

BAUXITE



# Indian Minerals Yearbook 2016

(Part- III : Mineral Reviews)



**55<sup>th</sup> Edition**

**BAUXITE**

**(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](mailto:cme@ibm.gov.in)  
Website: [www.ibm.gov.in](http://www.ibm.gov.in)

**February, 2018**

# 4 Bauxite

**B**auxite is basically an aluminous rock that contains hydrated aluminium oxide as main constituent and iron oxide, silica & titania as minor constituents present in varying proportions. Hydrated aluminium oxides present in the bauxite ore are diaspore and boehmite,  $Al_2O_3 \cdot H_2O$  ( $Al_2O_3$ -85%; Al-45%); gibbsite or hydrargillite,  $Al_2O_3 \cdot 3H_2O$  ( $Al_2O_3$ -65.4%; Al-34.6%), and bauxite (containing colloidal alumina hydrogel),  $Al_2O_3 \cdot 2H_2O$  ( $Al_2O_3$ -73.9%; Al-39.1%). The iron oxide in bauxite ore is present as haematite or goethite; silica as clay; and free quartz & titania as leucoxene or rutile. Bauxite is the principal ore of aluminium which is one of the most important non-ferrous metals used in the modern industry. It is also an essential ore for Refractory and Chemical industries. The country has 3,896 million tonnes of resources of bauxite which is sufficient to meet both domestic and export demands.

## RESERVES/RESOURCES

Reserves/Resources of bauxite in the country as on 1.4.2015, as per NMI database, based on UNFC system have been placed at 3,896 million tonnes. These resources include 656 million tonnes Reserves and 3,240 million tonnes Remaining Resources. By grades, about 77% resources are of Metallurgical grade. The resources of Refractory and Chemical grades are limited and together account for about 4%. By States, Odisha alone accounts for 51% of country's resources of bauxite followed by Andhra Pradesh (16%), Gujarat (9%), Jharkhand (6%), Maharashtra (5%) and Madhya Pradesh & Chhattisgarh (4% each). Major bauxite resources are concentrated in the East Coast bauxite deposits in Odisha and Andhra Pradesh (Table-1).

## EXPLORATION & DEVELOPMENT

Details of exploration carried out for bauxite by GSI and State Directorates of Geology & Mining, Government of Chhattisgarh, Meghalaya and Kerala during 2015-16 are furnished in Table- 2.

## PRODUCTION, STOCKS & PRICES

The production of bauxite at 28,134 thousand tonnes in 2015-16 increased by 25% from that of the previous year.

There were 177 reporting mines in 2015-16 as against 162 in the previous year. Besides, production of bauxite was reported as associate mineral by 5 mines during the year. In all, 73 producers reported production of bauxite in 2015-16. Ten principal producers having 66 mines contributed 79% of the total production. Sixty-one (61) major mines, including two associate mines each producing more than 50 thousand

tonnes per annum, together accounted for 96% of the total production.

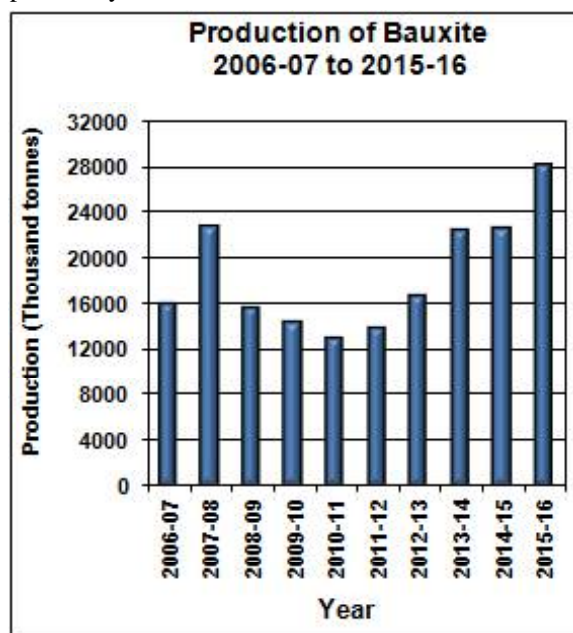
The contribution of the Panchpatmali bauxite mine of NALCO was 23% of the total production. The share of Public Sector mines was about 24% of the total production in 2015-16, as against 28 percent in the previous year.

About 49 % of the total production of bauxite was of 40-45%  $Al_2O_3$  grade, 35% was of Cement grade, 11% was of 45-50%  $Al_2O_3$  grade, 3% was of below 40%  $Al_2O_3$  and the remaining 2% of production was of grades that included 50-55%  $Al_2O_3$ . Abrasive, Refractory and Chemical during the year under review.

Odisha emerged as the leading producing State accounting for about 39% of the total production followed by Gujarat (36%), Jharkhand (8%), Chhattisgarh & Maharashtra (7% each) and Madhya Pradesh (2%). The remaining 1% of production was reported by Goa, Karnataka and Tamil Nadu (Tables - 3 to 6).

Mine-head closing stocks of bauxite in 2015-16 were 13,698 thousand tonnes as compared to 10,768 thousand tonnes in the previous year. About 88% of total stock was held in Gujarat at the end of the year (Tables- 7 'A' & 7 'B').

The average daily employment of labour in bauxite mines was 6,281 in 2015-16 as against 6,668 in the previous year.



BAUXITE

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

(In '000 tonnes)

