Indian Minerals Yearbook 2015

(Part- III : Mineral Reviews)

54th Edition

LATERITE

(FINAL RELEASE)

GOVERNMENT OF INDIA
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July, 2017

31 Laterite

Laterite is a residual ferruginous rock commonly found in tropical regions and has close genetic association with bauxite. The mineralogical & chemical composition of laterite depends on their parent rock. The term 'laterite' was originally used for highly ferruginous deposits first observed in Malabar Region of coastal Kerala and Dakshina Kannada & other parts of Karnataka. It is a highly weathered material, rich in secondary oxides of iron, aluminium or both. It is either hard or capable of hardening on exposure to moisture and drying.

Laterite and bauxite show a tendency to occur together. Aluminous laterites and ferruginous bauxites are quite common. The most common impurity in both is silica. Laterite gradually passes into bauxite with decrease in iron oxide and increase in aluminium oxide. The laterite deposits may be described on the basis of the dominant extractable minerals in it: (i) aluminous laterite (bauxite), (ii) ferruginous laterite (iron ore), (iii) manganiferous laterite (manganese ore), (iv) nickeliferous laterite (nickel ore) and (v) chromiferous laterite (chrome ore). Laterite with Fe_2O_3:Al_2O_3 ratio more than one, and SiO_2:Fe_2O_3 ratio less than 1.33 is termed as ferruginous laterite, while that having Fe_2O_3:Al_2O_3 ratio less than one and SiO_2:Al_2O_3 ratio less than 1.33 is termed as aluminous laterite.

Laterite can be considered as polymetallic ore as it is not only the essential repository for aluminium, but also a source of iron, manganese, cobalt, nickel and chromium. Furthermore, it is the home for several trace elements like gallium and vanadium which can be extracted as by-products.

RESOURCES

Laterite occurrences are widespread in the country. Almost all Indian bauxite deposits are associated with laterite, except those in Jammu & Kashmir. Laterite generally occurs as capping on the hills and plateaus of Madhya Pradesh and in some states of the Deccan peninsula at altitudes ranging from coastal to 2,000 m with thickness up to 60 m.

As per UNFC System as on 1.04.2013, the total resources of laterite is placed at 559 million tonnes. Out of these, 60 million tonnes are placed under Reserves category and 499 million tonnes are under Remaining Resources category. Majorshare of about 74% resources is located in

two states, namely, Madhya Pradesh (52%) and Rajasthan (22%). The remaining 26% of resources are spread over in the States of Andhra Pradesh, Kerala, Gujarat, Maharashtra and Jharkhand. Gradewise and Statewise reserves/resources are furnished in Table- 1.

EXPLORATION & DEVELOPMENT

Details of exploration activities for laterite done by GSI; DMG, Kerala, DMG, Rajasthan & DMG, West Bengal is given in Table- 2.

PRODUCTION, STOCKS AND PRICES

As per GOI Notification S.O. 423(E) dated 10th February 2015, laterite has been declared as 'Minor Mineral', hence the production beyond January 2015 is not available with IBM. The production of laterite at 4,651 thousand tonnes in 2014-15 (up to January 2015) increased by 34% as compared to that of the previous year owing to more demand in the market.

There were 68 reporting mines during 2014-15 as against 73 in the previous year. Besides, the production of laterite was reported as associated mineral by 19 mines during 2014-15 as against 22 in the previous year. Ten principal producers accounted for about 50% of the total production. Fifty-nine mines producing laterite which include 8 associate mines, each with more than 10,000 tonnes production annually, accounted for 98% of the total production during the period under review. Nominal production was reported from captive mines in 2014-15 as well as in the preceding year.

Telangana was the leading state in laterite production contributing 41% of the total production, followed by Andhra Pradesh (38%), Madhya Pradesh (13%), Kerala (3%), Karnataka (2%) and the remaining 3% was contributed by Gujarat & Maharashtra.

