

# 57 Mica

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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 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 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. Of late, there has been a steady downfall in the production of mica. This declining trend could be attributed to the slow down 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.

## 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, Odisha, Tamil Nadu and West Bengal.

As per UNFC, 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 (less than 1%) (Table - 1).

## PRODUCTION, STOCKS & PRICES

### Mica (Crude)

The production of mica (crude) at 1,213 tonnes in 2009-10 decreased by about 17% as compared to the preceding year due to narrow and non-productive pegmatites and closure of some mines due to forest law violation, labour problem and lack of demand.

There were 32 reporting mines during 2009-10 as against 35 in the previous year. Seven mines, each producing above 100 tonnes annually accounted for 78% of the total output and two mines each producing 40 to 100 tonnes annually contributed about 10%. Three mines each producing between 20 and 40 tonnes contributed 6% while the remaining 6% was contributed by 20 mines each producing less than 20 tonnes annually. The entire production was reported from private sector during the year under review. Six principal producers accounted for 69% of the total output. Andhra Pradesh was the sole producing state contributing almost entire production while meagre production was reported from Rajasthan (Tables - 2 to 5).

The mine-head stocks of mica (crude) were 264 tonnes at the end of 2009-10 as against 341 tonnes at the beginning of the year (Table - 6).

The average number of daily labourers employed in mica mines during 2009-10 was 432 as against 425 in the previous year. The domestic prices of mica are furnished in the General Review on Prices.

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

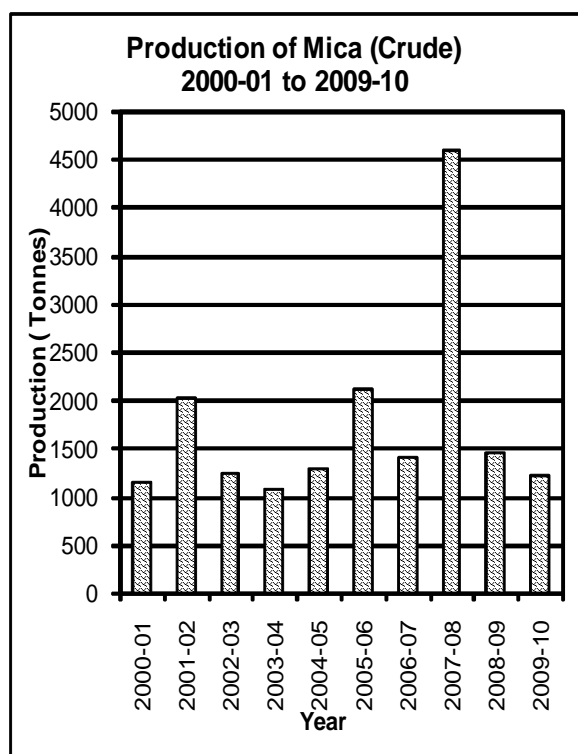
Grade/State	Reserves			Remaining resources				Resources (A+B)		
	Proved STD111	Probable STD121	Total (A)	Pre-feasibility STD222	Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334	Total (B)
<b>All India : Total</b>										
<b>All Grades/ Unclassified</b>	<b>1270873</b>	<b>9668</b>	<b>67289302</b>	<b>1418</b>	<b>109494690</b>	<b>43264890</b>	<b>170326124</b>	<b>2198454</b>	<b>325285576</b>	<b>393855419</b>
<b>By States</b>										
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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**Mica (Waste and Scrap)**

The production of mica (waste and scrap) at 7,999 tonnes in 2009-10 increased by 29% as compared to that of the previous year. The contribution of Andhra Pradesh was 54% of the total production of mica (waste & scrap) followed by Rajasthan 46%.



**Table – 2 : Principal Producers of Mica, 2009-10**

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
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
S.V.K.D. & U.M. Mining Co., Usman Saheb Pet, Nellore - 2, Andhra Pradesh.	Andhra Pradesh	Nellore
Seethamma Mining Co., P.O. Kalichedu, Mandal Sydapuram, Dist. Nellore, Andhra Pradesh.	Andhra Pradesh	Nellore
Sree Kalyanarama Company, Palace Venkatagiri (Town), Nellore, Dist. Nellore, Andhra Pradesh.	Andhra Pradesh	Nellore
M. Kodanda Rami Reddy, Bungalow, Garden, Nawabpet, Post - Nellore, Dist. Nellore, Andhra Pradesh.	Andhra Pradesh	Nellore

