# Indian Minerals Yearbook 2015

## (Part- III : Mineral Reviews)

## 54th Edition

# ASBESTOS

### (FINAL RELEASE)


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**INDIAN BUREAU OF MINES**

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# 2 Asbestos

Asbestos is a group of six naturally occurring fibrous silicate minerals. The physical properties, besides fibrous character, such as, fineness, flexibility, tensile strength & length of fibres, infusibility, low heat conductivity and high resistance to electricity & sound as also to corrosion by acids, make asbestos commercially important. Commercial asbestos is classified into two main mineralogical groups: serpentine asbestos or chrysotile asbestos and amphibole asbestos. The latter includes asbestos minerals, such as, tremolite, actinolite, anthophyllite, amosite and crocidolite. Commercially, chrysotile asbestos is far superior in physical properties and hence more valuable than amphibole asbestos.

India's asbestos requirement is mainly met through imports from Russia, Kazakhstan, Brazil and China.

## RESOURCES

As per the UNFC system, the total resources of asbestos in the country as on 1.4.2010 are placed at 22.17 million tonnes (Table-1). Of these, 2.5 million tonnes are reserves and 19.6 million tonnes are remaining resources. Out of the total resources, Rajasthan accounts for 13.6 million tonnes (61%) and Karnataka 8.28 million tonnes (37%). The remaining two percent resources are estimated in Jharkhand, Andhra Pradesh, Odisha and Uttarakhand.

Table-2 summarises the mineralogical varieties of asbestos occurring in various parts of the country.

## PRODUCTION, STOCKS & PRICES

No production of asbestos was reported in 2014-15 as compared to 172 tonnes in the previous year due to temporary discontinuance of mines in Andhra Pradesh. Thus, there were no reporting mines in 2014-15 as against 4 mines in the preceding year (Tables - 4 & 5).

The mine-head closing stock of asbestos remained at 11 tonnes in both years (Table-6).

The average daily employment of labour in 2014-15 was 'Nil' as compared to 50 in the preceding year. Prices of asbestos are furnished in the General Review on 'Prices'.

**Table – 2 : Occurrences of Asbestos in India**

| State | District | Mineralogical variety |
|---|---|---|
| Andhra Pradesh | Cuddapah | Chrysotile |
| Jharkhand | Singhbhum (East) | Chrysotile, tremolite, chrysotile mixed with other minerals |
| | Singhbhum (West) | |
| Karnataka | Chikkmagaluru | Amosite |
| | Hassan | Anthophyllite |
| | Mandya | Mixed amphibole minerals |
| | Mysuru | Chrysotile |
| | Shivamogga | Amosite |
| Odisha | Kendujhar | - |
| Rajasthan | Ajmer | Mixed amphibole minerals |
| | Bhilwara | -do- |
| | Dungarpur | -do- |
| | Pali | Tremolite, chrysotile mixed with other amphibole minerals |
| | Rajsamand | Tremolite, actinolite and mixed amphibole minerals |
| | Udaipur | Chrysotile, tremolite and mixed amphibole minerals |
| Uttarakhand | Chamoli | Others |

## Table – 1 : Reserves/Resources of Asbestos as on 1.4.2010
## (By Grades/States)

(In tonnes)