Gradewise analysis of production in 2014-15 revealed that the bulk of production was of Cement grade, accounting for 92% of the total production during the year. The remaining 8% production was in below 40% Al_2O_3 (7%) and 40% to below 45% Al_2O_3 (1%) grades which was reported from Andhra Pradesh and Madhya Pradesh. Nominal production of Chemical grade was reported from Karnataka (Tables- 3 to 6).

Mine-head closing stock of laterite in the year 2014-15 (up to January 2015) were 1,612 thousand tonnes as against 1,185 thousand tonnes in the previous year (Tables- 7(A) & 7(B)).

The average daily employment of labour in laterite mines was 785 in 2014-15 as against 955 in the previous year.

Table – 1 : Reserves/Resources of Laterite as on 1.4.2013
(By Grades/States)

(In 000' tonnes)

Grade/State	Reserves				Remaining Resources								
	Proved STD111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	Total Resources (A+B)
		STD121	STD122			STD221	STD222						
All India : Total	**46711**	**6110**	**7076**	**59897**	**30992**	**5025**	**20990**	**24**	**1629**	**229260**	**210859**	**498794**	**558675**
By Grades													
Unclassified	46710	6111	7077	59898	30992	5025	20989	24	1628	229259	210860	498777	558675
By States													
Andhra Pradesh	7628	510	1276	9414	20579	4033	1379	24	1107	458	-	27579	36993
Gujarat	14734	-	164	14898	7239	-	16938	-	-	-	-	24176	39074
Jharkhand	-	-	-	-	-	-	-	-	-	570	-	570	570
Kerala	-	-	1430	1430	953	-	-	-	-	-	16717	17670	19100
Madhya Pradesh	348	223	899	1470	160	27	509	-	522	158910	129778	289905	291376
Maharashtra	-	-	-	-	-	-	-	-	-	4000	-	4000	4000
Odisha	-	-	-	-	-	-	-	-	-	-	1227	1227	1227
Rajasthan	-	-	-	-	-	-	-	-	-	60490	62860	123350	123350
Telangana	24001	5377	3307	32685	2061	965	2164	-	-	4832	277	10299	42985

Figures rounded off.

Table – 2 : Details of Exploration Activities for Laterite during, 2014-15

Agency/ State/District	Location/ Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (Sq km)	No. of boreholes	Meterage		
GSI							
Chhattisgarh							
Balrampur	Jawaharnagar-Khajri-Barpat-Chandadarhi area	1:12,5000 1:5000	50.0 2.0	N.A.	N.A.	135	The area mainly comprises Precambrian metasediments and metabasics, Deccan trap rocks and laterite of Recent age. Laterite in the area is found associated with massive bauxite. It is characteristically red, yellow and brown in colour in Jawaharnagar and Premnagar & adjacent areas. Aluminous laterite was found in the south Damchuan village. Chemical analysis of laterite indicates Al_2O_3 in the range of 24.46 to 37.98% and SiO_2 from 6.59 to 10.85%. No further details about laterite is available as the area is being explored for bauxite.
Meghalaya							
West Khasi Hills	Rambari area	N.A.	N.A.	N.A.	N.A.	78	The main lithologies in the area are granite gneiss and retrograded mafic granulite along with patches of younger granite. The general trend is NE-SW. The lateritic bauxite in the area is buff and brick-red in colour. Four main bodies of lateritic bauxite were identified having diamensions as: 900 m x 400 m; 260 m x 150 m; 280 m x 100 m; and 620 m x 350 m. In addition, 4 small patches were also identified in NW and NE part of the area. The thickness of the complete profile of lateritic bauxite is about 8 to 10 m. Analytical results of the samples collected showed Al_2O_3 ranging from 15.33% to 60.88% with an average value of 38.5%. Cr and V are also showed encouraging values up to a max. of 1230 ppm and 875 ppm, respectively.

