

57 Mica

The mica group represents 34 phyllosilicate minerals that exhibit 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 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 and stable and does not absorb water.

Over hundred years, India has enjoyed the monopoly in the production and export of sheet mica in the world. But recently, production of mica has shown a continuous declining trend due to slow down in the demand of natural mica in the world market because of technological developments in 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.

RESOURCES

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

As per UNFC system, the total resources of mica in the country as on 1.4.2005 are estimated at 393,855 tonnes out of which 68,570 tonnes are placed under reserves category and 325,285 tonnes under remaining resources category. Rajasthan leads with 51% share in country's total

resources followed by Andhra Pradesh (28%), Maharashtra (17%), Bihar (3%) and Jharkhand (1%) (Table - 1).

PRODUCTION, STOCKS & PRICES

Mica (Crude)

The production of mica (crude) at 1,242 tonnes in 2007-08 decreased by about 12% as compared to the preceding year due to narrow and non-productive pegmatites and closure of some mines due to forest law violation.

There were 32 reporting mines during the year as against 35 in the previous year. Five mines, each producing above 100 tonnes annually accounted for 66% of the total output and three mines each producing 40 tonnes to 100 tonnes annually contributed about 22%. The entire production was reported from private sector during 2007-08 and six principal producers accounted for 78% of the total output. Andhra Pradesh continued to be the leading producing state contributing 99% of the total production. The remaining production was reported by Rajasthan (Tables - 2 to 5).

The mine-head stocks of mica (crude) were 414 tonnes at the end of 2007-08 as against 417 tonnes at the beginning of the year (Table - 6).

The average daily labour employed in mica mines during 2007-08 was 409 as against 411 in the previous year. The domestic prices of mica are furnished in Table - 7.

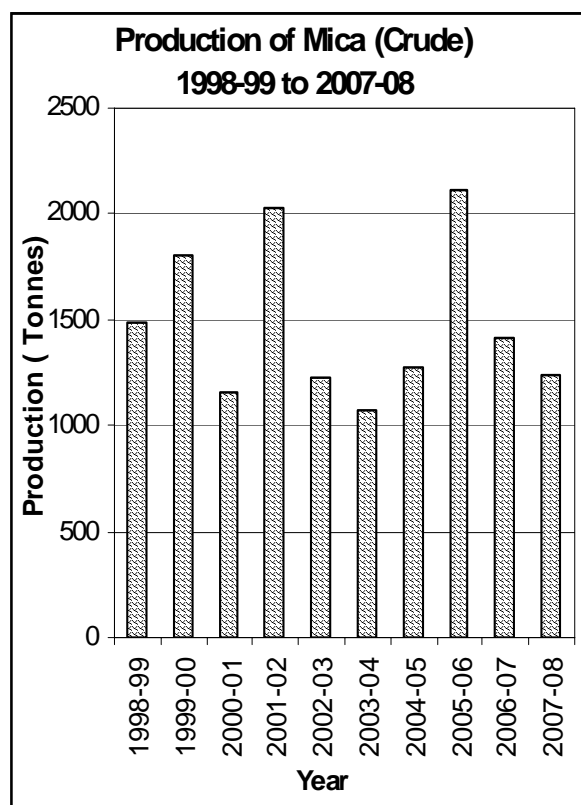
Mica (Waste and Scrap)

The production of mica (waste and scrap) at 3,341 tonnes in 2007-08 increased by 5% compared to the previous year. The contribution of Andhra Pradesh was 80% of the total production of mica (waste & scrap) followed by Rajasthan 20%.