Grade/State	Reserves				Remaining Resources						Total Resources (A+B)		
	Proved STD111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334	Total (B)
		STD121	STD122			STD221	STD222						
<b>All India : Total By Grades</b>	<b>434043</b>	<b>18599</b>	<b>203780</b>	<b>656422</b>	<b>254378</b>	<b>132633</b>	<b>382369</b>	<b>710878</b>	<b>430890</b>	<b>1209706</b>	<b>119588</b>	<b>3240442</b>	<b>3896864</b>
Chemical	6844	-	52	6896	276	4584	411	3018	182	4922	-	13393	20289
Refractory	58239	-	8919	67158	637	12439	45808	7267	734	10496	489	77870	145027
Chemical/Refractory Mixed with others	3546	139	742	4426	1184	2218	205	2970	216	8484	-	15278	19704
Metallurgical-1	266825	6241	166026	439093	186793	54042	270125	450564	292022	669230	19573	1942349	2381442
Metallurgical-2	44140	501	655	45296	28908	20698	35585	105661	67906	310738	22520	592016	637312
Metallurgical mixed	9897	26	5157	15080	5051	3841	2518	53969	-	28799	17340	111518	126598
Low Grade	19779	11167	9870	40816	11769	4803	19569	23447	54837	119307	48190	281922	322758
Beneficiable	-	-	-	-	-	-	-	55096	-	-	-	55096	55096
Mixed grade Excluding Chem./Refrac.	16993	232	2000	19225	5285	7507	6824	6839	4370	13266	-	44092	63317
Abrasive	651	-	70	721	28	805	123	92	56	961	840	2906	3627
Others	3347	97	8241	11685	3856	143	1097	1949	4848	10997	1545	24435	36120
Unclassified	3545	196	2048	5789	10183	21540	105	-	5720	11039	8954	57540	63329
Not-Known	236	-	-	236	407	12	-	5	-	21465	138	22027	22263
<b>By States</b>													
Andhra Pradesh	-	-	-	-	-	-	-	188971	138120	288176	-	615267	615267
Bihar	-	-	-	-	-	-	-	-	-	4114	-	4114	4114
Chhattisgarh	12537	218	2313	15068	15341	4570	46389	37264	12892	23483	18747	158687	173755
Goa	12357	-	1207	13564	14919	1097	10121	6820	-	8646	-	41603	55168
Gujarat	154911	2094	28229	185234	17324	35470	3925	28953	22107	56857	710	165347	350581
Jammu & Kashmir	-	-	-	-	-	-	-	1323	182	1220	-	2725	2725
Jharkhand	54471	219	8049	62740	9734	6154	15117	17883	17397	54106	55930	176321	239061
Karnataka	126	1123	3140	4389	2468	864	10	82	2220	35603	-	41246	45635
Kerala	-	-	-	-	29	-	24	2037	9284	2722	-	14096	14096
Madhya Pradesh	11979	3313	8299	23591	12566	15084	6013	11061	54484	50590	-	149797	173388
Maharashtra	11281	11221	3686	26188	15449	2064	16809	39197	8367	76501	-	158386	184574
Odisha	176002	441	148856	325269	166547	66189	280396	365938	155253	590780	44202	1669305	1994574
Rajasthan	-	-	-	-	-	-	-	-	-	528	-	528	528
Tamil Nadu	379	-	-	379	-	1141	3564	960	10084	8363	-	24112	24491
Uttar Pradesh	-	-	-	-	-	-	-	10390	500	8018	-	18908	18908

Figures rounded off.

BAUXITE

**Table – 2 : Details of Exploration Activities for Bauxite, 2015-16**

Agency/ State/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage drilled		
<b>Geological Survey of India</b>							
<b>Chhattisgarh</b>							
Balrampur	Dhamchuan	1:12500	2	35	-	7	Reconnaissance stage (G-4) investigation for bauxite was carried out in Dhamchuan block. Aluminous laterite occurs as irregular pockets and lenses. Massive pisolitic bauxite found at an elevation of 940 to 1080 m on the surface. Bauxite up to 200-300 m and 3.5 m thickness was reported in Dhamchuan area. Drilling at 100 x 100 m grid pattern was carried out and geological cross section of 35 boreholes was prepared and six bedrock samples and one PCS sample were collected and submitted for analysis. Resources of bauxite have not been assessed.
<b>Meghalaya</b>							
West Khasi Hills	North West Nongstoin	1:12500	50	-	-	-	Reconnaissance survey stage (G-4) of Nongstoin area investigation for laterite bauxite was carried out. Al <sub>2</sub> O <sub>3</sub> content varied from 15.33% to 51.43% to 30.10% with average value of 36.20%. Ga content varied from 41 to 93 ppm.
<b>DMG, /Chhattisgarh</b>							
Kabirdham	Salgi	1:50000	412	104	1055.80	739	Pitting (08 Nos) - 80.40 m <sup>3</sup> Resources of about 4 lakh tonnes of bauxite have been estimated.
Surguja	Dandkesra	1:50000	100	153	1530	1324	Pitting (07 Nos) - 110 m <sup>3</sup> . Resources of about 1 Million tonnes of bauxite under UNFC 333 code have been estimated.
<b>DMG/Kerala</b>							
Kasaragoda	Narayanman-galam area	-	-	-	05	-	Reserves are yet to be assessed.
<b>GSI /Chhattisgarh</b>							
Kabirdham (Kawardha)	Bamhantara block	-	-	80	-	194	A sponsored project of CMDC Chhattisgarh was taken up for general and detailed exploration (G2/G1) of bauxite in Bamhantara block. The Bamhantara bauxite bearing laterite capping is found on top of the basaltic plateau. The bauxite zone occurs in the form of thin and flat lenticular bodies varying from 1 to 3 m in thickness with average overburden of around 3-5 m. The bauxite is massive, hard compact and pisolitic in nature and shows shades of light grey and pink colour.
<b>Meghalaya</b>							
West Khasi Hill	Rambrai area	-	1.55	15	417.65	-	G3 stage investigation for bauxite was carried out in Rambrai area. The lateritic bauxite observed in the area is buff and brick red in colour. Pisolitic structure is also observed at many places. Thickness of ore bodies in boreholes varies from a minimum of 6.90 m (BR-17) to a maximum of 14.50 m (BR-2), the average thickness being 10.61 m. Analytical result shows the Al <sub>2</sub> O <sub>3</sub> content to vary from 41.34 wt% to 58.99 wt%.

**BAUXITE**

**Table – 3 : Principal Producers of Bauxite, 2015-16**

Name & address of producer	Location of mine	
	State	District
National Aluminium Co. Ltd, NALCO Bhawan, P/1, Nayapali, Bhubaneshwar-751 013, Odisha.	Odisha	Koraput
Utkal Alumina International Ltd, J-6, Jayadev-Vihar, Bhubaneshwar-751 013, Odisha.	Odisha	Rayagada
Hindalco Industries Ltd, Century Bhawan, 3rd Floor, Dr. Annie Beasant Road, Worli, Mumbai-400 030, Maharashtra.	Chhattisgarh Jharkhand	Surguja Gumla Latehar Lohardaga Kolhapur
Bombay Minerals Ltd, Jamnagar-Dwarka Highway, Jam-Khambalia-361 305, Distt. Devbhoomi Dwarka, Gujarat.	Gujarat	Devbhoomi Dwarka
Minerals & Minerals Corpn, 8/9, Ankur Apartment, Near Motor Park Colony, Jamnagar - 361 001 Gujarat.	Gujarat	Devbhoomi Dwarka

(Contd.)

Table- 3 (Concl.)

