

# 30 Diaspore

**D**iaspore is a dimorphous form of boehmite, with chemical composition  $Al_2O_3 \cdot H_2O$  (betamono-hydrate of aluminium). It is an important constituent of bauxite. Because of its good refractory properties, it is used chiefly for making high-alumina refractory bricks. It is also used as a filler in plastic industry.

## RESOURCES

Diaspore occurs as thin veins, stringers and geode-like bodies in association with pyrophyllite in Uttar Pradesh and Madhya Pradesh where the host rock mainly comprises granite, quartz and

pyrophyllite of Bundelkhand Super Group, and as a common constituent of bauxite in Jammu & Kashmir.

As per UNFC System of resource classification as on 1.4.2005 the total resources of diaspore are placed at 5.34 million tonnes of which about 68% are in Madhya Pradesh, 32% in Uttar Pradesh and negligible in Jammu & Kashmir. About 3.12 million tonnes (58%) of these resources are placed under reserves category. Out of the total resources, more than 64% are grouped under refractory grade, 3% in ceramic grade, while 33% resources fall under unclassified, not known and other grades (Table - 1).

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

Grade/State	Reserves				Remaining resources					Total Resources (A+B)
	Proved STD111	Probable		Total A	Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total B	
		STD121	STD122							
<b>All India : Total</b>	<b>1662218</b>	<b>531012</b>	<b>931802</b>	<b>3125032</b>	<b>1238</b>	<b>566</b>	<b>2092228</b>	<b>118329</b>	<b>2212361</b>	<b>5337393</b>
<b>By Grades</b>										
Ceramic	77459	-	49894	127353	-	-	3109	12944	16053	143406
Refractory I	808774	345309	566977	1721060	1238	0	1661470	50496	1713204	3434263
Refractory II	-	-	-	-	-	566	711	-	1277	1277
Others	550641	-	74359	625000	0	0	222829	0	222829	847829
Unclassified	220822	185703	227332	633857	0	0	193143	54889	248032	881889
Not - known	4522	-	13240	17762	-	-	10966	-	10966	28728
<b>By States</b>										
Jammu & Kashmir	-	-	-	-	-	566	711	-	1277	1277
Madhya Pradesh	798652	506308	699323	2004283	693	0	1552835	59012	1612540	3616823
Uttar Pradesh	863566	24704	232479	1120749	545	0	538682	59317	598544	1719293

Figures rounded off.

## PRODUCTION, STOCKS & PRICES

The production of diaspore at 22,393 tonnes in 2007-08 increased by 40 % as compared to that in the previous year owing to high market demand.

The entire production of diaspore was reported as an associated mineral by 23 pyrophyllite mines in 2007-08. Four principal producers accounted for 76% of the total production during the year. The private sector accounted for 95% of production. The remaining

5% production was from public sector during the year.

Madhya Pradesh was the leading producer of diaspore contributing about 54 % of total output. The remaining 46 % production was reported from Uttar Pradesh.

Mine-head stocks of diaspore at the end of 2007-08 were 3,129 tonnes as against 2,294 tonnes at the beginning of the year (Tables - 2 to 5). Prices of diaspore are furnished in Table - 6.

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

Name and address of producer	Location of mine	
	State	District
The Ishwar Industries Ltd. Room No.1, 7, Ishwarnagar, Mathura Road, New Delhi-110 065.	Uttar Pradesh	Lalitpur
Jindutta Minerals Pvt.Ltd. Torla House, Post Box No. 26, Dist. Chattarpur-471 001, Madhya Pradesh.	Madhya Pradesh	Chattarpur
M/S Eastern Minerals Vivekanand Marg, P. O. Jhansi-284 002 Dist. Jhansi, Uttar Pradesh.	Madhya Pradesh	Chattarpur
Khajuraho Minerals Torla House, P. O. Chattarpur, Dist.Chattarpur, Madhya Pradesh.	Madhya Pradesh	Chattarpur

\* Produced as an associated mineral with pyrophyllite.

