

MICA



Indian Minerals Yearbook 2016

(Part-III : Mineral Reviews)



55th Edition

MICA

(FINAL RELEASE)

**GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES**

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Mica is widely distributed and occurs in igneous, metamorphic and sedimentary regimes. Mica group represents 34 phyllosilicate minerals that exhibits a layered or platy structure. Commercially important mica minerals are Muscovite (potash or white mica) and Phlogopite (magnesium or amber mica). Granitic pegmatites are the source of muscovite sheet, while phlogopite is found in areas of metamorphosed sedimentary rocks into which pegmatite rich granite rocks have been intruded. It possesses highly perfect basal cleavage due to which it can easily and accurately split into very thin sheets or films of any specified thickness. It has a unique combination of elasticity, toughness, flexibility and transparency. It possesses resistance to heat and sudden change in temperature and high dielectric strength. It is chemically inert, stable and does not absorb water.

For over hundred years, India has enjoyed the monopoly in the production and export of sheet mica in the world. Of late, there has been a steady downfall in the production of mica. This declining trend could be attributed to fall in the demand of natural mica in the world market due to technological improvements that facilitate use of reconstituted mica and emergence of mica substitutes. However, there are sufficient resources in the country to meet the domestic requirement and export demand.

RESERVES/RESOURCES

Most important mica-bearing pegmatites occur in Andhra Pradesh, Bihar, Jharkhand, Maharashtra, Odisha, Rajasthan and Telangana. Occurrences of mica pegmatites are also reported from Gujarat, Haryana, Karnataka, Kerala, Tamil Nadu and West Bengal.

As per NMI database based on UNFC system, the total reserves/resources of mica in the country as on 1.4.2015 have been estimated at 635,302 tonnes out of which 114,433 tonnes

are placed under reserves category and 520,869 tonnes under remaining resources category. Andhra Pradesh leads with 41% share in country's total resources followed by Rajasthan (28%), Odisha (17%), Maharashtra (13%), Bihar (2%) and a small quantity of resources are found in Jharkhand and Telangana. (Table- 1).

PRODUCTION

Mica (Crude)

As per Govt. of India Notification S.O. 423(E) dated 10th February 2015, 'MICA' has been declared as 'Minor Mineral'. The production from January, 2015 onwards, therefore, is not available with IBM. List of principal producers of mica is furnished in Table-2.

Table – 2 : Principal Producers of Mica (crude)

Name & address of producer	Location of mine	
	State	District
Mahanth Mica Mines, Door No. 8, Plot No.7, 1 st Main Road, Kasturba Nagar, Adyar Chennai- 600 020, Tamil Nadu.	Andhra Pradesh	Nellore
Dwarakhanad M. Reddy, & 7 Others, 1-C, Vaibhav Enclave, Magunta Layout, Nellore- 524 003, Andhra Pradesh.	Andhra Pradesh	Nellore
Seetharama Mining Co., 86, Sydapuram, Post Kalichedu- 524 409, Distt. Nellore, Andhra Pradesh.	Andhra Pradesh	Nellore
Shree Kalyanarama Co., W 6/567, Kalichedu, Sydapuram - 524 409, Distt. Nellore, Andhra Pradesh.	Andhra Pradesh	Nellore

**Table – 1 : Reserves/Resources of Mica as on 1.4.2015
(By Grade/States)**

(In kg)

Grade/State	Reserves			Remaining Resources					Total Resources (A+B)	
	Proved STD111	Probable STD121 STD122	Total (A)	Feasibility STD211	Pre-feasibility STD221 STD222	Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334
All India : Total	82187635	20035595 12209547	114432777	38252500 10605400	124089303	143353477	56528016 144446953	3593715	520869364	635302141
By Grades										
Unclassified	82187635	20035595 12209547	114432777	38252500 10605400	124089303	143353477	56528016 144446953	3593715	520869364	635302141
By States										
Andhra Pradesh	61942537	18293548	80236085	18960000	-	93830994	12894000 51668132	-	177353126	257589211
Bihar	-	-	-	-	-	-	13066667	7700	13074367	13074367
Jharkhand	-	-	-	-	-	-	1494430	170700	1665130	1665130
Maharashtra	-	-	-	-	65916000	-	15120000	-	81036000	81036000
Odisha	-	-	-	-	51856000	-	26712000	-	105280000	105280000
Rajasthan	20245098	1742047 12209547	34196692	19292500 10605400	5732418 49522483	16922016 36385724	3415315	141875856	176072548	
Telangana	-	-	-	-	584885	-	-	-	584885	584885

Figures rounded off.