Name & address of producer	Location of mine	
	State	District
Bharat Aluminium Co. Ltd, Aluminium Sadan, Core-6, SCOPE Office Complex, 7 Lodhi Road, New Delhi- 110 003.	Chhattisgarh	Kabirdham Surguja
Prabhudas Vithaldas, Mayur Pankh Society, Opp. Circuit Villa, Chopati Road, Porbandar-360 575, Gujarat.	Gujarat	Devbhoomi Dwarka
Arun Kumar Gordhan, Das Malkan, Porgate Nagar Street, Jam-Khambalia-361 305, Distt.Devbhoomi Dwarka, Gujarat.	Gujarat	Devbhoomi Dwarka
Orient Abrasive Ltd, GIDC Industrial Area, Porbandar-360 577, Gujarat.	Gujarat	Devbhoomi Dwarka Kachchh
Carborundum Universal Ltd, Parry House, 43, Moore Street, Chennai- 600 001 Tamil Nadu.	Gujarat	Devbhoomi Dwarka

**Table – 4 : Production of Bauxite, 2013-14 to 2015-16  
(By States)**

(Qty in tonnes; Value in `'000)

States	2013-14		2014-15		2015-16 (P)	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>India</b>	<b>22319148</b>	<b>9996894</b>	<b>22493671</b>	<b>11922367</b>	<b>28133516</b>	<b>14095083</b>
Chhattisgarh	1314129	859657	1560784	1164426	1991454	1141984
Goa	220400	53420	268500	44235	310764	77663
Gujarat	7309743	2726039	5825628	2381970	10253591	4167265
Jharkhand	2282428	1302079	2040519	1330002	2111226	1096695
Karnataka	74500	24064	127500	31875	12050	4074
Madhya Pradesh	775508	458732	831899	526735	680705	476054
Maharashtra	2606349	945574	2669408	1274425	1907543	970889
Odisha	7635196	3578360	9091061	5124105	10839038	6145582
Tamil Nadu	100895	48969	78372	44594	27145	14877

BAUXITE

**Table – 5 (A) : Gradewise Production of Bauxite, 2014-15**  
(By Sectors/States/Districts)

(Qty in tonnes; Value in `000)

State/District	No. of Mines	For use in Alumina & Aluminium extraction : Al <sub>2</sub> O <sub>3</sub> content					For use in other than Alumina & Aluminium extraction					Total	
		55-60%	50-55%	45-50%	40-45%	Below 40%	Cement	Abrasive	Refractory	Chemical	Quantity	Value	
<b>India</b>	<b>162(8)</b>	<b>56311</b>	<b>7542882</b>	<b>7225317</b>	<b>1272963</b>	<b>5856382</b>	<b>145135</b>	<b>216176</b>	<b>178505</b>	<b>22493671</b>	<b>11922367</b>		
Public Sector	20	-	5866252	344496	-	5717	-	5136	134318	6355919	3531272		
Private Sector	142(8)	56311	1676630	6880821	1272963	5850665	145135	211040	44187	16137752	8391095		
<b>Chhattisgarh</b>	<b>13</b>	-	<b>932873</b>	<b>627911</b>	-	-	-	-	-	<b>1560784</b>	<b>1164426</b>		
Kabirdham	3	-	886645	15834	-	-	-	-	-	902479	667291		
Surguja	10	-	46228	612077	-	-	-	-	-	658305	497135		
<b>Goa</b>	<b>1</b>	-	-	<b>105000</b>	-	<b>163500</b>	-	-	-	<b>268500</b>	<b>44235</b>		
South Goa	1	-	-	105000	-	163500	-	-	-	268500	44235		
<b>Gujarat</b>	<b>79</b>	<b>26248</b>	<b>127132</b>	<b>363080</b>	-	<b>4837670</b>	<b>145135</b>	<b>176295</b>	<b>150068</b>	<b>5825628</b>	<b>2381970</b>		
Amreli	1	-	-	-	-	1650	-	-	-	1650	743		
Devbhoomi Dwarka	64	26248	-	362092	-	4652528	145135	171159	15750	5372912	2062567		
Kachchh	8	-	127132	988	-	5717	-	5136	134318	273291	193253		
Porbandar	4	-	-	-	-	103000	-	-	-	103000	88685		
Sabarkantha	2	-	-	-	-	74775	-	-	-	74775	36722		
<b>Jharkhand</b>	<b>23</b>	-	<b>28182</b>	<b>1220239</b>	<b>769117</b>	-	-	<b>22981</b>	-	<b>2040519</b>	<b>1330002</b>		
Gumla	12	-	28182	1109386	-	-	-	22981	-	1160549	752577		
Latehar	1	-	-	75631	-	-	-	-	-	75631	38496		
Lohardaga	10	-	-	35222	769117	-	-	-	-	804339	538929		
<b>Karnataka</b>	<b>2</b>	-	-	-	-	<b>127500</b>	-	-	-	<b>127500</b>	<b>31875</b>		
Belagavi	1	-	-	-	-	127500	-	-	-	127500	31875		
Dakshina Kannada*	1	-	-	-	-	-	-	-	-	-	-		
<b>Madhya Pradesh</b>	<b>23(8)</b>	-	<b>70386</b>	<b>421360</b>	<b>142122</b>	<b>152694</b>	-	<b>16900</b>	<b>28437</b>	<b>831899</b>	<b>526735</b>		
Anuppur	1	-	-	49925	-	-	-	-	-	49925	40190		
Jabalpur	1(1)	-	-	-	-	18000	-	1100	-	19100	10650		
Katni	7(4)	-	70386	142375	106750	133640	-	-	-	453151	264725		
Rewa	6	-	-	54135	112	285	-	-	-	54532	43472		
Satna	4(3)	-	-	-	35260	769	-	-	28437	64466	29844		
Shahdol	2	-	-	174925	-	-	-	-	-	174925	106245		
Sidhi	3	-	-	-	-	-	-	15800	-	15800	31609		
<b>Maharashtra</b>	<b>14</b>	<b>30063</b>	<b>645189</b>	<b>1318011</b>	<b>179499</b>	<b>496646</b>	-	-	-	<b>2669408</b>	<b>1274425</b>		
Kolhapur	7	30063	645189	682947	-	481428	-	-	-	1839627	810161		
Raigarh	4	-	-	45000	83582	15218	-	-	-	143800	40264		
Ranagiri	3	-	-	590064	95917	-	-	-	-	685981	424000		
<b>Odisha</b>	<b>4</b>	-	<b>5739120</b>	<b>3169716</b>	<b>182225</b>	-	-	-	-	<b>9091061</b>	<b>5124105</b>		
Koraput	2	-	5739120	-	-	-	-	-	-	5739120	3156516		
Rayagada	1	-	-	-	182225	-	-	-	-	3351941	1967589		
Sundargarh *	1	-	-	-	-	-	-	-	-	-	-		
<b>Tamil Nadu</b>	<b>3</b>	-	-	-	-	<b>78372</b>	-	-	-	<b>78372</b>	<b>44594</b>		
Namakkal *	2	-	-	-	-	-	-	-	-	-	-		
Salem	1	-	-	-	-	78372	-	-	-	78372	44594		

Figures in parentheses indicate number of associated mines.