| Grade/State | Reserves | | | | Remaining Resources | | | | | | | | Total Resources (A+B) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proved STD111 | Probable | | Total (A) | Feasibility STD211 | Pre-feasibility | | Measured STD331 | Indicated STD332 | Inferred STD333 | Reconnaissance STD334 | Total (B) | |
| | | STD121 | STD122 | | | STD221 | STD222 | | | | | | |
| **All India : Total** | **1700152** | **4588** | **806101** | **2510841** | **109641** | **3072849** | **3257941** | **100687** | **2527918** | **10528925** | **57800** | **19655761** | **22166602** |
| **By Grades** | | | | | | | | | | | | | |
| Chrysotile | 5754 | - | 9028 | 14782 | 856 | 3117 | 9191 | 2885 | 17619 | 41992 | - | 75660 | 90442 |
| Amosite | - | - | - | - | - | - | - | - | 3987 | 4459680 | - | 4463667 | 4463667 |
| Tremolite | - | - | - | - | - | 94768 | 116516 | - | 2426700 | 1562125 | - | 4200109 | 4200109 |
| Chrysotile mixed with others | - | - | - | - | - | 3871 | 18309 | - | - | 336 | - | 22516 | 22516 |
| Mixed Amphibole | 1634775 | 4588 | 770739 | 2410102 | 108785 | 2638007 | 2975117 | 87802 | 42101 | 4121718 | - | 9973530 | 12383632 |
| Actinolite | - | - | - | - | - | - | - | - | 311 | 34000 | - | 34311 | 34311 |
| Anthophyllite | - | - | - | - | - | - | - | - | - | 20000 | - | 20000 | 20000 |
| Others | - | - | - | - | - | 332459 | 99675 | - | - | - | - | 432134 | 432134 |
| Not-known | 59623 | - | 26334 | 85957 | - | 627 | 39133 | - | - | 279574 | 57800 | 377134 | 463091 |
| Unclassified | - | - | - | - | - | - | - | 10000 | 37200 | 9500 | - | 56700 | 56700 |
| **By States** | | | | | | | | | | | | | |
| Andhra Pradesh | 5754 | - | 9028 | 14782 | 856 | 3117 | 9191 | - | 1500 | 27085 | - | 41749 | 56531 |
| Jharkhand | - | - | - | - | - | 3871 | 18309 | 2885 | 5769 | 124059 | - | 154893 | 154893 |
| Karnataka | - | - | - | - | - | - | - | - | 2441037 | 5841420 | - | 8282457 | 8282457 |
| Odisha | - | - | - | - | - | - | - | 10000 | 37200 | 9500 | - | 56700 | 56700 |
| Rajasthan | 1694398 | 4588 | 797073 | 2496059 | 108785 | 3065861 | 3230441 | 87802 | 42101 | 4526861 | 57800 | 11119651 | 13615710 |
| Uttarakhand | - | - | - | - | - | - | - | - | 311 | - | - | 311 | 311 |

*Figures rounded off.*

## Table – 3 : Principal Producers of Asbestos Till 2013-14

| Name & address of producer | Location of mine | |
|---|---|---|
| | State | District |
| Padma Minerals (P) Ltd,<br>Door No 4-11-146,<br>Ambikapalli Road, Pulivendla,<br>Distt. Cuddapah – 516 390<br>Andhra Pradesh. | Andhra Pradesh | Cuddapah |
| Baba Minerals Corporation,<br>Door No. 1/125, Krishnappa Nagar,<br>Near Rly. Station,<br>Cuddapah, 516 004.<br>Andhra Pradesh. | Andhra Pradesh | Cuddapah |

## Table – 4 : Production of Asbestos, 2012-13 to 2014-15 (By States)

(Qty in tonnes; value in ₹'000)

| State | 2012-13 | | 2013-14 (P) | | 2014-15 (P) | |
|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| **India/Andhra Pradesh** | **389** | **17057** | **172** | **7271** | **-** | **-** |

## Table – 5 : Production of Asbestos, 2013-14 and 2014-15 (P) (By Sector/ States/Districts/Grades)

(Qty in tonnes; Value in ₹'000)

| State/District | 2013-14 (P) | | | | | 2014-15 (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. of mines | Quantity | | | Value | No. of mines | Quantity | | | Value |
| | | Chrysotile | Amphibole | Total | | | Chrysotile | Amphibole | Total | |
| **India** | **4** | **172** | **-** | **172** | **7271** | **-** | **-** | **-** | **-** | **-** |
| Private sector | 4 | 172 | - | 172 | 7271 | - | - | - | - | - |
| **Andhra Pradesh** | **3** | **172** | **-** | **172** | **7271** | **-** | **-** | **-** | **-** | **-** |
| Cuddapah | 3 | 172 | - | 172 | 7271 | - | - | - | - | - |
| **Rajasthan*** | **1*** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| Ajmer* | 1* | - | - | - | - | - | - | - | - | - |

**Production of felspar and quartz reported as associated minerals.*

## Table – 6 : Mine-head Closing Stocks of Asbestos 2013-14 & 2014-15 (P) (By State/Grades)

(Qty in tonnes)

| State | 2013-14 | | | 2014-15 | | |
|---|---|---|---|---|---|---|
| | Chrysotile | Amphibole | Total | Chrysotile | Amphibole | Total |
| **India /Andhra Pradesh** | **11** | **-** | **11** | **11** | **-** | **11** |

## MINING & MILLING

The usual method of mining chrysotile in Pulivendla Tehsil, Cuddapah district, Andhra Pradesh, is by opening an incline along the dip varying from $20^0$ to $25^0$, keeping the trap as floor and limestone as roof. Two or three such inclines are converted into a regular underground mine by developing levels and winzes connecting them and adopting board-and-pillar system of development. In almost all the mines, operations like blast hole drilling, hoisting, pumping and ventilation are mechanised.