(contd.)

(Table: 2 (concld.)

Agency/ State/District	Location/ Area/ Block	Mapping Scale	Mapping Area (Sq km)	Drilling No. of boreholes	Drilling Meterage	Sampling (No.)	Remarks Reserves/Resources estimated
DMG							
Kerala							
Kasargod	Niteswaram area	N.A.	0.2 ha.	5	113.5	N.A.	The rock types of the area are mainly laterite of Quaternary Age at the top followed by variegated clays of Tertiary Age overlying Archean gneissic charnockite. China clay/ aluminous laterite/laterite occurs in the form of massive flat sheets or blankets capping plateaus. Resource of china clay have been estimates at 52,000 tonnes. Laterite/aluminous laterite occurs as an associated minerals.
Kerala							
Kannur	Korom area, Kankol village, Taliparamba Taluk	N.A.	56.0 ha	9	354.0	N.A.	Laterite occurs in the form of massive flat sheets or blankets capping plateau. Average thickness of aluminous laterite is 3.5 m. Resources of china clay have been computed at 16 million tonnes. Laterite is found as an associated mineral with china clay in the area.
	Karinthadam area, Peringome- Vaikara Panchayat of Taliparamba Taluk	N.A.	N.A.	5	140.5	N.A.	Laterite occurs in the form of massive flat sheets or blankets capping plateau. Average thickness of aluminous laterite is 5 m. The work of exploration was in progress.
DMG							
Rajasthan							
Pratapgarh	Achalpuria, Amlawad, Chaniyatheri, Bamaotar, etc.	N.A.	N.A.	N.A.	N.A.	N.A.	Geologically, the area is occupied by basaltic flows. Weathering of basalt at places has resulted in formation of laterite cappings of varying thickness ranging from 2 to 10 m. Further work of exploration was continued in the year under review.
DMG							
West Bengal							
Paschim Medinipur	Belpahari	1:10000	100	N.A.	N.A.	50	Exploration for laterite & manganese in the area also includes putting of 50 pits of 4' of length, 3 to 4' of width and 3 to 5' of depth. The exploration work will continue in 2015-16.

Table- 3 : Principal Producers of Laterite, 2014-15

Name and address of producer	Location of mine	
	State	District
Putta Ramakrishna, 8-2-268/1/2,Flat-101, Uma Park Side Apartments, Road no. 5, Banjara Hills, Hyderabad-500 034, Telangana.	Andhra Pradesh	East Godavari
Maheswari Minerals, 1-1-37/1, Kondaiahpalem, Gangeyuluvari Street, Kakinada-533 033, East Godavari, Andhra Pradesh.	Andhra Pradesh	East Godavari
Andru Srinivas, D. No. 3-15, Raja Street, Gowripatnam, Devarpalli Mandal-534 313, Andhra Pradesh.	Andhra Pradesh	East Govavari
V. Prabhakar Rao, H. No. 7-1-469, Mankammathota, Karimnagar, Andhra Pradesh.	Telangana	Warangal
Donkena Pandari, House No. 4-71, UK road, Sedam, Kalaburagi-585 222, Karnataka.	Telangana	Rangareddy

(contd.)

Table: 3 (concld.)

Name and address of producer	Location of mine	
	State	District
Maa Sharda Mining & Chemical Works, 72, 1st Floor, Aditya Avenue, Zone II, Bhopal-462 011, Madhya Pradesh.	Madhya Pradesh	Jabalpur
Aziz Khan, H.No. 8-3-66, Old Tandur, Tandur- 501 141, Andhra Pradesh.	Telangana	Rangareddy
S. Chandra Mohan, 17-76/2, Sri Raghavendra Nagar, Uppal-500 039, Rangareddy, Telangana.	Telangana	Rangareddy
G. Rajendranath Goud, 1-8-497/3, Chickadapally, Musheerabad-500 020, Hyderabad, Telangana.	Telangana	Rangareddy
S. S. Enterprises, 40-APR Colony, Katanga-482 001, Jabalpur, Madhya Pradesh.	Madhya Pradesh	Jabalpur