**Table - 1 : Reserves/Resources of Mica as on 1.4.2005
(By States)**

Grade/State	Reserves			Remaining resources					Resources (A+B)	
	Proved STD111	Probable STD121 STD122	Total (A)	Pre-feasibility STD222	Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334		Total (B)
All India : Total										
All Grades/ Unclassified	1270873	9668	67289302	1418	109494690	43264890	170326124	2198454	325285576	393855419
By States										
Andhra Pradesh	-	-	-	-	-	-	111315850	-	111315850	111315850
Bihar	-	-	-	-	-	-	12937513	7700	12945213	12945213
Jharkhand	-	-	-	-	-	-	1494430	170700	1665130	1665130
Maharashtra	-	-	65916000	-	-	-	-	-	-	65916000
Rajasthan	1270873	9668	1373302	1418	109494690	43264890	44578331	2020054	199359383	202013226

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**Table – 2 : Principal Producers of Mica, 2007-08**

Name & address of producer	Location of mine	
	State	District
Dwaraka Nath M. Reddy, P.O. Talupur, Mandal Sydapuram, Dist. Nellore, Andhra Pradesh.	Andhra Pradesh	Nellore
Sree Kalyanarama & Co., P.O. Kalichedu, Mandal Sydapuram, Dist. Nellore, Andhra Pradesh.	Andhra Pradesh	Nellore
S.V.K.D. & U.M. Mining Co., Usman Saheb Pet, Nellore - 2, Andhra Pradesh.	Andhra Pradesh	Nellore
Mahanth Mica Mines, Managing Partner Smt. C. Leenaja Reddy, Plot No.7, Door No. 8, Ist Main Road, Kasturba Nagar, Adyar, Dist. Chennai, Tamil Nadu.	Andhra Pradesh	Nellore
Seethamma Mining Co., P.O. Kalichedu, Mandal Sydapuram, Dist. Nellore, Andhra Pradesh.	Andhra Pradesh	Nellore
Meenakshi Sundaram Mica Mines (Pvt.) Ltd, 61, Spur Tank Road, Chetpet, Chennai – 600 031, Tamil Nadu.	Andhra Pradesh	Nellore

**Table – 3 : Production of Mica (Crude and Waste & Scrap), 2005-06 to 2007-08
(By States)**

(Qty in tonnes; value in Rs. '000)

State	2005-06		2006-07		2007-08 (p)	
	Quantity	Value	Quantity	Value	Quantity	Value
Mica (Crude)						
India	2116	34439	1411	37635	1242	33872
Andhra Pradesh	2044	33558	1286	36383	1240	33814
Rajasthan	72	881	125	1252	2	58
Mica (Waste & Scrap)						
India	4754	-	3170	-	3341	-
Andhra Pradesh	3848	-	3114	-	2667	-
Jharkhand	42	-	-	-	-	-
Rajasthan	864	-	56	-	674	-

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**Table – 4 : Production of Mica (Crude and Waste & Scrap), 2006-07 and 2007-08
(By Sectors/States/Districts)**

(Qty. in tonnes; value in Rs. '000)

State/District	2006-07			2007-08 (p)		
	No. of mines	Quantity	Value	No. of mines	Quantity	Value
Mica (Crude)						
India	35(2)	1411	37635	32	1242	33872
Public sector	-	-	-	3	-	-
Private sector	35(2)	1411	37635	29	1242	33872
Andhra Pradesh	29(1)	1286	36383	24	1240	33814
Khammam #	1	-	-	1	-	-
Nellore	28(1)	1286	36383	23	1240	33814
Jharkhand	-	-	-	3	-	-
Koderma	-	-	-	3	-	-
Rajasthan	6(1)	125	1252	5	2	58
Ajmer	(1)	95	950	-	-	-
Bhilwara	5	30	302	4	2	58
Rajsamand #	1	-	-	1	-	-
Mica (Waste & Scrap) #						
India	*	3170	-	*	3341	-
Public sector	*	-	-	*	-	-
Private sector	*	3170	-	*	3341	-
Andhra Pradesh	*	3114	-	*	2667	-
Khammam	*	87	-	*	-	-
Nellore	*	3027	-	*	2667	-
Rajasthan	*	56	-	*	674	-
Bhilwara	*	34	-	*	653	-
Rajsamand		22	-		21	-

* Mines covered under mica (crude),

Production of mica (waste & scrap) only.