**Table – 3 : Production of Mica (Crude and Waste & Scrap), 2007-08 to 2009-10 (By States)**

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

State	2007-08		2008-09		2009-10(P)	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Mica (Crude)</b>						
<b>India</b>	<b>4578</b>	<b>160645</b>	<b>1462</b>	<b>42728</b>	<b>1213</b>	<b>40831</b>
Andhra Pradesh	2396	84394	1436	42468	1211	40802
Rajasthan	2182	76251	26	260	2	29
<b>Mica (Waste &amp; Scrap)</b>						
<b>India</b>	<b>3505</b>	–	<b>5685</b>	–	<b>7999</b>	–
Andhra Pradesh	2715	–	4297	–	4298	–
Rajasthan	790	–	1388	–	3701	–

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**Table – 4 : Production of Mica (Crude and Waste & Scrap), 2008-09 and 2009-10  
(By Sectors/States/Districts)**

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

State/District	2008-09			2009-10 (p)		
	No. of mines	Quantity	Value	No. of mines	Quantity	Value
<b>Mica (Crude)</b>						
<b>India</b>	<b>35(5)</b>	<b>1462</b>	<b>42728</b>	<b>32</b>	<b>1213</b>	<b>40831</b>
Private sector	35(5)	1462	42728	32	1213	40831
<b>Andhra Pradesh</b>	<b>31(2)</b>	<b>1436</b>	<b>42468</b>	<b>29</b>	<b>1211</b>	<b>40802</b>
Khammam #	1	–	–	–	–	–
Nellore	30(2)	1436	42468	29	1211	40802
<b>Rajasthan</b>	<b>4(3)</b>	<b>26</b>	<b>260</b>	<b>3</b>	<b>2</b>	<b>29</b>
Ajmer	(1)	26	260	–	–	–
Bhilwara	3(2)	–	–	2	2	29
Rajsamand #	1	–	–	1	–	–
<b>Mica (Waste &amp; Scrap) #</b>						
<b>India</b>	<b>*</b>	<b>5685</b>	<b>–</b>	<b>*</b>	<b>7999</b>	<b>–</b>
Private sector	*	5685	–	*	7999	–
<b>Andhra Pradesh</b>	<b>*</b>	<b>4297</b>	<b>–</b>	<b>*</b>	<b>4298</b>	<b>–</b>
Khammam	*	5	–	*	–	–
Nellore	*	4292	–	*	4298	–
<b>Rajasthan</b>	<b>*</b>	<b>1388</b>	<b>–</b>	<b>*</b>	<b>3701</b>	<b>–</b>
Bhilwara	*	1256	–	*	3291	–
Rajsamand	*	132	–	*	410	–

\* Mines covered under mica (crude).

# Production of mica (waste &amp; scrap) only.

**Table – 5 : Production of Mica (Crude), 2008-09 and 2009-10(P)  
(By Frequency Groups)**

(In tonnes)

Production group	No. of mines		Production for the group		Percentage in total production		Cumulative percentage	
	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10
<b>All Groups</b>	<b>35(5)</b>	<b>32</b>	<b>1462</b>	<b>1213</b>	<b>100.00</b>	<b>100.00</b>	–	–
Up to 2	14(3)	11	1	2	0.07	0.16	0.07	0.16
2 to 4	1	4	3	11	0.21	0.91	0.28	1.07
4 to 6	1	1	5	5	0.34	0.41	0.62	1.48
6 to 8	1	0	6	–	0.41	–	1.03	1.48
8 to 20	4(1)	4	55	56	3.76	4.62	4.79	6.10
20 to 30	3(1)	2	100	42	6.84	3.46	11.63	9.56
30 to 40	1	1	35	37	2.39	3.05	14.02	12.61
40 to 100	2	2	124	119	8.48	9.81	22.50	22.42
Above 100	8	7	1133	941	77.50	77.58	100.00	100.00

**Table – 6 : Mine-head Stocks of Mica (Crude), 2009-10(P)  
(By States)**

(In tonnes)

State	At the beginning of the year	At the end of the year
<b>India</b>	<b>341</b>	<b>264</b>
Andhra Pradesh	335	260
Rajasthan	6	4

## MINING, MARKETING AND TRANSPORT

There are about 32 working mica mines in the country and 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. The nature & quality of the yield decide 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 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. Most of the mines have installed haulages for transport of material, electric fans for ventilation and pumps for dewatering.