The run-of-mine is subjected to manual sorting of asbestos-bearing rock (ABR). ABR is then hand-combed for chipping off the asbestos-bearing portion in small pieces of about 2.5 cm for producing asbestos concentrates. From ABR, the serpentine is removed as a waste. The asbestos concentrate is fed manually into hopper of a hammer mill. In hammer mill, asbestos and other minerals are separated and then fed to double-deck screen having 10 to 40 mesh sieves. The screening gives three fractions: (a) oversize, (b) middling, and (c) tailing.

Tailing is taken as a waste which generally does not contain appreciable quantity of asbestos. The oversize is recycled in the hammer mill, and the middling fibre is sucked up by a cyclone and collected.

## GRADING & MARKETING

Small fibres recovered through milling process account for nearly a two-third production. The general grading system adopted is as follows:

| Grade | Fibre Size | Method |
|---|---|---|
| Grade - As | 45 mm and above | Hand-sorted |
| Grade - A | Between 25 and 45 mm | |
| Grade - B | Between 12 and 25 mm | |
| Grade - C | Above 16 mesh | Mill-processed |
| Grade - D3 | 24 mesh | |
| Grade - D4 | 40 mesh | |
| Grade - D6 | 60 mesh | |

***Note**: Producers of amphibole asbestos sell their output as crude or fluff and powder.*

## CLASSIFICATIONS

Various classifications of chrysotile asbestos followed in India are based, by and large, on fibre length:

(1) Grade As or A Special - 25.4 mm fibres or larger

- $As_1$ - 25.4 mm and larger fibres but brittle compared to As or A Special
- A - 19.05 to 25.4 mm fibres
- $A_1$ - 19.05 to 25.4 mm fibres but brittle compared to A
- $A_2$ - 19.05 to 25.4 mm fibres but brittle compared to $A_1$

Grade B - 6.35 to 19.05 mm fibres

- $B_1$ - 6.35 to 19.05 mm fibres but brittle compared to B
- $B_2$ - 6.35 to 19.05 mm fibres but brittle compared to $B_1$
- C - Below 6.35 mm fibres

(2) Grade A Special - Above 31.5 mm

- A - Between 19 and 31.5 mm
- B - Between 6.3 and 19 mm
- C - Below 6.3 mm including powder
- D - Dust

(3) Quebec standard asbestos testing machine classification of chrysotile asbestos according to groups is given below:

**Crude Asbestos**

Group No. 1 Crude No. 1: Consists basically of crude, 3/4 inch and longer staple

Group No. 2 Crude No. 2: Consists basically of crude, 3/8 to 3/4 inch staple.

**Milled Asbestos**

| Standard designation of grade | Guaranteed minimum spinning test |
|---|---|
| Group No. 3 (spinning fibres) | |
| 3 D | 10.5-3.9-1.3-0.3 |
| 3 Z | 0-8-6-2 |
| Group No. 4 (shingle fibres) | |
| 4 D | 0-7-6-3 |
| 4 Z | 0-1.5-9.5-5 |

(Contd.)

(Concld.)

| Standard designation of grade | | Guaranteed minimum spinning test |
|---|---|---|
| Group No. 5 (paper fibres) | | |
| | 5 D | 0-0.5-10.5-5 |
| | 5 R | 0-0-10-6 |
| Group No. 6 (waste) | | |
| | 6 D | 0-0-7-9 |
| Group No. 7 (shorts or refuse) | | |
| | 7 D | 0-0-8-11 |
| | 7W | 0-0-0-16 |
| Group No. 7 (floats)* | | |
| | 7 RF | No test |
| | 7 TF | No test |
| Group No. 8 (sand & gravel) | | |
| | 8 S | Less than 50 lb per cu ft loose measure |
| | 8 T | Less than 75 lb per cu ft loose measure. |
| Group No. 9 (gravel & stone) | | |
| | 9 T | More than 75 lb cu ft loose measure |

** The suffix 'F' designates 'floats' in the case of 7R and 7T grades.*

## USES

Industrial use of asbestos is linked with the type of asbestos. Chrysotile asbestos, being more fibrous and possessing better tensile strength than amphibole variety is used in the manufacture of asbestos fabrics, cement sheets, pipes and allied products. It is also used in brake linings, insulation and fireproof clothing. Short fibres are used with cement as binders for manufacturing asbestos-cement products. Amphibole asbestos generally finds use in heat insulation and treatment of acids. Anthophyllite and tremolite fibres, although of good length, are too weak and brittle to be spun. They are, therefore, used for boiler lagging, hard-setting magnesia composition and as a filler in asbestos paints and various asbestos-moulded articles.