MINING, MARKETING AND TRANSPORT

All the mica mines were first opened as prospecting pits. These trial workings were later developed into opencast workings of 5 to 10 m depths known as Upper Challa. The nature & quality of the yield decides as to whether underground method has to be adopted for mining of mica, especially mica-bearing pegmatites. Overhand cut-and-fill method of mining with flat-back and waste-fill methods are practised in mica mines. Pegmatite deposits are opened up by striking vertical or inclined shaft. As mica is confined to hanging wall, footwall contacts and sometimes to core zone, driving and stoping is done only in these areas. The entire pegmatite body is not subjected to stoping, the wall and roof are generally self-supporting. The mines are developed to maximum 100 m depths. Most of the mines have installed haulages for transport of material, electric fans for ventilation and pumps for dewatering.

The old method was tunneling, which has now been converted into open quarries in some of the old mines. With this system, mines now produce feldspar, quartz, mica and vermiculite. This system has also enabled the use of heavy machinery which resulted in increased production.

Crude mica produced from the workings is transported to the surface where it is cobbled manually to remove the gangue minerals like quartz, feldspar and other associated minerals, including waste mica. Skilled labourers dress the hand-cobbled mica with sickle, knife and scissors. During dressing, the part of mica containing deformities, such as, fractures, unevenness and cracks is removed and only the better material is retained as blocks. Such blocks are classified into various sizes and qualities on the basis of visual estimates. The mica so rejected during dressing is sold as scrap. Mica processing is a labour-intensive activity requiring special skills. The art of manual processing of mica has been acquired by the Indian workers through generations and has become a cottage industry in the mica mining areas of Bihar, Andhra Pradesh, Jharkhand and Rajasthan.

CONSUMPTION

Complete picture regarding the consumption of mica is not available due to inadequate availability of information on various mica-consuming industries. Sheet mica is used mainly in Electrical and Micanite industries, while scrap mica is used in the manufacture of mica paper and ground mica, finds application in asphaltic roofing, welding electrode, paint, rubber, insulation bricks, etc.

USES

Natural sheet mica is used in Electrical and Electronic industries in the form of blocks, splittings and films or built-up mica called "micanite". Sheet mica is used in manufacturing fabricated and micanite products, such as, capacitors and commutator segments. Micanite or built-up mica is partly overlapped, irregular-shaped and arranged as splittings cemented together with either an organic or inorganic binder. Other uses of sheet mica include gauge glasses of high pressure steam boilers, diaphragms of oxygen-breathing equipment, marker dials of navigation compasses, quarterwave plates for optical instruments, window covers for radiation pyrometers & thermal regulators, stove window, chimneys for gas & petromax lamps, diaphragms in microwave transmitters and insulation wrappers for high tension radar coils. Besides, high quality natural mica sheets are used in helium-neon lasers where mica sheet works as retardation plate. Of late, mica washers are extensively used in Computer Industry.

Mica paper or reconstituted mica is a paper-like material made by depositing fine flakes of scrap mica as a continuous mat which is then dried. Mica paper is usually impregnated with organic binder. Primary end-uses of mica paper are the same as for micanite or built-up mica.

Micanite is used in electrical insulation mainly because natural mica sheet of sufficient thickness is not always available. This is used in copper commutator segments of DC universal motors and generators, moulding plates from which V-rings are cut and stripped for use in commutators. These moulding plates also find use in the form of tubes

and rings as an insulator in transformers, armatures and motor starters. As flexible plates, micanite is also used in electric motors & generator-armatures, field coil insulators & magnet and commutator core insulation. Similarly, as heater plates, micanite is used where high insulation strength at high temperature is required.