There has been change in method of mining in some of the mines in recent years. The old method was tunneling, but now some of the old mines have been made into open quarries. With this system, mines now produce felspar, quartz mica and vermiculite. This system has also enabled use of heavy machinery which resulted into increase in production.

Crude mica produced from the workings is transported to the surface where it is cobbled manually to remove the gangue minerals like quartz, felspar 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. 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.

## 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 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 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

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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 & 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 & 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, 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).

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

## INDUSTRY

Although there are a number of mica-based industrial units located at various parts of the country, detailed information about them is not available. Indian Telephone Industries Ltd, Bengaluru; Indian Mica and Micanite Industries, Jhumritalaiya; Meenakshi Sundaram Mica Mines, Nellore; Master Insulation Corporation Pvt. Ltd, Bengaluru; 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 has been 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 splittings was one of the biggest generators of employment in the mica industry. This big section of the Mica Industry is now at 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 has wound up its

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 outright 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 2009-14 and the effective Export-Import Policy, exports and imports of all varieties of mica blocks, splittings, powder, waste and scrap under heading 2525 are allowed without restrictions.

## WORLD REVIEW

There has been no formal evaluation of world reserves 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. Reserves of scrap and flake mica are available in clay deposits, granite, pegmatite and schist and are considered more than adequate to meet anticipated world demand in the foreseeable future. The data on world reserves of mica (sheet), and mica (natural), scrap and flake are given in Tables - 7(A) and 7(B), respectively.

The world output of mica was 300 thousand tonnes in 2009. China and USA were the leading producers of mica, followed by Republic of Korea, France and Canada (Table -8).

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 – 7 (A) : World Reserves of Mica (Natural), Sheet (By Principal Countries)**

Country	Reserves
<b>World : Total</b>	<b>Very Large</b>
India	Very large
Russia	Moderate
USA	Very small
Other countries	Moderate

*Source: Mineral Commodity Summaries, 2010.*

**Table – 7 (B) : World Reserves of Mica (Natural), Scrap and Flake (By Principal Countries)**

Country	Reserves
<b>World: Total</b>	<b>Large</b>
Brazil	Large
Canada	Large
India	Large
Korea, Republic of	Large
Russia	Large
USA	Large
Other countries	Large

*Source: Mineral Commodity Summaries, 2010.*

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

Country	(In '000 tonnes)		
	2007	2008	2009
<b>World: Total</b>	<b>340</b>	<b>370</b>	<b>300</b>
Canada	17 <sup>(e)</sup>	17 <sup>(e)</sup>	17 <sup>(e)</sup>
China	93 <sup>(e)</sup>	139 <sup>(e)</sup>	91
Finland	11	11	10
France @	20 <sup>(e)</sup>	20 <sup>(e)</sup>	20 <sup>(e)</sup>
Korea, Rep. of #	42	49	27
Russia	12 <sup>(e)</sup>	10 <sup>(e)</sup>	9 <sup>(e)</sup>
Spain @	5	4	4 <sup>(e)</sup>
USA @	97	84	90
Other countries	43	36	32

*Source: World Mineral Production, 2005-2009.*

# *Mainly sericite*

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

## FOREIGN TRADE

### Exports

Exports of mica (total) decreased drastically to 94,216 tonnes in 2009-10 from 191,037 tonnes in the previous year. Almost all the exports were in the form of mica (unmanufactured) at 93,341 tonnes (comprising blocks - 1,400 tonnes, splittings - 2,704 tonnes, powder - 62,073 tonnes, and waste & scrap - 27,164 tonnes). The exports of mica (worked) were 875 tonnes (comprising

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washers & discs - 498 tonnes, sheets & strips - 8 tonnes, micanite & other built up mica - 10 tonnes, other worked mica - 358 tonnes and mica bricks - 1 tonne). Besides, nominal quantities of condenser films, plates cuts, NES were also exported. In 2009-10, exports were mainly to China (57%), Belgium (7%), Japan (5%), USA & Netherlands (3% each) and Finland (2%) (Tables - 9 to 22).

