

OCHRE



Indian Minerals Yearbook 2017

(Part- III : Mineral Reviews)

56th Edition

**MINOR MINERALS
30.17 OCHRE**

(FINAL RELEASE)

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

Indira Bhavan, Civil Lines,
NAGPUR – 440 001

PHONE/FAX NO. (0712) 2565471
PBX : (0712) 2562649, 2560544, 2560648
E-MAIL : cme@ibm.gov.in
Website: www.ibm.gov.in

March, 2018

30-17 Ochre

Ochre is a natural mineral pigment known to man from his historical past. In ancient times it had been used in colouring earthen-ware, household utensils and for decorative purposes. Though its use dates back to prehistoric times, ochre's use only became widespread in the late 19th century, when Jean-Etienne Astier of Roussillon introduced the industrial process for making ochre pigment.

It occurs in various shades and colours generally ranging from yellow to deep orange or brown. The pigmentary strength of ochre is mainly due to the presence of oxides of iron. The presence of hydrated iron oxide imparts yellow colour and anhydrous iron oxide red. A mixture of ferrous and ferric oxide imparts mainly brown besides other shades.

Depending upon the colour, the ochres are called red ochre, yellow ochre, green earth, sienna, umber and various other names. In addition to red ochre, the red oxide of iron, commonly called 'red oxide' is an important natural pigment which results from alteration of haematite & ferruginous laterite.

Red ochre is mostly used in cement industry. The cement grade mix raw material requires a minimum quantum of iron and alumina. The red ochre mixed with limestone makes a perfect mix of constituents in the raw material fed to the cement manufacturing units.

Ochres are non-toxic and are used in manufacturing of paints that not only dries quickly but also covers surfaces thoroughly. Occurrences of ochre have been reported from several states in the country.

RESERVES/RESOURCES

Deposits of red ochre are found chiefly in Bharatpur, Bhilwara, Bikaner, Chittorgarh & Udaipur districts in Rajasthan; Gwalior, Katni and Rewa districts in Madhya Pradesh; Anantapur, Kadapa, Visakhapatnam districts in Andhra Pradesh; Bhavnagar, Kachchh & Patan districts in Gujarat; Ballari & Bidar districts in Karnataka and Chandrapur district in Maharashtra.

Deposits of yellow ochre are found in Guntur and Kurnool districts in Andhra Pradesh, Jabalpur, Mandla, Satna & Shahdol districts in Madhya Pradesh and Nagpur district in Maharashtra.

The total reserves/resources of ochre as on 1.4.2015 as per the NMI data, based on UNFC system, have been estimated at 167.79 million tonnes. Out of these resources, about 36.93 million tonnes are under 'Reserves' category and 130.86 million tonnes are under 'Remaining Resources' category. Of the total, about 87% resources are of red ochre, 11% are of yellow ochre and the remaining 2% are of grades "Not-known". About 78% resources are concentrated in Rajasthan, followed by Madhya Pradesh 11%, Andhra Pradesh 7% and Gujarat about 2%. The remaining 2% resources are located in Karnataka, Maharashtra, Jharkhand and Uttar Pradesh (Table-1).

PRODUCTION & STOCKS

As per Govt. of India Notification S.O.423(E) dated 10th February 2015, 'ochre' has been declared as 'Minor Mineral' hence the production data is not available with IBM.

EXPLORATION & DEVELOPMENT

The exploration & development details, if any, are given in the review on "Exploration & Development" in "General Reviews".

**Table – 1 : Reserves/Resources of Ochre as on 1.4.2015
(By Grades/States)**

Grade/State	Reserves				Remaining Resources				Total Resources (A+B)				
	Proved	Probable	Total (A)	Feasibility	Pre-feasibility	Measured	Indicated	Inferred		Reconnaissance			
	STD111	STD121	STD122	STD211	STD221	STD331	STD332	STD333		STD334			
All India : Total	21959552	4448341	10525912	36933805	44924890	13936202	31896176	2559245	3560819	32369262	1612607	130859201	167793006
By Grades													
Red Ochre	16332257	4448341	9775941	30556539	43386327	12810591	28564110	1922633	1316886	25711807	1610486	115322840	145879380
Yellow Ochre	5626356	-	75802	5702158	1404292	912286	1796007	596612	2071612	5528926	2121	12311856	18014014
Not-known	939	-	674169	675108	134271	213324	1536059	40000	172321	1128529	-	3224505	3899613
By States													
Andhra Pradesh	5284990	-	64602	5349592	1404230	430231	1087353	347681	-	3596595	2121	6868210	12217802
Chhattisgarh	-	-	-	-	-	142	-	-	-	-	-	142	142
Gujarat	37862	-	75703	113565	-	32699	4303	-	-	3016066	-	3053068	3166633
Jharkhand	0	-	-	-	62	-	4	-	147	-	-	214	214
Karnataka	0	-	-	-	-	-	1766367	-	-	-	20000	1786367	1786367
Madhya Pradesh	1605342	194757	1895247	3695346	681904	1653225	5402710	356344	2577575	3732142	749250	15153150	18848495
Maharashtra	22260	-	16000	38260	-	-	156740	6010	6010	286000	-	454760	493020
Rajasthan	15009099	4253584	8474360	27737043	42838694	11819905	23478699	1824210	942087	21728459	841236	103473290	131210333
Uttar Pradesh	-	-	-	-	-	-	-	25000	35000	10000	-	70000	70000

Figures rounded off

MINING & PROCESSING

Ochre is worked by shallow open-pit mining. Red and yellow ochres occur separately in different bands, depending upon the hydration either in the same mine or in different mines. The run-of-mine contains gritty matter which is removed by levigation & also by hand sorting wherever possible.

Preparation of pigments from ochre requires an elaborate process. Since it is hard, it has to undergo milling and finally separation of the coarse particles by elutriation. Ochre being friable is crushed and lixiviated just like china clay to obtain extremely fine -textured material of uniform colour.