Figures in parentheses denote the number of associated mines.

**Table – 5 : Production of Mica (Crude), 2006-07 and 2007-08 (p)
(By Frequency Groups)**

(In tonnes)

Production group	No. of mines		Production for the group		Percentage in total production		Cumulative percentage	
	2006-07	2007-08	2006-07	2007-08	2006-07	2007-08	2006-07	2007-08
All Groups	35(2)	32	1411	1242	100.00	100.00	-	-
Up to 2	13	14	5	1	0.36	0.08	0.36	0.08
2 to 4	-	1	-	2	0.00	0.16	0.36	0.24
4 to 6	2	-	11	-	0.78	0.00	1.14	0.24
6 to 8	1	2	7	14	0.50	1.13	1.64	1.37
8 to 20	7	2	86	10	6.09	0.10	7.73	1.47
20 to 30	2(1)	5	74	126	5.24	10.14	12.97	11.61
30 to 40	1	-	30	-	2.13	0.00	15.10	11.61
40 to 100	4(1)	3	361	273	25.58	22.69	40.68	34.30
Above 100	5	5	837	816	59.32	65.70	100.00	100.00

Figures in parentheses denote the number of associated mines.

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Table - 6 : Mine-head Stocks of Mica (Crude), 2007-08 (p)
(By States)

(In tonnes)

State	At the beginning of the year	At the end of the year
India	417	414
Andhra Pradesh	348	413
Rajasthan	69	1

Table - 7 : Prices of Mica, 2005-06 to 2007-08
(Domestic Markets)

(In Rs. per kg)

Grade	Market	2005-06	2006-07	2007-08 (p)
Splittings	Average f.o.b./f.o.r. Price	13.91	30.55	62.50
Mica powder	Average f.o.b./f.o.r. Price	62.53	75.36	61.11
Micanite and all sort of builtup mica	Average f.o.b./f.o.r. Price	156.80	135.87	115.48
Crude mica, mixed blocks	Ex-mine Utukur (Andhra Pradesh)	21.60	22.60	22.60
Crude mica (G & up)	Ex-mine Kalichedu (Andhra Pradesh)	90	90	90
Crude mica (split)	Ex-mine Kalichedu (Andhra Pradesh)	13	13	13
Uncut chillas	Ex-mine Kalichedu (Andhra Pradesh)	30	30	30
Cut mica spotted	Ex-mine Kalichedu (Andhra Pradesh)	100	100	100

MINING, MARKETING AND TRANSPORT

There are about 32 working mica mines in the country majority of them are located in Andhra Pradesh. All the mica mines were opened up first as prospecting pits. These trial workings were later developed into opencast workings of 5 to 10 m depths known as Upper Challa. If the yield of the mica is paying, these are developed at depths by underground method, essentially following the mica-bearing pegmatites. Overhand cut-and-fill method of mining with flat-back and waste-fill methods are practised in mica mines. Pegmatite is opened up by striking vertical or inclined shaft. As mica is confined to hanging wall and 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, and wall and roof are generally self-supporting. The mines are developed to maximum 100 m depths. Non-coring extension drilling is being practised for underground drivages, etc.

Most of the mines have installed haulages for transport of material, electric fans for ventilation and pumps for dewatering.

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 skill. The art of manual processing of mica has been acquired by the Indian workers through generations. It has been 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 as there is no adequate coverage 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 which, in turn, is used in asphaltic roofing, welding electrode, paint, rubber, insulation bricks, etc. The estimated consumption of various types of mica was around 8,000 tonnes.