**Table – 3 : Production of Diaspore, 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
<b>India</b>	<b>24494</b>	<b>16954</b>	<b>15944</b>	<b>11691</b>	<b>22393</b>	<b>17629</b>
Madhya Pradesh	15062	8511	9795	6345	12012	7854
Uttar Pradesh	9432	8443	6149	5346	10381	9775

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**Table – 4 : Production of Diaspore, 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
<b>India</b>	<b>(20)</b>	<b>15944</b>	<b>11691</b>	<b>(23)</b>	<b>22393</b>	<b>17629</b>
Public sector	(1)	2065	1549	(1)	1174	881
Private sector	(19)	13879	10142	(22)	21219	16748
<b>Madhya Pradesh</b>	<b>(14)</b>	<b>9795</b>	<b>6345</b>	<b>(15)</b>	<b>12012</b>	<b>7854</b>
Chattarpur	(8)	6648	3784	(8)	9772	6043
Shivpuri	(1)	752	790	(1)	687	721
Tikamgarh	(5)	2395	1771	(6)	1553	1090
<b>Uttar Pradesh</b>	<b>(6)</b>	<b>6149</b>	<b>5346</b>	<b>(8)</b>	<b>10381</b>	<b>9775</b>
Jhansi	-	-	-	(2)	105	84
Lalitpur	(3)	5059	4371	(3)	8813	8466
Mahoba	(3)	1090	975	(3)	1463	1225

*Figures in parentheses indicate the number of associated mines with pyrophyllite.*

**Table – 5 : Mine-head Stock of Diaspore, 2007-08(p)  
(By States)**

(In tonnes)

State	At the beginning of the year	At the end of the year
<b>India</b>	<b>2294</b>	<b>3129</b>
Madhya Pradesh	601	813
Uttar Pradesh	1693	2316

**Table – 6 : Prices of Diaspore, 2004-05 to 2006-07  
(Domestic Markets)**

(In Rs. per tonne)

Grade	Market	2005 -06	2006-07	2007-08 (p)
R.O.M.	Ex-mine Sarkana (Madhya Pradesh)	471	471	471
Fine powder	Ex-Factory Jhansi (Uttar Pradesh)	1435	1455	1455
ROM	Ex-mine MPSC Ltd (Madhya Pradesh)	800	850	1000

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### MINING AND MARKETING

Diaspore is normally mined manually by opencast method. Mining has been carried out to a depth of 25 m along with mineral pyrophyllite in some mines. The average  $\text{Al}_2\text{O}_3$  content in the mined ore ranges between 42 and 72% and  $\text{Fe}_2\text{O}_3$  between 0.7 and 4.45%.

Chattarpur, Shivpuri and Tikamgarh districts in Madhya Pradesh and Lalitpur and Mahoba districts in Uttar Pradesh are the main mining centres in the country.

### CONSUMPTION

Diaspore was consumed mainly in the manufacture of high - alumina refractories either by itself or by bonding with flint or plastic clay as per content of alumina needed in the finished product. The indigenous refractory manufacturers use diaspore, analysing  $\text{Al}_2\text{O}_3$  56 to 62%,  $\text{Fe}_2\text{O}_3$  1 to 4% ,  $\text{TiO}_2$  0.8 to 1.5%., PCE (Orton) 36 (min.) and of size between 75 and 150 mm. A very negligible quantity was consumed in ceramic

industry. About 15,200 tonnes diaspore was consumed in refractory industry in 2007-08. The consumption was stable around 15,000 tonnes in the previous years (Table - 7).

In addition to its industrial use diaspore is also used for making decorative items such as small figurines, lampshades, flower-vase, etc.

**Table – 7 : Reported Consumption of Diaspore  
2005-06 to 2007-08  
(By Industries)**

(In tonnes)			
Industry	2005-06(R)	2006-07	2007-08(p)
<b>All Industries</b>	<b>15000</b>	<b>15000</b>	<b>15200</b>
Ceramic	++ (1)	++(1)	++(1)
Refractory	15000(23)	15000 (23)	15200 (22)

*Figures rounded off. Data collected on non-statutory basis.  
Figures in parentheses denote the number of units in organised sector reporting consumption.*