### Imports

Imports of mica (total) decreased to 1,661 tonnes in 2009-10 from 2,323 tonnes in the previous year. Out of the total imports in 2009-10, imports of mica (unmanufactured) were 379 tonnes (comprising powder-72 tonnes, splittings-191 tonnes and waste & scrap-116 tonnes). Besides, nominal quantity of block mica was also imported. The remaining 1,282 tonnes imports were of mica (worked) which included condenser films, plates, cuts, NES-115 tonnes, sheets & strips-136 tonnes, micanite and other built up mica-27 tonnes and other worked mica - 999 tonnes, besides 5 tonnes of washers & discs (Tables - 23 to 34).

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>190427</b>	<b>1361696</b>	<b>93341</b>	<b>1319956</b>
China	131978	668612	53920	714191
Belgium	5042	74181	7007	134868
Japan	8016	165553	4756	118809
U S A	5415	84539	2292	55625
Finland	2666	40064	2310	45353
Netherlands	4152	54344	2583	40579
Russia	481	22424	384	20901
Czech Republic	562	16553	690	20291
Saudi Arabia	5597	25831	2785	17114
Germany	3051	31141	1502	14869
Other countries	23467	178454	15112	137356

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>191037</b>	<b>1802852</b>	<b>94216</b>	<b>1620533</b>
China	132061	782003	53972	753324
Japan	8091	227293	4858	177771
Belgium	5042	74790	7010	139621
USA	5481	146986	2826	94195
Netherlands	4280	91757	2604	49936
Finland	2667	40463	2310	45916
Hong Kong	109	22187	257	42072
UK	1548	33641	1029	36872
Germany	3144	65274	1526	28203
Russia	489	30417	387	24901
Other countries	28125	288041	17437	227722

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>3311</b>	<b>94977</b>	<b>1400</b>	<b>71381</b>
Japan	1490	47279	907	40967
China	197	18159	41	13290
Russia	4	2349	10	3387
Korea, Rep. of	101	2325	101	3345
Kazakhstan	11	2780	14	2493
Bangladesh	700	1116	215	1120
Belgium	43	1048	24	996
Slovak Republic	3	2107	1	814
USA	226	1689	11	729
Czech Republic	244	11266	1	200
Other countries	292	4859	75	4040

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**Table – 12 : Exports of Mica (Splittings)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>2952</b>	<b>72596</b>	<b>2704</b>	<b>74207</b>
China	286	20231	354	18476
USA	197	17800	135	14733
Russia	20	3490	22	10785
Japan	141	7841	527	5686
Czech Republic	24	1015	106	4380
Bangladesh	1960	4446	1033	3735
Belgium	2	2176	82	3180
Kazakhstan	21	4839	12	3143
Brazil	1	1310	70	2113
Germany	66	3050	5	514
Other countries	234	6398	358	7462

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>72106</b>	<b>710212</b>	<b>62073</b>	<b>778727</b>
China	28496	283814	31089	375319
Belgium	4130	54174	6402	116937
Japan	3925	67755	2250	48277
Finland	2666	40064	2300	43833
Netherlands	4152	54344	2540	39944
U S A	3372	41686	1881	33987
Saudi Arabia	4808	23217	2494	15583
Korea, Rep. of	432	7156	590	11287
Germany	2367	21448	1030	9724
Egypt	1809	12104	745	6451
Other countries	15949	104450	10752	77385

**Table – 14 : Exports of Mica (Waste & Scrap)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>112049</b>	<b>481631</b>	<b>27164</b>	<b>395641</b>
China	102999	346408	22436	307106
Japan	2460	42678	1072	23879
Belgium	867	16783	499	13755
Czech Republic	294	4272	458	13655
USA	1620	23364	265	6176
Russia	400	13988	252	5956
Germany	591	5854	464	4206
Iran	340	3933	230	2477
Norway	612	5816	102	1856
Brazil	167	4597	44	1110
Other countries	1699	13938	1342	15465

**Table – 15 : Exports of Mica (Worked) : Total  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>610</b>	<b>441156</b>	<b>875</b>	<b>300577</b>
Japan	75	61740	102	58962
China	83	113391	52	39133
USA	66	62447	534	38570
Hong Kong	27	19991	49	38109
UK	34	25625	28	30182
Germany	93	34133	24	13334
Netherlands	128	37413	21	9357
Korea Rep. of	8	6730	4	6833
Russia	8	7993	3	4000
Thailand	4	10990	1	336
Other countries	84	60703	57	61761

**Table – 16 : Exports of Mica (Condenser Films)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>9</b>	<b>2280</b>	–	–
Nepal	6	9	–	–
Russia	3	2271	–	–