## CONSUMPTION

The apparent consumption of asbestos was 3,96,100 tonnes in the year 2014-15 whereas, it was 2,85,477 tonnes in the year 2013-14. Almost, all the asbestos was utilised for manufacturing of asbestos-cement and asbestos-based products.

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## SUBSTITUTION

Materials substituted for asbestos include calcium silicate, carbon fibres, fibres of cellulose, ceramic, glass & steel, wollastonite and several organic fibres like aramid, polyethylene, polypropylene and polytetrafluoroethylene. Where reinforcement properties of fibres are not required, several non-fibrous minerals are also considered for possible substitution. However, no single substitution is found to be as versatile or as cost-effective as asbestos.

## THE ENVIRONMENTAL IMPACT OF ASBESTOS

Asbestos used as a part of construction material due to flame retardant quality, poses major risk to human health and environment. Asbestos has been linked in number of serious medical conditions.These include the lungs and respiratory problems because asbestos is made of tiny fibres which when released into the air and prolonged breathing of air laden with asbestos dust, it can settle inside the lungs and irritate the tissues in the chest cavities.

Mesothelioma is a rare form of cancer of the lungs and digestive tract which is most commonly caused by exposure to asbestos mixed air.

Besides the personal health, asbestos has negative impact on the environment. A study presented in 2006 at the International Conference Health, The Environment and Justice found that asbestos dust can easily travel through the air into the water supply. It can also settle on the surface of the soil instead of getting absorbed into the ground, which means that it can still get picked up by the wind and inhaled into human respiratory system.

## TRADE POLICY & LEGISLATION

No restrictions have been imposed on exports of asbestos in the amended Foreign Trade Policy, 2009-14. As per the prevailing Foreign Trade Policy, asbestos under heading 2524 can be imported freely with the exception of amosite which is restricted. However, the imports of crocidolite, actinolite, anthophyllite, amosite and tremolite are restricted in terms of Interim Prior Informed Consent (PIC) Procedure of Rotterdam Convention for Hazardous Chemicals and Pesticides.

Ministry of Environment and Forest, vide Notification dated 13.10.1998, under Sections 3 (1) and 6 (2) (d) of Environment (Protection) Act, 1986 and Rule 13 of Environment (Protection) Rules, 1986, has prohibited the imports of waste asbestos (dust and fibre), being a hazardous waste detrimental to human health and environment.

## WORLD REVIEW

Large reserves are located mainly in China, Kazakhstan and Russia. The world production of asbestos was 1.9 million tonnes in 2014 . Russia was the leading producer and accounted for 53% production followed by China (20%), Brazil (16%) and Kazakhstan (11%) (Tables - 7 and 8).

**Table – 7 : World Reserves of Asbestos (By Principal Countries)**

(In tonnes)

| Country | Reserves |
|---|---|
| **World: Total** | **Large** |
| Brazil | 10,000,000 |
| China | Large |
| Kazakhstan | Large |
| Russia | Large |
| USA | Small |
| Other countries | Moderate |

***Source:*** *Mineral Commodity Summaries, 2016.*

**Table – 8 : World Production of Asbestos (By Principal Countries)**

(In '000 tonnes)

| Country | 2012 | 2013 | 2014 |
|---|---|---|---|
| **World: Total (rounded)** | **1966** | **1955** | **1975** |
| Brazil | 305 | 291 | 311 |
| China[e] | 420 | 420 | 400 |
| Kazakhstan | 241 | 243 | 213 |
| Russia[e] | 1000 | 1000 | 1050 |
| Other countries | 0 | 1 | 1 |

***Source:*** *World Mineral Production, 2010-2014.*

## FOREIGN TRADE

### Exports

Exports of asbestos increased to 393 tonnes in 2014-15 as compared to 96 tonnes in the previous year. Exports were mainly to Sri Lanka (63%),Nepal (28%) and Bangladesh (8%).