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 to manufacture fabricated and micanite products, such as capacitors and commutator segments. Micanite or built-up mica is partly overlapped, irregular-shaped and arranged 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 equipments, marker dials of navigation compasses, quarterwave plates for optical instruments, window covers for radiation pyrometers and thermal regulators, stove window, chimneys for gas and 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 have gained extensive use 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 and generator-armatures, field coil insulators and 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 seals, and insulation boards. The use of ground mica in building boards is a new development. 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 the form of powder 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. Mica is used mainly in four types of paints, such as bituminous emulsions, exterior paints, fire-retardant paints and pearlescent pigments. Drilling muds or fluids form an important market for ground mica. 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 and modulus, stiffness, heat deflection temperatures and resistance. Dry-ground mica powder is used in small quantities in cosmetic applications. Because of high resistance of mica to the effect of the sun rays, moisture, gases, water and other chemicals, dry-ground mica powder is used in small quantity to improve the decorative coating and lustre of

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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, etc.

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 and synthetic mica.

Scrap

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

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. Mica paper made from scrap mica can be substituted for sheet mica in electrical and insulation applications.

SPECIFICATIONS

Over the years, the Bureau of Indian Standards (BIS) has realised the importance of mica and mica products and 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: 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 (First Revision).

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

IS: 2001-1968: Deals with specifications of mica used in capacitors.

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

IS: 9043-1979: Deals with specifications of phlogopite blocks, thins and splitting and grading of phlogopite.

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

IS: 9045-1979: Deals with thermal classification of mica splittings.

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

IS : 9299 (Part 3/ Sec.2) – 1985: Deals with moulding mica materials for electrical purposes.

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

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

DOC: ETC D 63 (29/48) FI: Deals with flexible mica materials in sheet form.

INDUSTRY

Although there are a number of mica-based industrial units located in various parts of the country, detailed information about them is not available. Indian Telephone Industries Ltd, Bangalore; Indian Mica and Micanite Industries, Jhumritalaiya; Meenakshi Sundaram Mica Mines, Nellore; Master Insulation Corporation Pvt. Ltd, Bangalore; etc. are some of the known consumers of sheet mica for the manufacture of various mica-based products. The Mica Silvering and Capacitor Plant of MMTC at Giridih, Jharkhand is closed. Other units of MMTC, such as Mica Paper Plant, Micronised Mica Powder Plant and Mica

Insulating Material Plant, are all located at Abhrak Nagar in Koderma district, Jharkhand. Besides MMTC, Arun Mica Industries Ltd, Bhilwara and Metores Corporation Pvt. Ltd, Kolkata, are also reported to have produced mica powder. Details of projects of MMTC for mica-based products are furnished below:

Micronised Mica Powder Plant

The Mica Powder Plant set up at Jhumritalaiya in Koderma district, Jharkhand, has an annual production capacity of 900 tonnes of different grades of mica powder ranging from 325 to 1,000 mesh. One such unit was set up in Chennai which consumed Gudur mica scrap. Two small wet-ground mica powder units were known to be working in Nellore district of Andhra Pradesh. These plants consumed scrap mica produced in Gudur area of Nellore district. Dry-ground mica is exported to Asian and European countries after meeting the domestic requirement.

Mica Paper Plant (Mechanical Disintegration Process)

The plant was set up in collaboration with M/s. Nippon Rika Rogyosho Co. Ltd. It has a production capacity of 600 tpy mica paper and is registered under 100% Export-oriented Unit Scheme.

Mica Paper-based Insulating Material Project (Phase I)

The project to manufacture insulating material based on mica paper and mica splitting was set up in collaboration with M/s. ALK, West Germany. It has a production capacity of 45 tpy mica paper-based insulating material.

Mica Splittings

The manufacture of splitting was one of the biggest generators of employment in the mica industry. This big section of the mica industry is now on the ebb, mainly due to accumulated old stocks and the use of mica paper in micanite production. There are a number of units in the country, which are producing micanite from mica splittings.