\*: Only labour reported

BAUXITE

**Table – 5 (B) : Gradewise Production of Bauxite, 2015-16 (P)**  
(By Sectors/States/Districts)

(Qty in tonnes; Value in `000)

State/District	For use in Alumina & Aluminium extraction : Al <sub>2</sub> O <sub>3</sub> content					For use other than Alumina & Aluminium extraction					Total
	No. of Mines	50-55%	45-50%	40-45%	Below 40%	Cement	Abrasive	Refractory	Chemical	Quantity	
<b>India</b>	<b>177(5)</b>	<b>16150</b>	<b>3203711</b>	<b>13655699</b>	<b>879621</b>	<b>9819000</b>	<b>248487</b>	<b>259005</b>	<b>51843</b>	<b>28133516</b>	<b>14095083</b>
Public Sector	10	-	1675019	4925146	-	-	-	-	17774	6617939	3660632
Private Sector	167(5)	16150	1528692	8730553	879621	9819000	248487	259005	34069	21515577	10434451
<b>Chhattisgarh</b>	<b>10</b>	-	<b>1082672</b>	<b>908782</b>	-	-	-	-	-	<b>1991454</b>	<b>1141984</b>
Kabirdham	2	-	103300	51257	-	-	-	-	-	1084557	699278
Surguja	8	-	49372	857525	-	-	-	-	-	906897	442706
<b>Goa</b>	<b>1</b>	-	-	<b>310564</b>	-	<b>200</b>	-	-	-	<b>310764</b>	<b>77663</b>
South Goa	1	-	-	3150564	-	200	-	-	-	310764	77663
<b>Gujarat</b>	<b>104</b>	<b>16150</b>	-	<b>620206</b>	<b>20</b>	<b>9110849</b>	<b>248487</b>	<b>213781</b>	<b>44098</b>	<b>10253591</b>	<b>4167265</b>
Amreli	1	-	-	-	-	4757	-	-	-	4757	3592
Devbhoomi Dwarka	89	16150	-	620206	20	8719904	248487	213781	26324	9844872	3955964
Kheda	7	-	-	-	-	20793	-	-	-	20793	8497
Kachchh	2	-	-	-	-	105050	-	-	17774	122824	21031
Porbandar	4	-	-	-	-	227680	-	-	-	227680	169923
Sabarkantha	1	-	-	-	-	32665	-	-	-	32665	8258
<b>Jharkhand</b>	<b>19</b>	-	<b>17675</b>	<b>1414038</b>	<b>654023</b>	-	-	-	-	<b>2111226</b>	<b>1096695</b>
Gumla	12	-	17675	1319748	-	-	-	-	-	1362913	653429
Latehar	1	-	-	94290	-	-	-	-	-	94290	51733
Lohardaga	6	-	-	-	654023	-	-	-	-	654023	391533
<b>Karnataka</b>	<b>1</b>	-	-	-	-	<b>12050</b>	-	-	-	<b>12050</b>	<b>4074</b>
Belagavi	1	-	-	-	-	12050	-	-	-	12050	4074
<b>Madhya Pradesh</b>	<b>22(5)</b>	-	<b>11254</b>	<b>239165</b>	<b>143402</b>	<b>259405</b>	-	<b>19734</b>	<b>7745</b>	<b>680705</b>	<b>476054</b>
Anuppur	1	-	-	46150	-	-	-	-	-	46150	37774
Jabalpur	1(1)	-	-	-	-	23400	-	2700	-	26100	19740
Katni	7(3)	-	11254	12783	132550	218775	-	3984	-	379346	243323
Rewa	4	-	-	5367	63	-	-	-	-	5430	4058
Sata	4(1)	-	-	-	10789	17230	-	-	7745	35764	21469
Shahdol	2	-	-	174865	-	-	-	-	-	174865	119331
Sidhi	3	-	-	-	-	-	-	13050	-	13050	30359
<b>Maharashtra</b>	<b>13</b>	-	<b>417091</b>	<b>1029564</b>	<b>51537</b>	<b>409351</b>	-	-	-	<b>1907543</b>	<b>970889</b>
Kolhapur	7	-	417091	474010	20600	147485	-	-	-	1059186	561912
Raigarh	3	-	-	-	-	227000	-	-	-	227000	63560
Ratnagiri	3	-	-	555554	30937	34866	-	-	-	621357	345417
<b>Odisha</b>	<b>4</b>	-	<b>1675019</b>	<b>9133380</b>	<b>30639</b>	-	-	-	-	<b>10839038</b>	<b>6145582</b>
Koraput	2	-	1675019	4665123	-	-	-	-	-	6340142	3505865
Rayagada	1	-	-	4468257	30639	-	-	-	-	4498896	2639717
Sundargarh*	1	-	-	-	-	-	-	-	-	-	-
<b>Tamil Nadu</b>	<b>3</b>	-	-	-	-	<b>27145</b>	-	-	-	<b>27145</b>	<b>14877</b>
Namakkal *	2	-	-	-	-	-	-	-	-	-	-
Salem	1	-	-	-	-	27145	-	-	-	27145	14877

Figures in parentheses indicate number of associated mines. \* Only labour reported.

