65	8.30
4.	Mexico	208.87	5.80	204.08	6.10	201.47	6.56	357.68	8.05
5.	Canada	187.50	5.21	183.77	5.49	151.34	4.93	294.60	6.63
6.	Netherlands	147.85	4.11	126.00	3.77	149.79	4.87	271.81	6.12
7.	<b>India</b>	<b>121.72</b>	<b>3.38</b>	<b>115.59</b>	<b>3.45</b>	<b>101.44</b>	<b>3.30</b>	<b>152.61</b>	<b>3.44</b>
8.	China	138.17	3.84	131.22	3.92	129.84	4.23	142.00	3.20
9.	Viet Nam	65.83	1.83	67.98	2.03	75.77	2.47	132.64	2.99
10.	Brazil	42.89	1.19	26.91	0.80	74.49	2.42	131.79	2.97
	Others	1568.56	43.57	1469.24	43.91	1337.43	43.52	1716.71	38.65
	<b>Total</b>	<b>3599.99</b>	<b>100</b>	<b>3346.38</b>	<b>100</b>	<b>3072.86</b>	<b>100</b>	<b>4441.21</b>	<b>100</b>

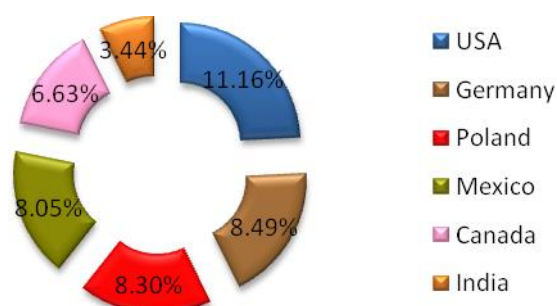
Source : UNComtrade

Major importers of Petroleum Jelly, Wax, Paraffin Wax etc.. from 2018 to 2021 (in million \$)

Data label given on the basis of 2021



Country wise world's top Importer of Petroleum Jelly, Wax, Paraffin Wax etc.. import by % in 2021 :

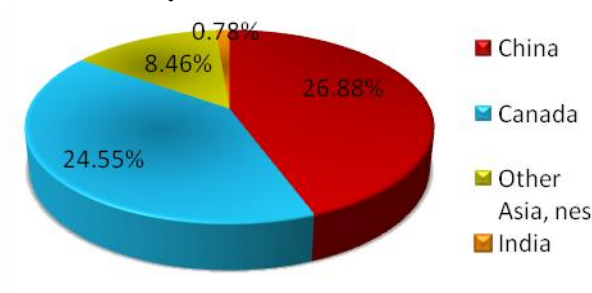


Global purchases of imported Petroleum jelly; paraffin wax etc... cost a total US \$ 4.44 billion in 2021. In that year, imported Petroleum jelly; paraffin wax etc... appreciated by an 44.62% from US \$ 3.07 billion during 2020. USA consumed the highest dollar worth of imported Petroleum jelly; paraffin wax etc... during 2021 with purchases valued at US \$ 495.83 million or 11.16 % of the world total. In second and third place were Germany and Poland at 8.49% and 8.30% of globally imported Petroleum jelly; paraffin wax etc... in 2021. In that year **India** stood at 7<sup>th</sup> position in ranking among the largest importing countries of Petroleum jelly; paraffin wax etc... in the world with 3.44 share of world import.

## Annexure-II

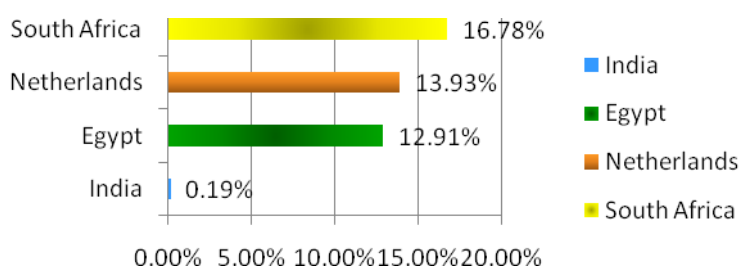
**Sources of top three importers of Petroleum Jelly, Wax, Paraffin Wax etc (HS Code – 2712)**

i) Top 3 Sources of Petroleum Jelly, Wax, Paraffin Wax etc.. to USA in 2021 by percentage:



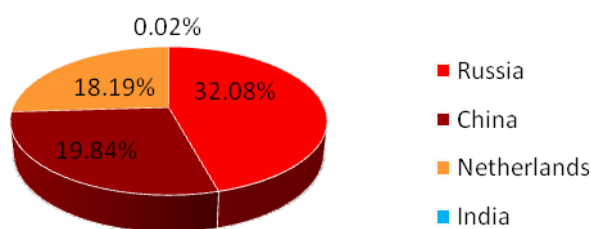
USA's source most of its Petroleum Jelly, Wax, Paraffin Wax etc.. from China with 26.88% share of its import of the commodity comes from China in 2021. Canada and Other Asia, nes are found to be the 2<sup>nd</sup> and 3<sup>rd</sup> largest exporters of Petroleum Jelly, Wax, Paraffin Wax etc.. to USA by 24.55% and 8.46% shares of USA's total import respectively in 2021. India's account was only 0.78% in that year **(Source: UN Comtrade)**

ii) Top 3 Sources Petroleum Jelly, Wax, Paraffin Wax etc... to Germany in 2021 by percentage:



16.78% share of Petroleum Jelly, Wax, Paraffin Wax etc... imports to Germany came from South Africa in 2021, followed by Netherlands (13.93%) and Egypt (12.91%). In the same year Germany imports of Petroleum Jelly, Wax, Paraffin Wax etc... only 0.19% from India. **(Source: UN Comtrade)**

iii) Top 3 Sources of Petroleum Jelly, Wax, Paraffin Wax etc.. to Poland in 2021 by



percentage:

With 32.08% share of Poland's total import of Petroleum Jelly, Wax, Paraffin Wax etc... Russia became the largest source of it to Poland in 2021. China (19.84 %) and Netherlands (18.19 %) were other major sources of Petroleum Jelly, Wax, Paraffin Wax etc... to Poland in that year. In the same year India has only 0.02% share to Poland. **(Source : UN Comtrade)**

## IMPORT

### Petroleum Coke and Bitumen and other Residues

**Petroleum coke**, is a final carbon-rich solid material that derives from oil refining, and is one type of the group of fuels referred to as cokes. Petcoke is the coke that, in particular, derives from a final cracking process—a thermo-based chemical engineering process that splits long chain hydrocarbons of petroleum into shorter chains—that takes place in units termed coker units. Stated succinctly, coke is the "carbonization product of high-boiling hydrocarbon fractions obtained in petroleum processing". Petcoke is also produced in the production of synthetic crude oil from bitumen extracted from Canada's oil sands and from Venezuela's Orinoco oil sands.

In petroleum coker units, residual oils from other distillation processes used in petroleum refining are treated at a high temperature and pressure leaving the petcoke after driving off gases and volatiles, and separating off remaining light and heavy oils. These processes are termed "coking processes", and most typically employ chemical engineering plant operations for the specific process of delayed coking.

This coke can either be fuel grade (high in sulfur and metals) or anode grade (low in sulfur and metals). The raw coke directly out of the coker is often referred to as green coke. In this context, "green" means unprocessed. The further processing of green coke by calcining in a rotary kiln removes residual volatile hydrocarbons from the coke. The calcined petroleum coke can be further processed in an anode baking oven to produce anode coke of the desired shape and physical properties. The anodes are mainly used in the aluminium and steel industry.

Petcoke is over 80% carbon and emits 5% to 10% more carbon dioxide (CO<sub>2</sub>) than coal on a per-unit-of-energy basis when it is burned. As petcoke has a higher energy content, petcoke emits between 30% and 80% more CO<sub>2</sub> than coal per unit of weight. The difference between coal and coke in CO<sub>2</sub> production per unit of energy produced depends upon the moisture in the coal, which increases the CO<sub>2</sub> per unit of energy – heat of combustion – and on the volatile hydrocarbons in coal and coke, which decrease the CO<sub>2</sub> per unit of energy.

**Bitumen** is a sticky, black, highly viscous liquid or semi-solid form of petroleum. In the U.S., it is commonly referred to as asphalt. It may be found in natural deposits or may be a refined product, and is classed as a pitch. Before the 20th century, the term asphaltum was also used. The largest natural deposit of bitumen in the world, estimated to contain 10 million tons, is the Pitch Lake in southwest Trinidad.