In the Construction Sector, mica scrap/ground mica is used in jointing cement for gypsum boards, asphaltic roofings and damp-proof seal, and insulation boards. Ground mica acts as reinforcing filler in plaster for textured coatings. Mica is used in insulation bricks, slabs and tiles because of its excellent thermal and insulating properties. Dry-ground 50 mesh mica is used in the flux coating for arc welding electrodes, with flux containing 3 to 5% mica powder. In paints, mica in powder form of is used as filler and as an extender because it provides a smoother consistency, improved workability and imparts increased resistance to water penetration and weathering. It also facilitates suspension due to its relatively low specific gravity and platy morphology. Mica is used mainly in four types of paints, such as, bituminous emulsions, exterior paints, fire-retardant paints and pearlescent pigments. Mica is added to drilling fluids to get off the lost circulation zones. The platy structure of mica facilitates the overlapping of particles to form a tight layer or wall, thereby preventing further fluid loss.

Ground mica is used in the Rubber Industry as a dusting agent and as an inert filler in the production of rubber. Mica fillers increase the hardness, tensile strength and tear resistance of rubber articles. In Plastic Industry, mica is used as a filler and reinforcer in thermoplastics to improve the electrical properties, flexural strength & modulus, stiffness, heat deflection temperatures and resistance. Dry-ground mica powder is used in small quantities in cosmetic applications. The property of high resistance of mica to the effect of the sun rays, moisture, gases, water and other chemicals, enables the use of dry-ground mica powder in small quantity to improve the decorative coating and lustre of wallpaper, printing and ceiling papers, etc. Wet-ground mica powder is used in paints, cosmetics, rubber, etc. as a filler. Small quantities of scrap mica/ground mica are also used in industries like foundries as coating to foundry cores and moulds, as a dry lubricant to prevent hot bearings from seizing up.

SUBSTITUTES

Mica and its products can be substituted to some extent by using alumina, ceramics, bentonite, glass, mylar polystyrene, fused quartz, silicon, talc, bakelite, teflon, nylon synthetic mica, acrylate polymers, cellulose acetate, fibre glass, etc.

Some lightweight aggregates, such as, diatomite, vermiculite and perlite may be substituted for ground mica when used as filler. Ground synthetic fluorophlogopite, fluorine-rich mica, may replace natural ground mica for uses that require thermal and electrical properties of mica.

Sheet mica is used in electrical components, electronics and atomic force microscopy. Many products can be substituted for mica in electrical and electronic uses. Substitutes include Acrylic, Benelex, Cellulose acetate, Delrin, Duranel N, Fibreglass, Fishpaper, Kel F, Kydex, Kapton Lexan, Lucite, Mylar, Nylon, Nylatron, Nomex, Noryl, Phenolics, Plexiglass, Polycarbonate, Polyester, Styrene, Teflon, Vinyl-PVC and Vulcanised Fibre.

SPECIFICATIONS

The Bureau of Indian Standards (BIS) has prepared standards for (a) processed mica, (b) fabricated mica and (c) mica-based products. BIS has brought out the following specifications for mica for various purposes:

IS:1175 – 1981 (First Revision, Reaffirmed 2011): Deals with methods of grading and classification of muscovite mica blocks, thins and films according to visual size, visual qualities and presence of structural imperfections.

IS:1885 (Part-53)-1980 (Reaffirmed 2007): Deals with electrotechnical vocabulary, Part-53, Mica.

IS:2001-1968: Deals with specifications of fixed silvered mica capacitors.

IS:2464-1963 (Reaffirmed 2008): Deals with specifications of built-up mica for electrical purposes.

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IS:9043-1979 (Reaffirmed 2011): Deals with grading (by size) of phlogopite mica blocks, thins, films and splittings.

IS:9044-1979 (Reaffirmed 2011): Deals with methods of measuring thickness of mica blocks, thins, films and splittings.