BAUXITE

**Table – 6 : Production of Bauxite, 2014-15 and 2015-16  
(By Frequency Groups)**

(Qty in tonnes)

Production group	No. of mines		Production for the group		Percentage to total production		Cumulative percentage	
	2014-15	2015-16 (P)	2014-15	2015-16 (P)	2014-15	2015-16 (P)	2014-15	2015-16 (P)
<b>Total</b>	<b>162(8)</b>	<b>177(5)</b>	<b>22493671</b>	<b>28133516</b>	<b>100.00</b>	<b>100.00</b>	-	-
Up to 1000	36(2)	55	2827	2595	0.01	0.01	0.01	0.01
1001 - 3000	9	5	20010	10467	0.09	0.04	0.10	0.05
3001 - 5000	7(1)	7	35754	28188	0.16	0.10	0.26	0.15
5001 - 10000	10	16(1)	73580	126542	0.33	0.45	0.59	0.60
10001 - 25000	27(3)	20(2)	505918	341986	2.25	1.22	2.84	1.82
25001 - 50000	17	15	633841	614903	2.82	2.18	5.66	4.00
50001 and above	56(2)	59(2)	21221741	27008835	94.34	96.00	100.00	100.00

*Figures in parentheses indicate number of associated mines.*

**Table – 7 (A) : Mine-head Closing Stocks of Bauxite, 2014-15  
(By States & Grades)**

(Qty in tonnes)

State	For use in Alumina & Aluminium metal Extraction Al <sub>2</sub> O <sub>3</sub> Content						For use other than Alumina & Aluminium metal extraction				
	60% & above	55-60%	50-55%	45-50%	40-45%	Below 40%	Cement	Abrasive	Refractory	Chemical	Total
<b>India</b>	-	<b>20</b>	<b>8467</b>	<b>655483</b>	<b>1482657</b>	<b>451086</b>	<b>7891753</b>	<b>100706</b>	<b>95877</b>	<b>81668</b>	<b>10767717</b>
Chhattisgarh	-	-	-	7275	6193	337	-	95	-	-	13900
Goa	-	-	-	-	50000	-	18165	-	-	-	68165
Gujarat	-	20	5521	521931	920659	-	7591160	97291	89374	51308	9277264
Jharkhand	-	-	-	807	20727	61824	-	-	134	-	83492
Karnataka	-	-	-	-	19296	-	17137	-	-	-	36433
Madhya Pradesh	-	-	-	16500	329318	98693	89238	-	6369	30360	570478
Maharashtra	-	-	2946	95781	114549	246787	166048	-	-	-	626111
Odisha	-	-	-	13189	21915	27010	-	-	-	-	62114
Tamil Nadu	-	-	-	-	-	16435	10005	3320	-	-	29760



BAUXITE

**Table – 7 (B) : Mine-head Closing Stocks of Bauxite at the end of the Year 2015-16(P)  
(By States & Grades)**

(In tonnes)

State	for use in alumina & aluminium metal extraction Al <sub>2</sub> O <sub>3</sub> Content					For use other than alumina & aluminium metal extraction					
	60% & above	50-55%	45-50%	40-45%	Below 40%	Cement	Abrasive	Refractory	Chemical	Total	
<b>India</b>	-	-	<b>4480</b>	<b>507014</b>	<b>1295484</b>	<b>670829</b>	<b>10617410</b>	<b>375526</b>	<b>156189</b>	<b>71214</b>	<b>13698154</b>
Chhattisgarh	-	-	-	6232	561	-	-	97	-	-	6888
Goa	-	-	-	-	150834	-	18170	-	-	-	169004
Gujarat	-	-	1534	362231	856976	300	10286255	372109	142510	48513	12070428
Jharkhand	-	-	-	486	40251	100178	-	-	426	-	141341
Karnataka	-	-	-	-	19296	-	8614	-	-	-	27910
Madhya Pradesh	-	-	-	10730	58705	389165	131936	-	13253	22701	626490
Maharashtra	-	-	2946	114146	146957	153541	162430	-	-	-	580020
Odisha	-	-	-	13189	21904	11210	-	-	-	-	46313
Tamil Nadu	-	-	-	-	-	16435	10005	3320	-	-	29760

## MINING & TRANSPORT

The mining of bauxite is carried out by opencast method. The mines are classified in the following three categories depending upon the level of mechanisation:

- (i) Manually operated mines
- (ii) Semi-mechanised mines
- (iii) Mechanised mines

### Manually Operated Mines

Many bauxite mines are small and produce less than 25,000 tpy. The entire work of overburden removal, extraction of bauxite and loading of bauxite on to trucks is carried out manually and the bauxite is transported to respective railway siding or plants by road.

### Semi-mechanised Mines

In semi-mechanised mines, mining operations are carried out by jack hammer drilling and normally ANFO mixture is used as an explosive for blasting in mineralised zone as well as in overburden, if required. Loading of mineral on to trucks or dumpers is done by payloaders or manually. Since bauxite occurs as small lenses or pockets or boulders or as segregations in murrum and laterite, it is difficult to mechanise the mining operations.

### Mechanised Mines

Mechanised mining operations are carried out in a few captive mines of the alumina/aluminium

plants. These mines use compressed-air drills for drilling blastholes. Sometimes, compressed-air jack hammer drills are also used for drilling blastholes for secondary blasting of boulders and also for toe drilling in irregular bauxite faces caused due to improper fragmentation of bauxite. The blasted overburden/ore materials are handled and transported separately by using shovels or excavators and trucks/dumpers. Separate benches are maintained for overburden and ores. The height of benches in ore varies from 1.5 to 7.5 m. Hindalco has done away with drilling and blasting at its Durgmanwadi mines in Maharashtra and instead has adopted the state-of-the-art ripper dozer which is regarded as "Miner's Plough". The ripper dozer silently ploughs the mine surface to extract the mineral. It eliminates ground vibrations and air pollution normally caused by dust, gases and noise.

In Bagru Hill mines of Hindalco in Jharkhand, the blasted bauxite is transported with the help of dumpers to the crusher. The 4-inch crushed bauxite is then transported to Lohardaga railway station by a monocable aerial ropeway. BALCO also has monocable ropeway for transporting bauxite from its captive mines to the alumina plant at Korba in Chhattisgarh.

Computerised mine planning, use of mobile crusher, simultaneous land reclamation, restricting operations to small portions of mining area at a time, etc. have greatly helped in conserving energy and faster land rehabilitation.

## BAUXITE

In Odisha, NALCO has adopted the mechanised 'Trench method' of opencast mining at Panchpatmali mine. In this method, a pilot trench is driven through the middle of the deposit and several other trenches are opened on both the sides in a staggered pattern exposing and creating more number of working faces. Transportation of ore to alumina refinery at Damanjodi has been done through a 14.6 km long single-flight, multi curve cable belt conveyor of 1800 TPH capacity. The mining operations involve dozing aside the top fertile soil which usually is preserved and hard laterite of 3 m thickness is drilled and blasted. The overburden is removed using higher capacity mobile equipment like dumpers and wheel loaders to expose the bauxite bed. The top slice of bauxite having 8–10 m thickness is loosened by drilling and blasting and the bauxite of 3-4 m thickness at the bottom contact is removed selectively using backhoe shovels.

The mine has achieved overall capacity of 6.3 million tonnes per year bauxite after expansion. Accordingly, higher capacity mobile equipment like dumpers, wheel loaders, ripper dozers and faster drills have been introduced. NALCO has plans in place to further increase bauxite mining capacity to 6.825 million tonnes per year.