Changed market requirement and technological developments in mica processing technologies globally led to activities at Mica Division of MMTC coming to a halt and the Abhrak Nagar factory of mica is not in operation since 2002-03. MMTC Ltd has recently called for expression of interest (EOI) from agencies desirous of purchasing the mica plant and machinery situated at Abhrak Nagar on out-right purchase or long-term lease basis or interested in Joint Venture (JV) with MMTC to operationalise the plant.

TRADE POLICY

As per the Foreign Trade Policy for 2004-09 announced by the Government on 8 April 2005 and Export-Import Policy effective from 1 April 2008, exports and imports of all varieties of mica blocks, splittings, powder, waste and scrap are allowed without restrictions.

WORLD REVIEW

There has been no formal evaluation of world resources of sheet mica because of the sporadic occurrence of this mineral. Large deposits of mica-bearing rocks are known to exist in countries, such as Brazil, India and Madagascar. The data on world resources of mica (sheet), and mica (natural), scrap and flake are given in Tables - 8(A) and 8(B), respectively.

The world output of mica was 310 thousand tonnes in 2007. China was the leading producer of mica, followed by USA, Republic of Korea, France and Canada (Table - 9).

Muscovite mica production was delivered from the USA, Russia, China and Rep. of Korea. Sheet mica supply was confined largely to India and to a lesser extent, Russia and Argentina.

**Table - 8 (A) : World Resources of Mica (Sheet)
(By Principal Countries)**

Country	Reserve base
World : Total	Very Large
India	Very large
Russia	Large
USA	Small
Other countries	Large

Source: Mineral Commodity Summaries, 2008.

**Table - 8 (B) : World Resources of Mica
(Natural), Scrap and Flake
(By Principal Countries)**

Country	Reserve base
World : Total	Large
Brazil	Large
Canada	Large
India	Large
Korea, Republic of	Large
Russia	Large
USA	Large
Other countries	Large

Source: Mineral Commodity Summaries, 2008.

**Table - 9 : World Production of Mica
(By Principal Countries)**

Country	(In '000 tonnes)		
	2005	2006	2007
World : Total	300	330	310
Canada ^e	18	18	18
China ^e	89	94	93
Finland	10	8	11
France @ ^e	20	20	20
Iran	7	4	NA
Korea, Rep. of#	37	30	42
Russia ^e	9	11	12
Spain @	4	4	4
USA @	78	110	72
Other countries	28	31	38

Source: World Mineral Production, 2003-2007.

Mainly sericite

@ Including mica recovered from mica schists and/or kaolin beneficiation.

FOREIGN TRADE

Exports

Exports of mica (total) increased to 99,888 tonnes in 2007-08 from 80,795 tonnes in the previous year. Almost all the exports were in the form of mica (unmanufactured) at 99,389 tonnes (comprising blocks - 1,374 tonnes, splittings - 1,463 tonnes, powder - 73,682 tonnes, condenser films - 230 tonnes and waste & scrap - 22,640 tonnes). The exports of mica (worked) were 499

tonnes (comprising condenser films, plates, cuts, NES - 4 tonnes, washers & discs - 42 tonnes, sheets & strips - 25 tonnes, micanite and other built up mica - 11 tonnes and other worked mica - 417 tonnes, besides nominal quantity of bricks). In 2007-08, exports were mainly to China (41%), USA and Saudi Arabia (10% each), Netherlands (6%), Japan (5%) and Finland and Germany (4% each) (Tables - 10 to 23).

Imports

Imports of mica (total) increased to 2,645 tonnes in 2007-08 from 1,579 tonnes in the previous year. Out of the total imports in 2007-08, imports of mica (unmanufactured) were 860 tonnes (comprising powder - 125 tonnes, splittings - 10 tonnes and waste & scrap - 725 tonnes). The remaining 1,785 tonnes imports were of mica (worked) which included condenser films, plates cuts, NES - 78 tonnes, sheets & strips - 267 tonnes, micanite and other built up mica - 62 tonnes and other worked mica - 1,378 tonnes, besides a nominal quantity of washers & discs (Tables - 24 to 35).

