

DIASPORE



Indian Minerals Yearbook 2014

(Part- III : Mineral Reviews)

53rd Edition

DIASPORE

(ADVANCE RELEASE)

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

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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, the total resources of diaspore as on 1.4.2010 are placed at 5.98 million tonnes of which about 63% are located in Madhya Pradesh, 37% in Uttar Pradesh and a nominal quantity in Jammu & Kashmir. About 2.86 million tonnes (48%) of these resources are placed under reserves category. Out of the total resources, more than 76% are grouped under refractory grade, less than 1% in ceramic grade, while 23% resources fall

under unclassified, not-known and other grades (Table - 1).

PRODUCTION, STOCKS & PRICES

The production of diaspore at 14,781 tonnes in 2013-14 registered a decrease by 9% as compared to that in the previous year.

The entire production of diaspore was reported as an associated mineral by 16 pyrophyllite mines. Five principal producers accounted for 92% of the total production during the year. The private sector accounted for almost entire production of diaspore during the year.

Uttar Pradesh being the leading producer of diaspore contributed about 55% of total production in 2013-14. The remaining 45% production was reported from Madhya Pradesh only (Tables - 2 to 4).

Mine-head stocks of diaspore at the end of 2013-14 was 6,561 tonnes as against 6,789 tonnes at the beginning of the year (Table -5).

Prices of diaspore are furnished in the General Review on 'Prices'.

**Table – 3 : Production of Diaspore, 2011-12 to 2013-14(P)
(By States)**

State	(Qty in tonnes; value in `'000)					
	2011-12		2012-13		2013-14(P)	
	Quantity	Value	Quantity	Value	Quantity	Value
India	23818	35654	16222	25742	14781	29360
Madhya Pradesh	12115	15376	7268	10954	6666	13698
Uttar Pradesh	11703	20278	8954	14788	8115	15662

Table –1 : Reserves/Resources of Diaspore as on 1.4.2010
(By Grades/States)

(In tonnes)

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	Total (B)		
All India : Total	1469687	1106296	283691	2859674	187821	714316	488395	248880	133360	1306306	46068	3125144	5984818
By Grades													
Ceramic	5646	6274	3137	15057	-	-	-	-	-	252	-	252	15309
Refractory-I	1459674	706699	134619	2300992	11659	156266	80350	545	-	531597	-	780415	3081407
Refractory-II	4367	345830	17785	367982	171443	347331	156025	199559	44381	205550	-	1124289	1492271
Unclassified	-	-	57531	57531	-	3178	23080	-	6502	6422	46068	85250	142781
Not-known	-	-	-	-	-	4522	3290	-	9950	10966	-	28728	28728
Others	-	47493	70619	118112	4719	203019	225650	48776	72527	551519	-	1106210	1224322
By States													
Jammu & Kashmir	-	-	-	-	-	-	-	-	566	711	-	1277	1277
Madhya Pradesh	719609	562818	174476	1456903	51764	386086	349488	248335	132794	1081412	46068	2295947	3752850
Uttar Pradesh	750078	543478	109215	1402771	136057	3282230	138907	545	-	224183	-	827922	2230693

Figures rounded off.

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Table – 2 : Principal Producers* of Diaspore, 2013-14

Name and address of producer	Location of mine	
	State	District
The Ishwar Industries Ltd 'Charan Kamal', Room No.7, Ishwar Nagar, Mathura Road, New Delhi-110 065.	Uttar Pradesh	Lalitpur*
J.K.Minerals 195,Laxman Ganj C1 & C2 Industrial Estate, Gwalior Road, Jhansi-284 003, Uttar Pradesh.	Uttar Pradesh	Jhansi* Lalitpur*
Khajuraho Minerals Post Box No.25, Chhatarpur-471 001 Madhya Pradesh.	Madhya Pradesh	Chhatarpur*
Jindutta Minerals Pvt. Ltd Post Box No. 27, Dhadari, Chhatarpur-471 001, Madhya Pradesh.	Madhya Pradesh	Chhatarpur*
Eastern Minerals 35, Vivekanand Marg, Cantonment Area, Distt. Jhansi-284 001, Uttar Pradesh.	Madhya Pradesh	Tikamgarh* Chhatarpur*

* Produced as an associated mineral with pyrophyllite.

**Table – 4 : Production of Diaspore, 2012-13 and 2013-14(P)
(By Sectors/States/Districts)**

(Qty in tonnes; value in ₹'000)

State/District	2012-13			2013-14(P)		
	No. of mines	Quantity	Value	No. of mines	Quantity	Value
India	(15)	16222	25742	(16)	14781	29360
Private sector	(15)	16222	25742	(16)	14781	29360
Madhya Pradesh	(8)	7268	10954	(9)	6666	13698
Chhatarpur	(6)	6640	9393	(5)	5897	11930
Shivpuri	(1)	620	1550	(1)	556	1390
Tikamgarh	(1)	8	11	(3)	213	378
Uttar Pradesh	(7)	8954	14788	(7)	8115	15662
Jhansi	(1)	55	47	(2)	52	45
Lalitpur	(5)	8740	14588	(3)	7668	14743
Mahoba	(1)	159	153	(2)	395	874

Figure in parenthesis indicates associated mines with pyrophyllite.

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**Table – 5 : Mine-head Stocks of Diaspore, 2013-14(P)
(By States)**

(In tonnes)

State	At the beginning of the year	At the end of the year
India	6789	6561
Madhya Pradesh	799	1300
Uttar Pradesh	5990	5261

MINING AND MARKETING

Diaspore is generally mined manually by opencast method. Mining has been carried out by formation of benches in overburden and minerals & mined up to a depth of 25 m. The average Al_2O_3 content in the mined ore ranges from 42% to 72% and Fe_2O_3 from 0.7% to 4.45 percent.

Chhatarpur and Tekamgarh districts in Madhya Pradesh, Lalitpur and Jhansi districts in Uttar Pradesh are the mining centres of diaspore in the country.

CONSUMPTION & USES

Diaspore mainly finds application 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 domestic refractory manufacturers use indigenous diaspore, analysing Al_2O_3 56% to 62%, Fe_2O_3 1% to 4% , TiO_2 0.8% to 1.5%, Pyrometric Cone Equivalent (PCE) 36 (min.) and of size between 75 mm and 150 mm. In 2013-14, about 20,400 tonnes diaspore was consumed. The entire quantity was consumed in refractory industry. The consumption of diaspore is decreased by 2% from previous year (Table - 6).

In addition to its industrial applications, diaspore is also used for making decorative

items such as small figurines, lampshades, flower-vase, etc.

Crystallised diaspore specimens are highly desired by mineral collectors, especially those from Turkey. The transparent colour-changing diaspore gem often promoted by the name Zultanite is used as a gemstone. There are other varieties of diaspore namely chrome diaspore, Csarite, Mangan diaspore & Zultanite, this name was officially abandoned in 2012 by Murat Algun, he original promoter of the name Zutanite.

In the state of Madhya Pradesh it is used in refractories, cermamics, paper, rubber, potteries, insecticides, toys as statues industries.

**Table – 6 : Consumption of Diaspore
2011-12 to 2013-14
(By Industries)**

(In tonnes)

Industry	2011-12	2012-13(R)	2013-14(P)
All Industries	23800	20800	20400
Ceramic	++(1)	++(1)	++(1)
Refractory	23800 (15)	20800(15)	20400(1)

Figures rounded off.

Figures in parentheses denote the number of units in organised sector reporting consumption.*

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