Exports of asbestos (fibre products) was 31,471 tonnes in 2014-15 as compared to 31,664 tonnes in the previous year. Export was mainly to USA (28%), UAE (6%), Egypt & Saudi Arabia (5% each), Poland (4%) & Sri Lanka (3%). Exports of asbestos (chrysotile) was 248 tonnes during the year 2014-15 as compared to 22 tonnes in the preceding year. Exports of asbestos (others) increased to 145 tonnes during the year 2014-15 as compared to 74 tonnes in the preceding year.

Export was mainly to Nepal (75%) and Bangladesh (21%). Exports of asbestos-cement products were 1,61,018 tonnes in 2014-15 as compared to 77,129 tonnes in the preceding year. Exports of asbestos-cement products were mainly to UAE (33%), Saudi Arabia (30%), Qatar (11%) and Nepal (10%). (Tables - 9 to 13).

## Imports

Imports of asbestos were 3,96,493 tonnes in 2014-15 against 2,85,870 tonnes in the previous year. The imports comprised chrysotile asbestos 3,96,258 tonnes and asbestos (others) 235 tonnes in 2014-15. Imports of asbestos were mainly from Russia (65%), Kazakhstan (19% ), Brazil (16%) and China (1%). A total of 24,216 tonnes asbestos-cement products were also imported in 2014-15 as against 4,612 tonnes in the previous year. Imports were mainly from Thailand (82%), China ( 13%) and Vietnam (4%). Besides above, asbestos fibre of 3,96,258 tonnes was also imported during the year 2014-15 as compared to 2,83,719 tonnes in the previous year. Imports of asbestos fibre was mainly from Russia (65%), Kazakhstan (19%) and Brazil (16%) (Tables-14 to 19).

**Table – 9 : Exports of Asbestos : Total (By Countries)**

| Country | 2013-14 | | 2014-15 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **96** | **486** | **393** | **12026** |
| Sri Lanka | - | - | 248 | 11511 |
| Nepal | 94 | 467 | 109 | 280 |
| Bangladesh | - | - | 30 | 189 |
| Kenya | - | - | 5 | 22 |
| Fiji | - | - | 1 | 21 |
| Bahrain | - | - | 0 | 3 |
| Other countries | 2 | 19 | 0 | 0 |

**Table – 10 : Exports of Asbestos (Fibre Products)(By Countries)**

| Country | 2013-14 | | 2014-15(P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **31664** | **4306102** | **31471** | **4139396** |
| USA | 9434 | 1191318 | 8722 | 1095028 |
| UAE | 1728 | 233262 | 1932 | 267790 |
| Saudi Arabia | 1617 | 201889 | 1535 | 192793 |
| UK | 1181 | 280635 | 796 | 172835 |
| Poland | 1437 | 197406 | 1387 | 157182 |
| Sri Lanka | 665 | 97933 | 904 | 138934 |
| South Africa | 1061 | 169685 | 796 | 127224 |
| Egypt | 1621 | 132784 | 1651 | 126009 |
| Thailand | 435 | 69787 | 653 | 115562 |
| Germany | 723 | 141852 | 535 | 100560 |
| Other countries | 11762 | 1589551 | 12560 | 1645479 |

**Table – 11 : Exports of Asbestos (Chrysotile) (By Countries)**

| Country | 2013-14 | | 2014-15 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **22** | **221** | **248** | **11511** |
| Sri Lanka | - | - | 248 | 11511 |
| Other countries | 22 | 221 | - | - |

**Table – 12 : Exports of Asbestos (Others) (By Countries)**

| Country | 2013-14 | | 2014-15 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **74** | **266** | **145** | **515** |
| Nepal | 72 | 246 | 109 | 280 |
| Bangladesh | - | - | 30 | 189 |
| Kenya | - | - | 5 | 22 |
| Fiji | - | - | 1 | 21 |
| Bahrain | - | - | ++ | 3 |
| Other countries | 2 | 20 | - | - |