**Table - 10 : Exports of Mica : Total
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	80795	1089880	99888	1253411
China	26606	258075	41191	373273
Japan	5009	146114	5057	163245
USA	10654	173649	10368	146188
Netherlands	5701	63427	5599	70259
Korea, Rep. of	1290	24845	623	62175
Belgium	4202	50313	3422	61511
UK	792	41136	488	49344
Finland	2980	33978	3660	42463
Germany	2997	35499	3748	38845
Saudi Arabia	7799	33586	9506	37395
Other countries	12765	229258	16226	208713

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**Table - 11 : Exports of Mica (Unmanufactured) : Total
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	80368	760097	99389	875533
China	26584	244729	41170	352933
USA	10583	104507	10325	100771
Japan	4975	87545	4994	80614
Netherlands	5700	60509	5522	49635
Belgium	4190	47153	3372	47892
Finland	2980	33684	3660	42329
Saudi Arabia	7794	32821	9506	37259
Germany	2991	24273	3716	23701
Russia	1194	17270	1775	23175
Korea, Rep. of	1284	17689	568	8414
Other countries	12093	89917	14781	108810

**Table - 12 : Exports of Mica (Blocks)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	1082	57549	1374	58085
Japan	645	22378	632	22025
China	77	18365	45	9075
Russia	6	2764	44	5636
Czech Republic	8	324	140	5323
Bangladesh	18	292	268	2647
Hong Kong	2	768	22	1923
Belgium	166	3103	38	1851
Korea, Rep. of	86	1951	57	1423
Germany	3	1120	4	1075
USA	21	2435	2	615
Other countries	50	4049	122	6492

**Table - 13 : Exports of Mica (Splittings)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	871	46986	1463	68396
China	164	11684	709	23766
Russia	50	6785	44	8906
Japan	50	6984	183	7259
Belgium	29	2086	141	5059
USA	251	6449	70	4765
Chinese Taipei/ Taiwan	19	2031	49	3800
Brazil	14	1555	89	3698
Cambodia	10	2532	10	2343
Italy	3	225	36	2192
Germany	97	2455	18	1059
Other countries	184	4200	114	5549

**Table - 14 : Exports of Mica (Powder)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	62072	503313	73682	550783
China	15826	125368	26094	202879
USA	9283	87237	9445	89130
Netherlands	5700	60509	5471	49222
Finland	2880	32554	3660	42329
Japan	3362	47258	3058	37821
Saudi Arabia	7763	32053	8820	35093
Belgium	3398	32849	2059	21578
Germany	1992	13465	2572	14057
Bangladesh	2700	4151	5590	11766
Korea, Rep. of	1157	15156	338	4644
Other countries	8011	52713	6575	42264

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**Table - 15 : Exports of Mica (Condenser Films)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	313	2718	230	4881
Bangladesh	200	481	-	-
China	84	599	136	2606
Russia	-	-	12	918
USA	29	1638	82	1357

**Table - 16 : Exports of Mica (Waste & Scrap)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	16030	149531	22640	193388
China	10433	88713	14186	114607
Belgium	597	9115	1134	19404
Japan	918	10925	1121	13509
Norway	918	7319	918	7654
Germany	899	7233	1122	7510
Russia	192	2735	1296	5941
USA	999	6748	726	4904
Brazil	132	2370	172	3390
Chile	185	2788	227	2983
France	238	4509	50	857
Other countries	519	7076	1688	12629

**Table - 17 : Exports of Mica (Worked) : Total
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	427	329783	499	377878
Japan	34	58569	63	82631
Korea, Rep. of	6	7156	55	53761
UK	37	36275	43	47268
USA	71	69142	43	45417
Netherlands	1	2918	77	20624
China	22	13346	21	20340
Hong Kong	36	26268	28	18371
Germany	6	11226	32	15144
Belgium	12	3160	50	13619
Iran	11	18432	++	480
Other countries	191	83291	87	60223