IS:9045-1979 (Reaffirmed 2011): Deals with thermal classification of phlogopite mica splittings.

IS :9299 (Part 3/Sec.1)- 1979 (Reaffirmed 2003): Deals with rigid mica material for commutator separators.

IS:9299 (Part3/Sec.2)-1982 (Reaffirmed 2003): Deals with moulding mica materials for electrical purposes.

IS:9299 (Part 3/Sec. 3) – 1982 (Reaffirmed 2008): Deals with flexible mica flake tape for insulation of electrical machines.

IS:9299 (Part 3/Sec. 4) (Reaffirmed 2008): Deals with rigid mica materials for heating equipment.

IS:13357: Methods of grading and visual classification of muscovite mica splittings.

TRADE POLICY

As per the Foreign Trade Policy for 2015-20 and the effective Export-Import Policy, exports and imports of varieties of mica blocks, splittings, powder, waste and scrap under heading 2525 are allowed without restrictions.

WORLD REVIEW

Very large reserves of mica (Natural), sheet are located mainly in India and moderate reserves of mica are located in Russia. The data on world reserves of mica (natural) sheet are provided in Table- 3.

The world output of mica was 810 thousand tonnes in 2015. Brazil (56%) was the leading producer of mica, followed by China (19%), Turkey (6%), USA (5%) and Canada & France (3% each) (Table- 4).

Table – 3 : World Reserves of Mica (Natural) Sheet (By Principal Countries)

Country	Reserves
World: Total	Very Large
India*	Very large
Russia	Moderate
USA	Very small
Other countries	Moderate

Source: Mineral Commodity Summaries, 2017.

* India's total reserves/resources of mica as on 1.04.2015 have been estimated at 0.64 million tonnes.

Table – 4 : World Production of Mica (By Principal Countries)

Country	(In '000 tonnes)		
	2013	2014	2015
World: Total	352	777	810
Argentina ^e	8	8	8
Brazil	10	427	450 ^e
Canada ^e	22	22	22
China ^e	161	159	151
Finland	11	12	12
France ^{ea}	20	20	21
Korea, Rep of *	25	24	17
Madagascar	11	9	9
Russia ^e	9	9	9
Taiwan	9	5	8
Turkey	1	17	45
USA ^{ab}	48	46	41 ^e
Other countries	18	18	17

Source: World Mineral Production, 2011-15.

* *sericite.*

a: Including mica recovered from mica schists and/or kaolin beneficiation.

b: Sold or used by producers.

FOREIGN TRADE

Exports of mica in 2015-16 was reported to be 1,35,805 tonnes as against the meagre production of 636 tonnes of crude mica. Reasons for such a huge difference in the quantity of exports and production may be attributed to the old stocks (minehead or otherwise) which are not reported.

Exports

Exports of mica (total) decreased to 1,35,805 tonnes in 2015-16 from 1,41,110 tonnes in the previous year. Almost all the exports were in the form of mica (unmanufactured) at 1,35,085 tonnes (which comprised blocks at 1,879 tonnes, splittings at 11,611 tonnes, powder at 89,716 tonnes, and waste & scrap at 31,879 tonnes). The exports of mica (worked) were 720 tonnes in 2015-16 [which comprised washers & discs 15 tonnes, condenser films and plates, cuts, NES 8 tonnes, sheets & strips 49 tonnes, a small quantity of micanite & other built up mica, mica worked (others) 648 tonnes]. In 2015-16, exports were mainly to China (62%), Saudi Arabia (9%), Belgium (6%), Japan (5%) and USA (3%) (Tables - 5 to 17).

Imports

Imports of mica (total) increased slightly to 2,471 tonnes in 2015-16 from 2,240 tonnes in the previous year. Out of the total imports in 2015-16, imports of mica (unmanufactured) were at 984 tonnes (comprising powder 317 tonnes, splittings 590 tonnes, block mica 73 tonnes and waste & scrap 4 tonnes). Imports of 1,487 tonnes of mica (worked) included a very small quantity i.e. 14 tonnes of condenser films, plates, cuts, NES; 187 tonnes of sheets & strips, 1286 tonnes mica worked (others) besides a small quantity of washers & discs. In 2015-16, imports were mainly from China (54%), Madagascar (13%), Austria (8%), Malaysia (7%) and Japan (4%) (Tables- 18 to 28).