## CONSUMPTION

In 2015-16, consumption of bauxite was estimated at 14.03 million tonnes as compared to 13.57 million tonnes in the previous year. Alumina/ Aluminium Industry was the principal consumer of bauxite and accounted for 85.31% consumption in 2015-16 followed by Cement (9.14%) and Refractory (2.10%) (Table-8).

Gujarat was the main supplier of abrasive and refractory grade bauxite. Besides, Madhya Pradesh also produces refractory grade bauxite. Alumina plants draw supplies mostly from their captive mines. Hindalco sources bauxite from other suppliers too (Table- 9).

## USES & SPECIFICATIONS

Bauxite is primarily used to produce alumina through the Bayer process. Aluminium industry normally uses bauxite containing minimum 40% Al<sub>2</sub>O<sub>3</sub>. However, slightly inferior grades with a suitable blend are also used, depending upon other characteristics, such as, solubility in caustic soda and absence of silica. The IS : 5953-1985 (Reaffirmed 2008 & 2014) specifications for metallurgical grade bauxite are listed in Table-10. Details of the industries are provided in a separate Review named 'Aluminium and Alumina'.

**Table – 8 : Consumption\* of Bauxite#  
2013-14 to 2015-16  
(By Industries)**

(In tonnes)			
Industry	2013-14	2014-15 (R)	2015-16 (P)
<b>All Industries</b>	<b>14077200</b>	<b>13572400</b>	<b>14027900</b>
Abrasives	3400	71800	92700
Alumina <sup>1/</sup>	13216900	12017500	11967200
Calcination	-	140500	375500
Cement	561100	1039400	1282000
Ceramic	1200	1200	800
Chemical	5900	6300	6200
Ferro-alloys	7100	8000	7200
Iron & steel	1200	1200	1200
Refractory <sup>2/</sup>	280400	286500	295100

Figures rounded off.

\* Includes actual reported consumption and/or estimates made wherever required and paucity of data, hence coverage may not be complete.

#Excludes industrial end-use consumption of laterite which was 43,34,400 tonnes, 57,43,600 tonnes and 59,41,400 tonnes during 2013-14, 2014-15 and 2015-16, respectively.

<sup>1/</sup> Includes about 3,654 thousand tonnes, 9,692 thousand tonnes and 11,406 thousand tonnes bauxite equivalent of alumina estimated to have been consumed in the production of aluminium metal in 2013-14, 2014-15 and 2015-16, respectively.

<sup>2/</sup> Includes consumption of calcined bauxite.

**Table – 9 : Domestic Sources of Supplies of  
Bauxite to Alumina Plants**

Producer	Plant	Source of supply
NALCO	Damanjodi, Koraput (Odisha)	Captive mines at Panchpatmali Hills, Koraput distt. Odisha.
BALCO	Korba (Chhattisgarh)	Captive mines in Surguja & Bodai-Daldali in Kabirdham (Kawardha) distt. Chhattisgarh.
Hindalco Industries	Renukoot (Uttar Pradesh)	Captive mines in Shahdol distt. Madhya Pradesh; Gumla & Lohardaga distts. Jharkhand and Surguja distt. in Chhattisgarh. Also other suppliers include suppliers from Odisha, Madhya Pradesh and Jharkhand; Katni Bauxite Pvt. Ltd, Satna, Laxmidasji Ramji, Katni; and Minerals & Minerals Corp., Gujarat.
	Belagavi (Karnataka), Muri, Ranchi (Jharkhand)	Captive mines in Chandgad & Durgmanwadi, Kolhapur distt. Maharashtra and Lohardaga distt. Jharkhand. Udgeri, Gudeghar, Kolhapur distt. Bhoomi Resources Pvt Ltd Maharashtra.
Utkal Alumina	Odisha	Baphimali bauxite mine (Odisha)
Vedanta Aluminium	Lanjigarh (Odisha)	GMDC, Gujarat, Ashapura Minechem, Maharashtra, BALCO, Bagmar Resources Pvt Ltd, Chhattisgarh; LDR, M.P.

## BAUXITE

**Table – 10 : Specifications for Metallurgical Grade Bauxite (IS : 5953-1985; Reaffirmed 2008 & 2014)**

(In % by weight)

Constituent	Gr. I (essentially gibbsite or trihydrate)	Gr. II * (mixture of gibbsite, boehmite and diaspor or trihydrate & monohydrate)
Total Al <sub>2</sub> O <sub>3</sub> (min.)	40.00	47.00
Total available alumina (min.)	36.00	43.00
Total SiO <sub>2</sub> (max.)	4.00	4.00
Module Al <sub>2</sub> O <sub>3</sub> /SiO <sub>2</sub> (min.)	12.00	12.00
Fe <sub>2</sub> O <sub>3</sub> /TiO <sub>2</sub> (max.)	30.00	30.00
P <sub>2</sub> O <sub>5</sub> (max.)	0.20	0.20
V <sub>2</sub> O <sub>5</sub> (max.)	0.20	0.20
Loss on ignition at 1100 °C	20.00	20.00

\* Normally, 1 to 20% diaspor and 5 to 7% boehmite.

In Steel Industry, bauxite is used as a slag corrector in place of fluorite and generally bauxite, containing 45 to 54% Al<sub>2</sub>O<sub>3</sub> and 5% SiO<sub>2</sub> (max.) is consumed. Size preference is 25 to 125 mm with a tolerance of 5% (max.) for -25 mm & +100mm fractions.

BIS has prescribed the following specifications of bauxite for Refractory Industry (Table-11):

**Table – 11 : IS Specifications of Bauxite for Refractory Industry (IS : 10817-1984; Reaffirmed 2008 & 2014)**

Constituent	Percent
Al <sub>2</sub> O <sub>3</sub>	58 min.
Fe <sub>2</sub> O <sub>3</sub>	3 max.
TiO <sub>2</sub>	3 max.
CaO	0.5 to 0.6
LOI	27 to 30

The refractory manufacturers use bauxite of the following specifications:

### Specifications of Bauxite used by Refractory Industry

Constituent	Percent
Al <sub>2</sub> O <sub>3</sub>	55-60
Fe <sub>2</sub> O <sub>3</sub>	4-6
TiO <sub>2</sub>	5-8
SiO <sub>2</sub>	2
Others	25-40
PCE	33-36 (Ortan)

The IS specifications of bauxite for consumption in Chemical and Petroleum industries are given in Table-12.