**Table - 18 : Exports of Mica
(Cond. Films, Plates, Cuts, NES)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	3	3159	4	2028
Germany	++	373	1	829
Japan	++	201	1	708
USA	++	175	++	223
Romania	++	102	++	28
Chinese Taipei/ Taiwan	1	627	-	-
Finland	++	194	-	-
Hong Kong	1	314	-	-
Iran	1	511	-	-
Korea, Rep. of	++	282	-	-
Singapore	++	277	-	-
Other countries	++	103	2	240

**Table - 19 : Exports of Mica
(Washers & Discs)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	31	25840	42	25879
China	3	2715	9	5072
USA	6	7699	5	4441
Japan	1	1219	6	3395
Hong Kong	11	7007	9	3096
Korea, Rep. of	1	1078	3	1715
Malaysia	1	575	1	768
Canada	4	555	2	658
Chinese Taipei/ Taiwan	1	699	1	635
Brazil	++	532	++	612
South Africa	1	647	1	578
Other countries	2	3114	5	4909

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**Table - 20 : Exports of Mica (Sheets & Strips)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	21	13747	25	17895
Hong Kong	4	3977	5	3522
USA	-	141	1	2776
Netherlands	1	982	1	1653
Canada	1	1136	1	1316
South Africa	1	418	4	1123
Romania	-	-	1	1051
Korea, Rep. of	1	1208	1	959
Chinese Taipei/ Taiwan	1	646	3	738
Germany	1	1219	1	562
Sudan	9	1646	-	-
Other countries	2	2374	7	4195

**Table - 21 : Exports of Micanite &
Other Built-up Mica
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	14	7649	11	8208
UK	1	840	2	2019
South Africa	4	2031	3	1510
Thailand	1	306	2	1039
Chinese Taipei/ Taiwan	3	1447	2	902
Egypt	1	203	1	433
Denmark	2	1364	++	348
Germany	++	107	++	256
Malaysia	++	197	++	248
Romania	++	224	++	43
Bulgaria	1	256	++	37
Other countries	1	674	1	1373

**Table - 22 : Exports of Mica (Bricks)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	++	335	++	366
USA	-	-	++	301
Germany	++	49	++	65
Japan	++	45	-	-
Korea, Rep. of	++	200	-	-
UK	++	41	-	-

**Table - 23 : Exports of Mica Worked (Others)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	358	279053	417	323502
Japan	33	57104	56	78423
Korea, Rep. of	4	4378	51	51087
UK	36	34934	39	44308
USA	65	61127	37	37676
Netherlands	++	1919	76	18658
China	19	10532	12	15268
Belgium	12	3079	50	13451
Germany	5	9383	30	12840
Hong Kong	20	14970	14	11558
Iran	9	17488	++	154
Other countries	155	64139	52	40079

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

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	1579	281654	2645	336016
Austria	260	92192	682	117315
UK	59	25427	310	68678
Switzerland	270	85160	238	54636
China	374	32253	479	35990
USA	8	3526	37	10670
Sri Lanka	342	5136	734	10629
Germany	46	13046	16	8221
Japan	38	7986	33	7546
Belgium	43	6334	46	6470
Czech Republic	3	877	9	6220
Other countries	136	9717	61	9641

**Table - 25 : Imports of Mica (Unmanufactured) : Total
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	740	18662	860	18767
Sri Lanka	342	5136	734	10629
Turkey	-	-	20	3013
China	205	6775	43	1902
USA	4	787	18	879
Japan	25	2396	7	842
Belgium	33	809	3	500
Korea, Rep. of	8	181	8	496
Singapore	50	674	-	-
Somalia	25	315	-	-
UK	17	994	-	-
Other countries	31	595	27	506