**Table – 5 : Exports of Mica : Total
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	141100	4263736	135805	4229711
China	88221	2130574	84753	2200883
Japan	6679	401781	6960	453078
USA	5524	310166	3987	270318
Belgium	7344	207465	7492	232306
Saudi Arabia	8264	134745	11987	147836
Turkey	582	44014	135	95182
France	3243	187320	1436	92604
UAE	1234	22929	2202	75839
Korea Rep. of	1295	56042	1457	62374
Russia	604	69130	267	60429
Other countries	18110	699570	15129	538862

**Table – 6 : Exports of Mica
(Unmanufactured) : Total
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	140450	3421154	135085	3444185
China	88196	2058789	84711	2152768
Japan	6625	299395	6914	329348
Belgium	7344	207272	7492	231931
USA	5494	213563	3966	186103
France	3235	170970	1429	73545
Saudi Arabia	8140	36248	11879	62439
Korea, Rep. of	1292	41903	1456	50173
Romania	527	26731	623	32955
UAE	1223	13916	2152	32703
Russia	565	49038	213	29232
Other countries	17809	303329	14250	262988

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**Table – 7 : Exports of Mica (Blocks)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	2178	200401	1879	199919
Japan	841	70921	978	85671
China	437	73846	342	65296
Russia	105	14771	76	13299
Czech Republic	299	15204	123	6658
Korea, Rep. of	180	7153	140	5687
Brazil	198	7189	132	5122
USA	79	1799	16	5005
UK	1	553	2	2914
UAE	-	-	60	1726
Germany	1	3027	1	1637
Other countries	37	5938	9	6904

**Table – 9 : Exports of Mica (Powder)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	90312	2023889	89716	2250836
China	49756	1203227	49459	1370603
Belgium	6786	186885	7316	226213
Japan	4722	172896	5051	203675
USA	4145	153113	3703	146718
Saudi Arabia	6847	29689	10409	57188
Korea, Rep. of	1013	31713	1236	42516
UAE	1156	13395	2017	30258
Germany	2139	27662	1380	18135
France	459	21312	417	17373
Chinese Taipei/Taiwan	1308	14471	1362	16850
Other countries	11981	169526	7366	121307

**Table – 8 : Exports of Mica (Splittings)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	10730	340648	11611	295740
China	8764	221865	7079	179932
Kazakhstan	22	9141	63	28142
USA	76	10730	74	19204
Japan	445	31591	310	15396
Russia	70	18857	12	11870
Romania	450	22769	198	9830
Germany	775	13047	389	6512
Bangladesh	3	80	2301	6502
Saudi Arabia	-	-	994	3403
Slovak Rep.	5	5052	3	2980
Other countries	120	7516	188	11969

**Table – 10 : Exports of Mica (Waste & Scrap)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	37229	852722	31879	697690
China	29239	559851	27831	536937
France	2776	149395	968	53096
Japan	617	23987	575	24606
Romania	77	3962	425	23125
Czech Republic	248	8901	509	18496
USA	1194	47921	173	15176
Belgium	558	20387	176	5718
Russia	275	9413	125	4063
Estonia	-	-	100	3000
Kuwait	112	1585	106	2797
Other countries	2133	27320	891	10676

**Table – 11: Exports of Mica (Worked) : Total
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	650	842582	720	785526
Japan	54	102386	46	123730
Turkey	48	40938	121	94477
Saudi Arabia	124	98497	108	85397
USA	30	96603	21	84215
China	25	71785	42	48115
UAE	11	9013	50	43136
UK	50	58186	74	36767
Russia	39	20092	54	31197
Netherlands	29	26989	40	27727
Hong Kong	15	17562	13	20508
Other countries	225	300531	151	190257