**Table – 12 : IS Specifications of Bauxite for Chemical and Petroleum Industries (IS : 3605-1984; Reaffirmed 2010)**

Constituent	Requirement
Alumina (as Al <sub>2</sub> O <sub>3</sub> ), % by mass (min.)	58.0
Silica (as SiO <sub>2</sub> ), % by mass (max.)	3.0
Iron oxide (as Fe <sub>2</sub> O <sub>3</sub> ), % by mass (max.)	2.0
Titania (as TiO <sub>2</sub> ), % by mass (max.)	4.0
Phosphorus pentoxide (as P <sub>2</sub> O <sub>5</sub> ), % by mass (max.)	0.3
Manganese dioxide (as MnO <sub>2</sub> ), % by mass (max.)	0.1
Calcium and magnesium (as CaO), % by mass (max.)	2.0
Loss on ignition, % by mass (max.)	32.0

Apart from the chemical specifications, the physical requirements are that the material passing through 90-micron IS sieve but retained on 212-micron IS sieve should be 90% maximum; that passing through 300-micron IS sieve shall be 1% by mass maximum; and that passing through 212- micron IS sieve but retained on 300-micron IS sieve should be 10% maximum.

The other specifications laid down by BIS are IS:8228-1976 (Reaffirmed 2008) for bauxite sand and IS:8988-1978 (Reaffirmed 2008) for bauxite powder for foundry washes.

## SUBSTITUTION

There is no substitute for bauxite as source for aluminium metal extraction carried out on a large scale. However, calcined clay can be substituted for refractory bauxite but only with reduction in time and stock resistance. Sillimanite, alumina, silicon carbide, magnesite-chromite and carbon-magnesite refractories are the other alternatives for high-alumina material but these would entail higher cost. Silicon carbide and diamonds can substitute for fused aluminium oxide in abrasive use but these would entail again at higher cost. Synthetic mullite is a probable substitute for bauxite-based refractories. Silicon carbide and alumina-zirconia are costlier substitutes for bauxite-based abrasives. The raw material like alunite, anorthosite, coal wastes and oil shales are other potential sources of alumina. The extraction, however, would require new plants with different technology. These non-bauxitic materials could satisfy the demand for primary metal, refractories, aluminium chemicals and abrasives.

## TRADE POLICY

As per the Foreign Trade Policy 2015-2020 and policy on export and import, imports of aluminium ores and concentrates including natural bauxite, calcined and activated bauxite and others are permitted free. There are no policy restrictions on the export of bauxite.

## WORLD REVIEW

The world bauxite reserves are estimated at 28 billion tonnes and are located mainly in Guinea (26%), Australia (22%), Brazil (9%), Vietnam (8%), Jamaica (7%), Indonesia (4%), Guyana (3%) and China (4%). Countrywise reserves of bauxite are furnished in Table- 13.

The world production of bauxite was estimated at 294 million tonnes in 2015. Australia continued to be the major producer and accounted for about 28% share in total production, followed by China (22%), Brazil (13%), India (10%) and Guinea (6%) (Table-14).

**Table – 13 : World Reserves of Bauxite  
(By Principal Countries)**

(In '000 tonnes)	
Country	Reserves
<b>World: Total (rounded off)</b>	<b>28000000</b>
Australia	6200000
Brazil	2600000
China	980000
Greece	130000
Guinea	7400000
Guyana	850000
India*	590000
Indonesia	1000000
Jamaica	2000000
Kazakhstan	160000
Malaysia	110000
Russia	200000
Saudi Arabia	210000
Suriname	580000
USA	20000
Vietnam	2100000
Other countries	2700000

*Source: Mineral Commodity Summaries, 2017.*

\* India's total resources of bauxite as per UNFC system are placed at 3.89 billion tonnes as on 1.4.2015.

## Australia

Bauxite production at 2.28 million tonnes increased by about 3% and alumina production decreased slightly to 3,78,000 tpy from that in 2014. Rio Tinto expanded bauxite capacity of the Gove mine in the Northern Territory to 8 million tpy from 6 million tpy, and production increased by 15% to 9,69,000 tpy as compared to the production in 2014. Bauxite production from the Weipa mine increased by 5% to 1.4 million tonnes from that in 2014. Australian Bauxite Ltd completed construction of the Bald Hill mine in Tasmania and started bauxite production in December. The mine is expected to ramp up to 1.5 million tpy by mid-2017. Rio Tinto has plans to construct a 22.8 million tonnes bauxite mine in Queensland. Bauxite produced at the Amrun mine would be shipped through the port of Cape York. The project is scheduled for completion in 2019.

## China

Bauxite production was estimated to be 65 million tpy, 10% more than the revised amount in 2014. Bauxite imports were 55.9 million tpy, 54% more than the 36.3 million tpy imported in 2014. The leading sources of bauxite imports, in descending order, were Malaysia (43%), Australia (35%) and India (14%). Results of exploration projects completed in 2014 were announced, including the discovery of 210 million tonnes of bauxite reserves. Two of the deposits discovered were in Guizhou Province. The Hongguangbe deposit contained 21 million tonnes, and the Dazhuyuan deposit contained 33 million tonnes.

## Guizhou Province

Chinalco, Aluminium Corp. of China, which completed the 1.2 million tpy Maochang mine in 2015 year end had plans to commence production in early 2016 to supply feed to Qingzhen refinery. China Power investment Corp. continued construction of an 8,00,000 tpy alumina refinery in Wuchuan County. The refinery would be supplied with bauxite from the 1 million tpy Dazhuyuan mine and the 1 million tpy Wachangping mine, which were completed during the year.

## Guinea

United Company RUSAL Plc continued construction of the Dian-Dian mine, which would have a capacity of 3 million tpy. The bauxite mine was scheduled for completion in 2016 for bauxite to be shipped by rail to a port for export. Hongqiao Group Ltd completed its 5 million tpy bauxite mine in the Boke region and began shipments to its refinery in China in September.

## BAUXITE

### Indonesia

Bauxite production in Indonesia fell to 4,72,000 tonnes in 2015 as compared to 2.56 million tonnes in 2014 and 57 million tonnes in 2013, as mines that had exported bauxite closed after a ban on exporting bauxite and other unprocessed mineral ores took effect on January 12, 2014. The export ban was part of the 2009 mining law and was intended to increase economic development in the country through investment in mineral processing facilities. Tayan refinery of PT Indonesia Chemical Alumina is on trial runs of 3 lakh tpa and it will draw bauxite from nearby deposits from West Kalimantan.

### Malaysia

Bauxite production in Malaysia increased to 35 million tonnes in 2015 from 3.67 million tonnes in 2014 as mines increased production to supply bauxite feeds to alumina refineries in China. The surge in demand from China was due to the export ban on unprocessed mineral ores, including bauxite that got implemented in Indonesia in 2014.