**Table – 13 : Exports of Asbestos Cement Products (By Countries)**

| Country | 2013-14 | | 2014-15 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **77129** | **1245602** | **161018** | **2428929** |
| UAE | 21739 | 320795 | 53447 | 713480 |
| Saudi Arabia | 17447 | 285916 | 48220 | 670637 |
| Qatar | 6901 | 122519 | 17652 | 252534 |
| Nepal | 11141 | 132146 | 16865 | 236408 |
| Zambia | ++ | 21 | 3597 | 192030 |
| Angola | 3213 | 53467 | 5190 | 70560 |
| Turkey | 5798 | 87184 | 3038 | 54730 |
| South Africa | 3628 | 63227 | 2600 | 39885 |
| Kuwait | 635 | 10392 | 1195 | 23780 |
| Canada | 612 | 15909 | 622 | 14990 |
| Other countries | 6015 | 154026 | 8592 | 159895 |

**Table – 14 : Imports of Asbestos : Total (By Countries)**

| Country | 2013-14 | | 2014-15 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **285870** | **13298986** | **396493** | **17168105** |
| Russia | 172509 | 7870877 | 257698 | 11413958 |
| Kazakhstan | 59001 | 2919819 | 73524 | 2925536 |
| Brazil | 49776 | 2356902 | 61790 | 2713900 |
| China | 3946 | 131685 | 2782 | 89604 |
| Singapore | - | - | 360 | 13921 |
| Poland | - | - | 271 | 9052 |
| USA | 105 | 3556 | 68 | 2134 |
| Other countries | 533 | 16147 | - | - |

**Table – 15 : Imports of Asbestos (Chrysotile) (By Countries)**

| Country | 2013-14 | | 2014-15 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **283719** | **13224308** | **396258** | **17159659** |
| Russia | 172121 | 7855199 | 257653 | 11412467 |
| Kazakhstan | 58212 | 2889669 | 73354 | 2919131 |
| Brazil | 49776 | 2356902 | 61790 | 2713900 |
| China | 3264 | 111221 | 2762 | 89054 |
| Singapore | - | - | 360 | 13921 |
| Poland | - | - | 271 | 9052 |
| USA | 105 | 3556 | 68 | 2134 |
| Other countries | 241 | 7761 | - | - |

**Table – 16 : Imports of Asbestos (Others) (By Countries)**

| Country | 2013-14 | | 2014-15 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **2151** | **74678** | **235** | **8446** |
| Kazakhstan | 789 | 30150 | 170 | 6405 |
| Russia | 388 | 15678 | 45 | 1491 |
| China | 682 | 20464 | 20 | 550 |
| Other countries | 292 | 8386 | - | - |

## Table – 17 : Imports of Asbestos Cement Products (By Countries)

| Country | 2013-14 | | 2014-15 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **4612** | **145165** | **24216** | **491702** |
| Thailand | 3423 | 74031 | 19796 | 338127 |
| Vietnam | 1 | 152 | 954 | 73879 |
| China | 814 | 50164 | 3034 | 66431 |
| Malaysia | 257 | 8073 | 287 | 5709 |
| Germany | 1 | 896 | 29 | 2639 |
| Philippines | 32 | 839 | 66 | 1896 |
| USA | 4 | 498 | 8 | 1166 |
| Indonesia | - | - | 30 | 741 |
| UAE | 14 | 330 | 7 | 466 |
| Hong Kong | - | - | 3 | 317 |
| Other countries | 66 | 10182 | 2 | 331 |

## Table – 18 : Imports of Asbestos Fibre (By Countries)

| Country | 2013-14 | | 2014-15 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **283719** | **13224308** | **396258** | **17159659** |
| Russia | 172121 | 7855199 | 257653 | 11412468 |
| Kazakhstan | 58212 | 2889669 | 73354 | 2919131 |
| Brazil | 49776 | 2356902 | 61790 | 2713900 |
| China | 3264 | 111221 | 2762 | 89054 |
| Singapore | - | - | 360 | 13920 |
| Poland | - | - | 271 | 9052 |
| USA | 105 | 3556 | 68 | 2134 |
| Other countries | 241 | 7761 | - | - |

**Table – 19 : Imports of Asbestos (Chrysotile Others) (By Countries)**

| Country | 2013-14 | | 2014-15 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value ( ₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **672** | **20509** | **-** | **-** |
| China | 380 | 12122 | - | - |
| Belgium | 292 | 8387 | - | - |

# FUTURE OUTLOOK

The resources of chrysotile variety of asbestos are very much limited in India. So, there is an urgent need to go for detailed exploration as the internal demand for asbestos in the country can not be met from indigenous production. The apparent demand of asbestos is expected to touch 605 thousand tonnes by 2016-17 with 9% growth rate as per the Report of the Working Group for 12$^{th}$ Plan.