**Table – 17 : Exports of Mica  
(Cond. Films, Plates, Cuts (NES)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>1</b>	<b>1889</b>	<b>++</b>	<b>1307</b>
USA	–	–	++	371
Germany	++	257	++	313
Chinese Taipei/ Taiwan	–	–	++	216
UK	++	62	++	203
Iran	1	409	++	96
Brazil	++	200	–	–
Hong Kong	++	193	–	–
Italy	++	55	–	–
Japan	++	396	–	–
Poland	++	270	–	–
Other countries	++	47	++	108

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**Table – 18 : Exports of Mica (Washers & Discs)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>29</b>	<b>20439</b>	<b>498</b>	<b>23229</b>
USA	6	5950	470	5222
Mexico	-	-	3	3497
Japan	2	1816	3	2998
Hong Kong	3	1662	15	2719
China	7	3219	4	2451
Canada	-	-	++	1004
Czech Republic	1	530	++	813
Korea, Rep. of	3	1338	++	800
Brazil	++	631	1	729
Chinese Taipei/ Taiwan	1	887	1	286
Other countries	6	4406	1	2710

**Table – 19 : Exports of Mica (Sheets & Strips)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>25</b>	<b>9263</b>	<b>8</b>	<b>4833</b>
USA	1	1669	1	994
Chinese Taipei/ Taiwan	1	469	2	911
Canada	2	2593	3	770
Sri Lanka	-	-	++	415
Germany	1	308	++	347
Malaysia	7	359	1	336
China	1	750	++	53
Bulgaria	1	321	-	-
Korea, Rep. of	++	692	-	-
UK	1	662	-	-
Other countries	10	1440	1	1007

**Table – 20 : Exports of Micanite & Other Built-Up Mica  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>12</b>	<b>7608</b>	<b>10</b>	<b>3894</b>
Hong Kong	3	1077	2	711
UK	2	1082	1	584
Egypt	++	427	2	573
Chinese Taipei/ Taiwan	3	1991	1	538
Chile	-	-	1	492
South Africa	2	1078	1	339
Thailand	-	-	1	215
Malaysia	1	360	1	176
Brazil	++	223	++	125
Denmark	1	1137	-	-
Other countries	++	233	++	141

**Table – 21 : Exports of Mica (Bricks)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>++</b>	<b>265</b>	<b>1</b>	<b>1289</b>
Poland	-	-	++	584
USA	-	-	++	528
Korea, Rep. of	++	19	1	113
UAE	-	-	++	63
Germany	++	119	-	-
Hong Kong	++	6	-	-
Switzerland	++	64	-	-
UK	++	57	-	-
Other countries	-	-	++	1

**Table – 22 : Exports of Mica Worked (Others)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>543</b>	<b>401692</b>	<b>358</b>	<b>266025</b>
Japan	73	59528	99	55964
China	75	109359	48	36629
Hong Kong	21	17053	32	34597
USA	59	54828	63	31455
U K	31	23660	27	28795
Germany	92	33367	24	12674
Netherlands	128	37210	21	9252
Korea, Rep. of	5	4681	3	5920
Russia	3	7926	3	4000
Thailand	4	10179	-	-
Other countries	52	43901	38	46739

**Table – 23 : Imports of Mica : Total  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>2323</b>	<b>424930</b>	<b>1661</b>	<b>422697</b>
Austria	536	109537	190	103041
Switzerland	304	98434	276	91844
UK	395	104746	318	87859
China	430	30410	547	43287
Japan	65	16019	43	38129
Germany	15	5603	34	17122
Malaysia	52	15935	51	14565
USA	45	17462	27	6223
Korea, Rep. of	49	8374	6	5524
Sweden	5	5912	8	3289
Other countries	427	12498	161	11814

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>552</b>	<b>14913</b>	<b>379</b>	<b>15874</b>
China	32	1461	208	7117
Sudan	66	4157	100	2824
USA	1	168	15	1750
Japan	16	1572	17	1644
Spain	1	177	3	498
UK	2	271	1	389
Sri Lanka	70	982	10	258
Austria	42	1080	-	-
Korea, Rep. of	38	1356	-	-
Norway	54	1810	-	-
Other countries	230	1879	25	1394