The primary use (70%) of bitumen is in road construction, where it is used as the glue or binder mixed with aggregate particles to create asphalt concrete. Its other main uses are for bituminous waterproofing products, including production of roofing felt and for sealing flat roofs. In material sciences and engineering, the terms "asphalt" and "bitumen" are often used interchangeably to mean both natural and manufactured forms of the substance, although there is regional variation as to which term is most common. Worldwide, geologists tend to favor the term "bitumen" for the naturally occurring material. For the manufactured material, which is a refined residue from the distillation process of selected crude oils, "bitumen" is the prevalent term in much of the world; however, in American English, "asphalt" is more commonly used. To help avoid confusion, the phrases "liquid asphalt", "asphalt binder", or "asphalt cement" are used in the U.S. Colloquially, various forms of asphalt are sometimes referred to as "tar".

The vast majority of refined bitumen is used in construction: primarily as a constituent of products used in paving and roofing applications. According to the requirements of the end use, bitumen is produced to specification. This is achieved either by refining or blending. It is estimated that the current world use of bitumen is approximately 102 million tonnes per year. Approximately 85% of all the bitumen produced is used as the binder in asphalt concrete for roads. It is also used in other paved areas such as airport runways, car parks and footways.

These are broadly classified under **H. S. Code 2713**.

Table - 7

**India's Top 10 Sources of Petroleum Coke and Bitumen ( H.S. Code - 2713)**

Rank	Countries	2018		2019		2020		2021	
		Value ( million \$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)
1.	U A E	211.21	9.73	296.45	11.63	303.41	18.28	855.58	35.80
2.	U S A	877.25	40.41	904.10	35.47	662.45	39.92	427.86	17.90
3.	Saudi Arab	230.96	10.64	289.37	11.35	167.06	10.07	288.61	12.08
4.	China	266.75	12.29	189.36	7.43	104.80	6.32	243.17	10.17
5.	Oman	15.38	0.71	51.97	2.04	47.06	2.84	128.14	5.36
6.	Kuwait	33.56	1.55	24.95	0.98	23.53	1.42	65.12	2.72
7.	Japan	64.95	2.99	140.42	5.51	19.78	1.19	55.82	2.34
8.	Iran	90.75	4.18	0.42	0.02	4.38	0.26	42.28	1.77
9.	Germany	11.94	0.55	16.27	0.64	11.19	0.67	41.37	1.73
10.	Iraq	1.29	0.06	133.91	5.25	192.84	11.62	35.51	1.49
	Others	366.65	16.89	501.51	19.68	122.97	7.41	206.62	8.65
	<b>Total</b>	2170.68	100	2548.73	100	1659.46	100	2390.07	100

Source: DGCI&S

Note : India's Import including re-import

The dollar value of Petroleum Coke and Bitumen and Other Residues import in 2021 stood at US \$ 2.39 Billion and US \$ 2.17 Billion in 2018, which shows a increasing trends. In the 2021 the import of Primary Cell in India grew by more than 43.97% compare to the year 2020. In 2021 India imported Petroleum Coke and Bitumen and Other Residues maximum worth value of US \$ 855.58 Million from UAE or 35.80% of India's total import, which was followed by USA and Saudi Arab, from where India imported around 17.90% and 12.08% share of Petroleum Coke and Bitumen and Other Residues. The top 10 countries shared 91.35% of the Petroleum Coke and Bitumen and Other Residues import to India in 2021.

Table - 8

**World's Top 10 Importer of Petroleum Coke and Bitumen ( H.S. Code - 2713)**

Rank	Countries	2018		2019		2020		2021	
		Value (million\$)	Share (%)	Value ( million\$)	Share (%)	Value ( million\$)	Share (%)	Value ( million\$)	Share (%)
1.	China	3437.03	14.79	3354.86	15.48	2559.51	16.49	3788.87	15.80
2.	<b>India</b>	<b>2156.47</b>	<b>9.28</b>	<b>2516.34</b>	<b>11.61</b>	<b>1649.92</b>	<b>10.63</b>	<b>2379.38</b>	<b>9.92</b>
3.	USA	1667.13	7.18	1494.59	6.90	1077.94	6.95	1938.91	8.09
4.	Japan	922.89	3.97	795.40	3.67	521.17	3.36	942.02	3.93
5.	Australia	761.63	3.28	641.63	2.96	559.48	3.61	775.16	3.23
6.	France	807.78	3.48	844.16	3.90	526.73	3.39	771.67	3.22
7.	Mexico	808.59	3.48	681.73	3.15	498.25	3.21	746.95	3.12
8.	Turkey	635.68	2.74	391.50	1.81	341.53	2.20	682.85	2.85
9.	Malaysia	392.55	1.69	513.57	2.37	357.59	2.30	592.96	2.47
10.	Brazil	359.92	1.55	262.41	1.21	208.81	1.35	536.06	2.24
	Others	11285.35	48.57	10174.09	46.95	7216.96	46.51	10820.88	45.13
	<b>Total</b>	<b>23235.03</b>	<b>100</b>	<b>21670.27</b>	<b>100</b>	<b>15517.88</b>	<b>100</b>	<b>23975.71</b>	<b>100</b>