### Russia

Production started at the Cheryomukhovskaya-Glubokaya section of the North Urals mine. Further expansion that was scheduled for completion in 2016, and a third expansion proposed for completion in 2017, would increase the capacity of the mine to 4.6 million tonnes per year from the current 3.4 million tonnes per year.

## FOREIGN TRADE

### Exports

Exports of bauxite increased drastically to 8,914 thousand tonnes in 2015-16 from 6,808 thousand tonnes in 2014-15. Exports were mainly to China (96%), UAE (2%) and Kuwait (1%) (Tables-15 to 17).

### Imports

In 2015-16, imports of bauxite decreased to 1,116 thousand tonnes from 1,800 thousand tonnes in the previous year. Imports were mostly from Guinea (55%), Brazil (24%), Pakistan (11%) and China (6%) (Tables - 18 to 20).

**Table – 14 : World Production of Bauxite  
2013 to 2015  
(By Principal Countries)**

Country	2013	2014	2015
(In '000 tonnes)			
<b>World: Total</b>	<b>299295</b>	<b>260051</b>	<b>294076</b>
Australia	81119	78632	80910
Brazil	33904	36313	37064
China	50339	59212	65000 <sup>e</sup>
Greece	1844	1876	1821
Guinea	18763	19182	18114
Guyana	1713	1564	1527
India*	22319	22494	28134
Indonesia <sup>e</sup>	57024	2556	472
Jamaica	9435	9677	9629
Kazakhstan	5193	4516	4683
Malaysia	209	3500 <sup>e</sup>	27700 <sup>e</sup>
Russia	5322	5589	5398
SaudiArabia	1044	2076	2174
Suriname	2671	2708	1865
Venezuela	2346	2316	992
Other countries	6050	7840	8593

*Source: World Mineral Production, 2011-2015.*

\* India's production of bauxite during 2013-14, 2014-15 and 2015-16 was 22,319 thousand tonnes, 22,494 thousand tonnes and 28,134 thousand tonnes, respectively.

BAUXITE

**Table – 15 : Exports of Bauxite  
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
<b>All Countries</b>	<b>6808588</b>	<b>14050662</b>	<b>8914624</b>	<b>19527405</b>
China	6239885	12547289	8528536	18613085
UAE	57200	52292	165000	284505
Kuwait	120200	231441	104422	200228
Sri Lanka	10	222	30275	76616
Slovenia	16499	220712	5759	74965
Qatar	253304	444579	30020	57368
Nepal	17177	34703	25526	52759
Estonia	-	-	16400	36759
UK	2235	43992	1326	28071
Saudi Arabia	3166	32183	2061	19756
Other countries	98912	443249	5299	83293

**Table – 17 : Exports of Bauxite :  
Aluminium Ores & Concentrates  
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
<b>All Countries</b>	<b>6752618</b>	<b>13934869</b>	<b>8756130</b>	<b>19136973</b>
China	6239885	12547289	8401487	18287785
UAE	57200	52292	165000	284505
Kuwait	120200	231441	104400	199905
Srilanka	10	222	30275	76616
Slovenia	16499	220712	5759	74965
Nepal	16282	32773	24419	51053
Estonia	-	-	16400	36759
UK	2235	43992	1326	28071
Saudi Arabia	3100	30644	2000	18158
Japan	1004	25688	500	13093
Other countries	296203	749816	4564	66063

**Table – 16 : Exports of Bauxite : Other  
Aluminium Ores & Concentrates  
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
<b>All Countries</b>	<b>55970</b>	<b>115793</b>	<b>158494</b>	<b>390432</b>
China	-	-	127049	325300
Qatar	54253	97538	30020	57368
Thailand	275	5573	150	3177
Nepal	895	1930	1107	1706
Saudi Arabia	66	1539	61	1598
Bangladesh	108	919	54	455
Kuwait	-	-	22	323
Ethiopia	-	-	22	283
Vietnam	-	-	9	221
USA	373	8294	-	-
Other countries	-	-	++	1

**Table – 18 : Imports of Bauxite  
(By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
<b>All Countries</b>	<b>1800689</b>	<b>8560886</b>	<b>1116010</b>	<b>5982901</b>
Guinea	1394291	5579257	613570	2431430
China	67151	1540078	68814	1408488
Brazil	99321	466413	263534	1178393
Pakistan	72912	400092	124187	808714
Malaysia	37282	114235	45594	142614
Netherlands	225	9911	310	13121
Madagascar	-	-	1	79
USA	5	324	++	48
Denmark	-	-	++	7
Singapore	-	-	+	7
Other countries	129502	450576	-	-

BAUXITE

**Table – 19 : Imports of Bauxite : Other Aluminium Ores & Concentrates (By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹ '000)	Qty (t)	Value (₹ '000)
<b>All Countries</b>	<b>72313</b>	<b>396420</b>	<b>124164</b>	<b>837477</b>
Pakistan	72312	396357	123612	804820
Brazil	-	-	351	21135
China	-	-	201	11522
Taiwan	1	63	-	-
Other countries	-	-	-	-

### FUTURE OUTLOOK

The total resources of bauxite that comprise of various grades, as found to occur in the country as on 1.4.2015, is estimated at 3,896 million tonnes. The resources of Metallurgical grade bauxite are adequate while those of the Chemical and Refractory grades bauxite are relatively limited considering the future requirements. As per provision made in Mineral (Auction) Rule 2015, bauxite block was auctioned in 2017 in the State of Maharashtra.

**Table – 20 : Imports of Bauxite : Aluminium & Concentrates (By Countries)**

Country	2014-15		2015-16 (P)	
	Qty (t)	Value (₹ '000)	Qty (t)	Value (₹ '000)
<b>All Countries</b>	<b>1728376</b>	<b>8164466</b>	<b>991846</b>	<b>5145424</b>
Guinea	1394291	5579257	613570	2431430
China	67151	1540078	68613	1396966
Brazil	99321	466413	263183	1157258
Malaysia	37282	114235	45594	142614
Netherlands	225	9911	310	13121
Pakistan	600	3736	575	3894
Madagascar	-	-	1	79
USA	5	324	++	48
Denmark	-	-	++	7
Singapore	-	-	++	7
Other countries	129501	450512	-	-

As per the Report of the Working Group for the 12<sup>th</sup> Five Year Plan, the abundance of bauxite resources in Eastern Ghat regions of Odisha and Andhra Pradesh is likely to metamorphose the region into a hub for bauxite mining activities in future.