**Table - 26 : Imports of Mica (Blocks)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	-	-	++	67
Russia	-	-	++	67

**Table - 27 : Imports of Mica (Powder)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	50	3768	125	7639
Turkey	-	-	20	3013
China	21	1127	43	1902
USA	4	787	17	852
Japan	7	794	7	842
Belgium	-	-	3	500
Sri Lanka	-	-	10	201
France	-	-	4	180
Thailand	-	-	21	139
Germany	1	227	-	-
UK	16	802	-	-
Other countries	1	31	++	10

**Table - 28 : Imports of Mica (Splittings)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	334	10204	10	625
Korea, Rep. of	8	181	8	496
Brazil	++	69	++	37
Germany	-	-	1	37
USA	-	-	1	27
Belgium	33	809	-	-
China	184	5648	-	-
Japan	18	1602	-	-
Somalia	25	315	-	-
Sri Lanka	65	1384	-	-
UK	1	192	-	-
Other countries	++	4	++	28

**Table - 29 : Imports of Mica (Waste & Scrap)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	356	4690	725	10436
France	++	1	1	8
Nigeria	24	183	-	-
Singapore	50	674	-	-
Spain	5	80	-	-
Sri Lanka	277	3752	724	10428

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**Table - 30 : Imports of Mica (Worked)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	839	262992	1785	317249
Austria	260	92192	682	117315
UK	42	24433	310	68678
Switzerland	270	85160	238	54636
China	169	25478	436	34088
USA	4	2739	19	9791
Germany	45	12819	15	8184
Japan	13	5590	26	6704
Czech Republic	3	877	9	6220
Belgium	10	5525	43	5970
Korea, Rep. of	8	3435	4	2462
Other countries	15	4744	3	3201

**Table - 31 : Imports of Mica (Condensed Films, Plates, Cuts, NES)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	234	45037	78	18651
Switzerland	136	26802	43	8326
Austria	43	12077	8	4583
China	40	3607	26	2898
UK	-	-	1	2844
Belgium	2	165	-	-
France	11	1218	-	-
Germany	2	1168	-	-

**Table - 32 : Imports of Mica (Washers & Discs)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	++	132	++	74
Chinese Taipei/Taiwan	++	132	++	61
USA	-	-	++	13

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**Table - 33 : Imports of Mica (Sheets & Strips)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	15	2301	267	7964
China	15	1633	121	2964
Austria	-	-	101	1600
Switzerland	-	-	1	1561
UK	++	537	12	1047
Belgium	-	-	32	792
Chinese Taipei/Taiwan	++	92	-	-
Japan	++	39	-	-

**Table - 34 : Imports of Micanite & Other Built-up Mica
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	85	11549	62	7160
China	77	9098	60	6258
Japan	3	1290	1	405
Austria	-	-	1	300
Germany	-	-	++	187
Malaysia	-	-	++	10
Korea, Rep. of	4	744	-	-
USA	++	151	-	-
Unspecified	1	266	-	-

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**Table - 35 : Imports of Mica Worked (Others)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	505	203973	1378	283400
Austria	217	80115	572	110832
Belgium	8	5360	11	5178
China	37	11140	229	21968
Czech Republic	3	877	9	6220
Germany	43	11651	15	7997
Japan	10	4261	25	6299
Korea, Rep. of	4	2691	4	2462
Switzerland	134	58358	194	44749
UK	42	23896	297	64787
USA	4	2588	19	9778
Other countries	3	3036	3	3130

FUTURE OUTLOOK

World demand for sheet mica is expected to decline. This is, however, compensated by the growing demand for scrap mica and value-added mica-based products. Therefore, the world market conditions are expected to be favourable for mica exports. However, to take full advantage of situation for boosting exports, it would be necessary for Indian mica industry to manufacture

and export fabricated and value-added mica-based products, such as mica paper, micanite sheets and mica-based paper.

Traditionally, mica from India was exported to USA, Japan and Europe in fairly large quantity. However, China has steadily risen to be the top consumer of Indian mica. It is expected that China would emerge as main export related destination in near future.