Source :UNComtrade

In 2021, the global import of Petroleum Coke and Bitumen and Other Residues to US \$ 23.97 Billion, increasing by more than 54.54% against the previous year figure. Over the period under review, global Petroleum Coke and Bitumen and Other Residues imports reached its maximum level of US \$ 23.97 Billion in this year. In 2021 China (US \$ 3.78 B) constitutes the largest market for imported Petroleum Coke and Bitumen and Other Residues worldwide, making up 15.80 % of global imports. The second position in the ranking was occupied by **India** (US \$ 2.38 B), with the share of 9.92% of global imports. It was followed by the USA, with the share of 8.09%.

### Articles of Carbon Used for Electrical purpose

The ever increasing use of technology in all areas of our daily life has had an immense effect on our demand for electrical energy, and this has resulted in the urgent need to find more efficient methods for its generation and distribution. This need has stimulated the quest for new materials and highly efficient devices, which have significantly better performance than those currently in use, as well being cost-effective, safe, and environmentally friendly. In this perspective, carbon is a very promising material.

The recent synthesis of fullerenes, carbon nanotubes and separation of graphene has generated enormous interest in these carbon materials. Carbon allotropes of this type offer not only a highly exciting and vast area for scientific exploration but also the potential for a wide spectrum of novel engineering applications due to their properties.

Carbon nanotubes are particularly attractive, due to their tubular shape, low density, tuneable electrical properties, ballistic electron transport, lack of skin effect, current carrying capacity exceeding superconductors, mechanical strength/stiffness better than any metal, thermal conductivity exceeding diamond and many other properties. This amazing list can be extended by advantages such as the wide availability of carbon sources, the potential low-cost of large-scale production and their zero net carbon footprint, together these attributes make carbon nanotubes an obvious candidate for “the material of the future”.

One very interesting potential application of carbon nanotubes is in electrical wiring. Conventional electrical wires made of copper and aluminium suffer from several problems including: weight (an issue in aerospace applications), skin effect (hindering their use in modern telecommunications), mechanical performance (critical in overhead power lines), and electromigration (severely damaging microscopic wires in electronics applications). Moreover, the growing demand for these conventional metal conductors and their continually increasing prices suggests that a low-cost material that can outperform conventional conductors would be highly desirable. Hence, carbon nanotubes are the material of great interest.

However, there are several challenges in the production of carbon nanotube electrical wires and their application, which include; preparation of macroscopic structures that retain the properties of individual nanotubes, control over the morphology and dimensions of these structures, development of large-scale cost-effective manufacturing processes and providing the wires with suitable electrical insulation and connections for integration into electrical systems. Not less important, is the in-depth understanding of the physics behind the transport properties of these new carbon structures and possible preparation of new standards for the use of the CNT wires. Some of the solutions to these issues have been already suggested.

The theoretical and experimental research on CNT fibers predict that proper control of the morphology of these macroscopic assemblies of CNTs should produce the material of excellent electrical conductivity comparable to the conductivity of individual nanotubes.

Moreover, the fibers should considerably exceed the performance of any metals used currently in electrical engineering in terms of mechanical and thermal properties, while keeping the density very low.

Graphite carbon is widely used for manufacturing the electrodes for Electric Arc furnaces. In Electric Arc furnaces used for steel production the operating temperature level is about 2760°C. Graphite carbon is only commercial available material which has the high level of electrical conductivity and ability to with stand with such high level of temperature. Which make it suitable for making electrodes for electric arc furnaces.

Graphite carbon is also widely used for manufacturing the electrodes for Arc lighting and welding. As discussed above, graphite carbon has the high level of electrical conductivity and ability to with stand at high level of temperature during Arc lighting and welding. Which make it suitable for making electrodes for Arc lighting and welding.

These are broadly classified under the **ITCHS Code-8545**.