**Table – 13 : Exports of Mica (Condenser Films)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	1	3494	-	-
Russia	1	3367	-	-
Thailand	++	93	-	-
Italy	++	34	-	-

**Table – 14: Exports of Mica (Washers & Discs)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	81	153514	15	45577
Mexico	70	127156	10	17764
France	++	4948	++	9774
USA	3	9715	2	8902
Japan	3	6109	3	4875
Israel	++	28	++	3020
UK	1	1690	++	353
Bangladesh	-	-	++	217
Romania	++	155	++	199
South Africa	++	177	++	191
Baharain	++	69	++	113
Other countries	4	3467	++	169

**Table – 12 : Exports of Mica
(Cond. Films, Plates, Cuts NES)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	1	12193	8	26632
Russia	1	4540	1	15812
USA	++	3758	1	3259
Japan	-	-	++	2955
Iran	-	-	5	1229
Sweden	-	-	++	991
Thailand	++	464	++	655
Malaysia	++	176	1	612
Germany	++	1044	++	536
Italy	-	-	++	447
Canada	-	-	++	51
Other countries	++	2211	++	85

**Table – 15 : Exports of Mica
(Sheets & Strips)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	58	75599	49	85073
Japan	38	21822	32	37964
UK	4	14363	4	11770
USA	2	8376	4	11511
China	++	1716	1	6466
Germany	++	544	++	3567
Canada	++	3057	++	2402
Egypt	-	-	++	2005
Korea, Rep. of	2	8049	++	1786
Chinese Taipei/Taiwan	3	1610	1	1072
Jordan	-	-	2	1060
Other countries	9	16062	5	5470

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Table – 16: Exports of Micanite & Other Built-Up Mica (By Countries)

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	15	6034	++	1285
Germany	-	-	++	517
Bhutan	-	-	++	432
USA	1	893	++	336
Egypt	1	1986	-	-
Georgia	11	1264	-	-
South Africa	1	689	-	-
UK	++	556	-	-
Brazil	1	349	-	-
Morocco	++	252	-	-
Chile	++	45	-	-

Table – 17 : Exports of Mica Worked (Others) (By Countries)

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	495	595204	648	626959
Turkey	48	40938	121	94477
Saudi Arabia	124	98426	108	85241
Japan	13	74455	11	77936
USA	24	73861	14	60207
UAE	11	8969	50	42969
China	25	69779	41	41649
Netherlands	29	26072	40	27079
UK	45	41405	70	24644
Hong Kong	14	16451	13	20102
Russia	38	15552	53	15103
Other countries	124	129296	127	137552

Table – 18 : Imports of Mica : Total (By Countries)

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	2240	703135	2471	895588
China	1261	245723	1327	408994
Austria	135	177407	192	198835
Switzerland	83	101233	56	71584
Malaysia	98	31394	163	51844
Japan	44	28605	101	43582
Brazil	10	13310	33	28150
UK	24	28612	17	20303
Germany	34	28257	26	19341
Madagascar	210	5425	327	9692
USA	33	14098	36	7816
Other countries	308	29071	193	35447

Table – 19 : Imports of Mica (Unmanufactured) : Total (By Countries)

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	967	38596	984	56496
China	402	11010	293	9997
Madagascar	210	5425	327	9692
Japan	24	4091	76	7373
USA	16	3249	35	7002
Bangladesh	-	-	2	5921
Canada	50	3121	67	5195
Germany	17	3930	17	3295
Malaysia	65	1564	96	2210
Mozambique	-	-	17	1431
France	6	1022	6	963
Other countries	177	5184	48	3417

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**Table – 20 : Imports of Mica (Blocks)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	3	520	73	3803
Madagascar	3	437	54	2073
Mozambique	-	-	17	1431
China	++	17	2	299
UK	++	66	-	-

**Table – 21 : Imports of Mica (Splittings)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	597	13218	590	24046
Madagascar	183	4510	271	7164
China	296	5864	245	7034
Bangladesh	-	-	2	5921
Japan	-	-	40	2373
Sri Lanka	45	1070	28	898
Spain	-	-	2	520
Korea, Rep. of	2	151	2	136
Russia	54	1083	-	-
Singapore	17	540	-	-