**Table – 25 : Imports of Mica (Blocks) (By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>59</b>	<b>4624</b>	<b>++</b>	<b>137</b>
USA	-	-	++	129
Italy	-	-	++	8
Japan	16	1570	-	-
Nigeria	1	103	-	-
Sudan	42	2951	-	-

**Table – 26 : Imports of Mica (Splittings) (By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>106</b>	<b>3249</b>	<b>191</b>	<b>5739</b>
China	8	535	174	4886
South Africa	-	-	5	431
Romania	-	-	12	422
Austria	42	1058	-	-
Korea, Rep. of	35	1247	-	-
UAE	21	408	-	-
Other countries	++	1	-	-

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>150</b>	<b>4526</b>	<b>72</b>	<b>6343</b>
China	24	919	30	1740
Japan	++	2	17	1644
USA	1	168	13	1539
Spain	1	166	3	498
UK	2	271	1	389
Canada	-	-	4	276
France	3	152	2	168
Denmark	5	142	2	89
Norway	54	1810	-	-
Sri Lanka	50	445	-	-
Other countries	10	451	-	-

**Table – 28 : Imports of Mica (Waste & Scrap) (By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>237</b>	<b>2514</b>	<b>116</b>	<b>3655</b>
Sudan	24	1206	100	2824
China	++	7	4	491
Sri Lanka	20	537	10	258
USA	-	-	2	82
Austria	++	22	-	-
France	++	3	-	-
Nigeria	24	228	-	-
Spain	++	11	-	-
Turkey	168	487	-	-

**Table – 29 : Imports of Mica (Worked) : Total (By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>1771</b>	<b>410017</b>	<b>1282</b>	<b>406823</b>
Austria	494	108457	190	103041
Switzerland	304	98434	276	91844
UK	393	104475	317	87470
Japan	49	14447	26	36485
China	398	28949	339	36170
Germany	15	5603	34	17122
Malaysia	52	15935	51	14565
Korea, Rep. of	11	7018	6	5524
USA	44	17294	12	4473
Sweden	5	5912	8	3289
Other countries	6	3493	23	6840

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**Table – 30 : Imports of Mica  
(Condensed Films, Plates, Cuts, NES)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>144</b>	<b>27934</b>	<b>115</b>	<b>22377</b>
UK	44	12076	63	11993
Switzerland	39	5878	35	7410
Germany	6	1154	12	1540
USA	16	3541	4	1339
China	34	1811	1	90
Thailand	-	-	++	3
Canada	-	-	++	1
Austria	5	3474	-	-
Other countries	-	-	++	1

**Table – 31 : Imports of Mica  
(Washers & Discs)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>++</b>	<b>17</b>	<b>5</b>	<b>384</b>
Italy	-	-	++	147
Singapore	-	-	1	116
China	-	-	4	79
USA	-	-	++	42
Chinese Taipei/ Taiwan	++	17	-	-

**Table – 32 : Imports of Mica (Sheets & Strips)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>241</b>	<b>7509</b>	<b>136</b>	<b>10535</b>
China	224	6841	114	5383
UK	15	601	18	2671
Italy	-	-	2	1385
Switzerland	-	-	1	1040
Austria	2	58	1	56
Czech Republic	++	5	-	-
USA	++	4	-	-

**Table – 33 : Imports of Micanite & Other  
Built-up Mica  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
<b>All Countries</b>	<b>41</b>	<b>4702</b>	<b>27</b>	<b>3809</b>
China	16	1991	27	3809
Austria	4	460	-	-
Japan	21	2251	-	-

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**Table – 34 : Imports of Mica Worked (Others)  
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
<b>All Countries</b>	<b>1345</b>	<b>369855</b>	<b>999</b>	<b>369718</b>
Austria	483	104465	189	102985
Switzerland	265	92556	240	83393
UK	334	91798	236	72806
Japan	28	12196	26	36485
China	124	18306	193	26809
Germany	9	4449	22	15582
Malaysia	52	15935	51	14565
Korea, Rep. of	11	7018	6	5524
Sweden	5	5912	8	3289
USA	28	13749	8	3092
Other countries	6	3471	20	5188

**FUTURE OUTLOOK**

World demand for sheet mica is expected to decline. This would, however, be compensated by the anticipated growth in 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 the prevailing situation and 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.

Over the past few years, India has gradually increased its mica exports to China. This new partnership could diversify India's export prospects of mica in the region as the market seems buoyed up for propping demand.