

30 Diaspore

Diaspore 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 is placed at 5.34 million tonnes of which about 68% is in Madhya Pradesh, 32% in Uttar Pradesh and negligible in Jammu & Kashmir. About 3.12 million tonnes (59%) 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							
All India : Total	1662218	531012	931802	3125032	1238	566	2092228	118329	2212361	5337393
By Grades										
Ceramic	77459	–	49894	127353	–	–	3109	12944	16053	143406
Refractory I	808774	345309	566977	1721060	1238	–	1661470	50496	1713204	3434263
Refractory II	–	–	–	–	–	566	711	–	1277	1277
Others	550641	–	74359	625000	–	–	222829	–	222829	847829
Unclassified	220822	185703	227332	633857	–	–	193143	54889	248032	881889
Not - known	4522	–	13240	17762	–	–	10966	–	10966	28728
By States										
Jammu & Kashmir	–	–	–	–	–	566	711	–	1277	1277
Madhya Pradesh	798652	506308	699323	2004283	693	–	1552835	59012	1612540	3616823
Uttar Pradesh	863566	24704	232479	1120749	545	–	538682	59317	598544	1719293

Figures rounded off.

PRODUCTION, STOCKS & PRICES

The production of diaspore at 26,469 tonnes in 2009-10 increased by 7% 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 21 pyrophyllite mines in 2009-10. Seven principal producers accounted for 99% of the total production during the year. The private sector contributed almost entire production.

Uttar Pradesh being the leading producer of diaspore contributing about 55 % of total output. The remaining 45 % production was reported from Madhya Pradesh.

Mine-head stocks of diaspore at the end of 2009-10 were 5,441 tonnes as against 4,644 tonnes at the beginning of the year (Tables - 2 to 5). Prices of diaspore are furnished in the General Review on 'Prices'.

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

Name and address of producer	Location of mine	
	State	District
The Ishwar Industries Ltd Charankamal, 7, Ishwarnagar, Mathura Road, New Delhi-110 065.	Uttar Pradesh	Lalitpur
Jindutta Minerals Pvt. Ltd Torja House, Post Box No. 26, 6 KM Sagar Road,Dhadari, Dist. Chhatarpur-471 001, Madhya Pradesh.	Madhya Pradesh	Chhatarpur
J.K.Minerals C1 & C2 Industrial Estate, Gwalior Road, Jhansi-284003, Uttar Pradesh.	Uttar Pradesh	Jhansi Lalitpur
Eastern Minerals Vivekanand Marg, P. O. Jhansi-284 002, Dist. Jhansi, Uttar Pradesh.	Madhya Pradesh	Chhatarpur
Khajuraho Minerals 6 KM Sagar Road,Dhadari, Dist. Chhatarpur-471001, Madhya Pradesh.	Madhya Pradesh	Chhatarpur
Ishwar Mining & Ind. Corp. (P) Ltd, Sanjiv Bhaskar, 7, Ishwar Nagar, Charan Kamal, Mathura Road, Post - New Delhi, Delhi - 110 065.	Madhya Pradesh	Shivpuri
Goura Udyog Audyogik Utpadan Sahkari Sam, Vill-Gourhari, Post-Gourhari, Dist. - Mahoba.	Uttar Pradesh	Mahoba

* Produced as an associated mineral with pyrophyllite.

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**Table – 3 : Production of Diaspore, 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
India	21236	17868	24642	23384	26469	24892
Madhya Pradesh	11320	7324	10180	7410	11867	9207
Uttar Pradesh	9916	10544	14462	15974	14602	15685

**Table – 4 : Production of Diaspore, 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
India	(22)	24642	23384	(21)	26469	24892
Public sector	(1)	307	230	(1)	138	104
Private sector	(21)	24335	23154	(20)	26331	24788
Madhya Pradesh	(15)	10180	7410	(14)	11867	9207
Chattarpur	(8)	7457	4561	(9)	9133	6230
Shivpuri	(1)	2043	2452	(1)	2117	2540
Tikamgarh	(6)	680	397	(4)	617	437
Uttar Pradesh	(7)	14462	15974	(7)	14602	15685
Jhansi	(2)	120	96	(2)	277	222
Lalitpur	(3)	11863	13170	(3)	12554	13521
Mahoba	(2)	2479	2708	(2)	1771	1942

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

**Table – 5 : Mine-head Stocks of Diaspore, 2009-10(P)
(By States)**

(In tonnes)

State	At the beginning of the year	At the end of the year
India	4644	5441
Madhya Pradesh	789	1054
Uttar Pradesh	3855	4387

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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 Al_2O_3 content in the mined ore ranges between 42 and 72% and Fe_2O_3 between 0.7 and 4.45%.

Chhatarpur, 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 diaspora, analysing Al_2O_3 56 to 62%, Fe_2O_3 1 to 4% , 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. In 2009-10, about 16,100 tonnes

diaspore was consumed mostly in refractory industry. The consumption of diaspora is increased by 7% as compared to previous years (Table - 6).

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

**Table – 6 : Reported Consumption of Diaspora
2007-08 to 2009-10
(By Industries)**

(In tonnes)			
Industry	2007-08	2008-09(R)	2009-10(p)
All Industries	15300	15000	16100
Ceramic	++ (1)	++(1)	++(1)
Refractory	15300(21)	15000 (20)	16100(20)

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

*(*Includes actual reported consumption and/or estimates made wherever required.)*