**Table – 22 : Imports of Mica (Powder)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	298	23158	317	27701
USA	16	3244	35	7002
Canada	50	3121	67	5195
Japan	24	4091	36	5000
Germany	16	3749	15	2900
China	106	5129	46	2664
Malaysia	65	1549	96	2210
France	6	1022	6	963
Norway	3	375	8	812
Denmark	3	167	7	385
Italy	-	-	++	279
Other countries	9	711	1	291

**Table – 23 : Imports of Mica (Waste & Scrap)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	69	1700	4	946
Madagascar	24	478	2	456
Germany	1	181	2	395
Ireland	-	-	++	95
Sri Lanka	44	1021	-	-
Malaysia	++	15	-	-
USA	++	5	-	-

**Table – 24 : Imports of Mica (Worked) : Total
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	1273	664539	1487	839092
China	859	234713	1034	398997
Austria	135	177407	192	198830
Switzerland	83	101233	56	71584
Malaysia	33	29830	67	49634
Japan	20	24514	25	36209
Brazil	10	13310	33	28150
UK	24	28546	17	20303
Germany	17	24327	9	16046
Korea, Rep. of	4	6602	3	4772
Czech Republic	1	1968	3	2991
Other countries	87	22089	48	11576

**Table – 25 : Imports of Mica
(Condenser Films, Plates, Cuts, NES)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	3	3273	14	4457
Austria	-	-	1	1823
Malaysia	1	508	5	1114
China	++	12	6	929
Bulgaria	-	-	++	213
Germany	-	-	2	163
Belgium	-	-	++	117
Switzerland	2	2053	++	98
Brazil	++	609	-	-
France	++	84	-	-
Czech Republic	++	7	-	-

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**Table – 26 : Imports of Mica (Washers & Discs)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	17	11968	++	98
Germany	1	597	++	88
USA	12	8466	++	6
China	1	448	++	3
Korea, Rep. of	++	104	++	1
Mexico	1	729	-	-
Slovak Rep.	++	294	-	-
Italy	1	292	-	-
Finland	++	225	-	-
Canada	++	186	-	-
Czech Republic	++	185	-	-
Other countries	1	442	-	-

**Table – 28 : Imports of Mica Worked (Others)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	884	614420	1286	812868
China	530	205503	846	379543
Austria	135	177370	189	196561
Switzerland	81	99180	56	71486
Malaysia	32	29103	60	48046
Japan	20	24358	25	36209
Brazil	10	12621	33	28150
UK	20	24081	16	18153
Germany	16	23697	7	15795
Korea, Rep. of	4	6498	3	4770
Czech Republic	1	1776	3	2991
Other countries	35	10233	48	11164

**Table – 27 : Imports of Mica (Sheets & Strips)
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	369	34820	187	21668
China	328	28724	182	18522
UK	4	4439	1	2150
Malaysia	++	220	2	474
Austria	++	37	2	476
France	-	-	++	76
Belgium	22	897	-	-
UAE	15	503	-	-

FUTURE OUTLOOK

There are sufficient resources of mica in the country to meet the domestic demand and export requirement. As per the Report of the Sub Group for the 12th Plan (2012-17), Planning Commission of India, there appears to be good demand for wet ground mica, specially in the manufacture of pearlescent pigments which are increasingly used in the Automotive Industry. The Sub Group has recommended that establishment of wet ground mica plants based on imported know-how in the country needs to be encouraged. The quality of Indian ground mica powder, though is acceptable to foreign buyers, it would be beneficial if the

material produced is free from iron and if there is maintenance of consistency in the mesh size of the powder. The Sub Group has underlined the need for efforts in this direction. It has also opined that process know-how for recovery of substantial concentration of lithium, rubidium and cesium values contained in some of the mica deposits in the country needs to be developed.

For boosting exports, it would be necessary for Indian Mica Industry to manufacture and export fabricated & value-added mica-based products, such as, mica paper, micanite sheets and mica-based paper.