**Table 9****India's Top 10 Sources of Articles of Carbon for Electrical Purpose (HS Code 8545)**

Rank	Countries	2018		2019		2020		2021	
		Value ( million \$)	Share (%)	Value ( million\$)	Share (%)	Value ( million\$)	Share (%)	Value ( million\$)	Share (%)
1.	U S A	49.55	22.40	53.51	22.83	39.51	25.61	52.07	24.10
2.	China	82.78	37.43	91.61	39.09	27.71	17.96	44.44	20.57
3.	Poland	16.68	7.54	18.06	7.71	26.08	16.90	38.43	17.79
4.	France	12.65	5.72	24.80	10.58	25.54	16.56	26.42	12.23
5.	Japan	9.45	4.27	12.77	5.45	6.45	4.18	11.17	5.17
6.	Malaysia	24.05	10.87	0.06	0.03	0.93	0.60	11.02	5.10
7.	Indonesia	2.14	0.97	1.73	0.74	4.77	3.09	6.99	3.24
8.	Germany	3.90	1.76	3.95	1.69	3.93	2.55	4.90	2.27
9.	U K	0.13	0.06	0.22	0.10	1.75	1.13	4.10	1.90
10.	Korea RP	1.01	0.46	5.25	2.24	2.72	1.76	2.51	1.16
	Others	18.84	8.52	22.40	9.56	14.91	9.66	13.98	6.47
	<b>Total</b>	221.17	100	234.38	100	154.29	100	216.03	100

Source: DGCI&amp;S

Note : India's Import including re-import

The dollar value of Carbon Electrodes and Other Articles of Carbon used for Electrical purpose import in 2021 stood at US \$ 216.03 Million. In the 2021 the import of Primary Cell in India grew by more than 40% compare to the year 2020. In 2021 India imported Carbon Electrodes and Other Articles of Carbon used for Electrical purpose maximum worth value of US \$ 52.07 Million from USA or 24.10% of India's total import. In second and third place were China and Poland from where India imported around 20.57% and 11.79 % share of Carbon Electrodes and Other Articles of Carbon used for Electrical purpose The top 10 countries shared 93.53% of the Carbon Electrodes and Other Articles of Carbon used for Electrical purpose import to India in 2021.



**Table 10****World's top 10 Importers of Articles of Carbon for Electrical Purpose (HS Code 8545)**

Rank	Countries	2018		2019		2020		2021	
		Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)	Value (million\$)	Share (%)
1.	Canada	563.25	4.96	453.28	5.46	340.37	6.50	429.57	6.97
2.	USA	846.74	7.45	705.24	8.49	364.26	6.96	424.34	6.89
3.	Russia	668.09	5.88	501.52	6.04	337.78	6.45	416.36	6.76
4.	U A E	140.27	1.23	170.31	2.05	168.64	3.22	345.24	5.60
5.	Iceland	359.03	3.16	341.63	4.11	289.44	5.53	327.51	5.32
6.	Rep. of Korea	521.28	4.59	566.25	6.82	285.43	5.45	293.75	4.77
7.	Norway	313.57	2.76	309.65	3.73	231.75	4.43	288.36	4.68
8.	Italy	547.15	4.82	363.06	4.37	228.07	4.36	270.73	4.39
9.	Turkey	595.97	5.25	369.76	4.45	224.74	4.29	263.02	4.27
10.	Germany	419.04	3.69	327.46	3.94	218.51	4.17	227.25	3.69
<b>11.</b>	<b>India</b>	<b>221.41</b>	<b>1.95</b>	<b>234.38</b>	<b>2.82</b>	<b>154.65</b>	<b>2.95</b>	<b>216.58</b>	<b>3.52</b>
	Others	6163.35	54.26	3962.13	47.71	2392.60	45.69	2658.59	43.15
	<b>Total</b>	11359.16	100	8304.66	100	5236.24	100	6161.30	100

Source: UN Comtrade

Canada tops the world in terms import of Carbon Electrodes and Other Articles of Carbon used for Electrical purpose and its share in the world import of it was more than 6.97% of the total world import value of it in 2021, however USA was the top for three consecutive years from 2018 to 2020. In the same year USA and Russia were 2<sup>nd</sup> and 3<sup>rd</sup> largest importer of said Commodity group with share of 6.89% and 6.76% of world import. In the year 2021 **India** imports US \$ 216.58 million or 3.52% share of world import and comes at 11<sup>th</sup> rank in the world. The trends of world import of Oxygen function amino Compound is increasing from 2018 to 2020 however in the year 2021 it has increased by nearly 17.66 % compare to that in the year 2020.