Table – 4 : Production of Laterite, 2012-13 to 2014-15 (By States)

(Quantity in tonnes; value in ₹'000)

States	2012-13		2013-14		2014-15 (P)	
	Quantity	Value	Quantity	Value	Quantity	Value
India	**4224842**	**736542**	**3475368**	**687807**	**4650597**	**888225**
Andhra Pradesh	1661825	262353	795729	211244	1760358	400194
Gujarat	117880	12746	19050	3554	61174	10400
Karnataka	163200	58272	118500	46386	121200	52154
Kerala	97909	35219	169672	76063	148357	61894
Madhya Pradesh	614207	181855	606056	141520	589835	135172
Maharashtra	4000	552	53987	7558	69000	9660
Telangana#	1565821	185545	1712374	201482	1900673	218751

 # Figures mentioned against 2012-13 and 2013-14 are of districts which are part of present Andhra Pradesh and Telangana states; (P): Data up to January, 2015.

Table – 6 : Production of Laterite, 2013-14 & 2014-15 (By Frequency Groups)

(Quantity in tonnes)

Production group	No. of mines		Production		Percentage in total production		Cumulative percentage	
	2013-14	2014-15(P)	2013-14	2014-15(P)	2013-14	2014-15(P)	2013-14	2014-15(P)
Total	**73(22)**	**68(19)**	**3475368**	**4650597**	**100.00**	**100.00**	**-**	**-**
Up to 1000	19(2)	6(3)	5812	1075	0.17	0.02	0.17	0.02
1001-2000	3(1)	2(1)	6162	3835	0.18	0.08	0.35	0.10
2001-5000	2(3)	2(4)	15587	17740	0.45	0.38	0.80	0.48
5001-10000	6(4)	7(3)	69101	81458	1.99	1.75	2.79	2.23
10001-50000	18(11)	25(6)	655717	847103	18.87	18.21	21.66	20.44
50001 & above	25(1)	26(2)	2722989	3699386	78.34	79.56	100.00	100.00

Figures in parentheses indicate number of associated mines: (P): Data up to January, 2015.

Table – 7 (A) : Mine-head Closing Stocks of Laterite, 2013-14 (By States/Grades)

(In tonnes)

State	For use in alumina & aluminium extraction Al_2O_3 Content		For use in other than alumina & aluminium metal extraction				Total
	Below 40%	40–45%	Cement	Abrasive	Chemical	Refractory	
India	**207174**	**122216**	**825800**	**9250**	**20067**	**48**	**1184555**
Andhra Pradesh	-	-	134128	-	-	-	134128
Gujarat	-	-	29524	9250	-	-	38774
Jharkhand	104	-	-	-	-	-	104
Karnataka	-	-	14019	-	353	48	14420
Kerala	-	-	31950	-	-	-	31950
Madhya Pradesh	207070	122216	461373	-	19714	-	810373
Maharashtra	-	-	8918	-	-	-	8918
Tamil Nadu	-	-	85	-	-	-	85
Telangana#	-	-	145803	-	-	-	145803

 # Figures are of districts which are part of present Andhra Pradesh & Telangana States.

Table 5 (A) : Gradewise Production of Laterite, 2014-15
(By Sectors, States and Districts)

(Quantity in tonnes; value in ₹'000)

State / District	No. of mines	For use in alumina & aluminium extraction, Production by Grades : Al_2O_3 Content		For use in other than alumina & aluminium extraction		Total	
		Below 40%	40-45%	Cement	Chemical	Quantity	Value
India	**68(19)**	**327725**	**25579**	**4296293**	**1000**	**4650597**	**888225**
Public Sector	2	-	-	110216	-	110216	50064
Private Sector	66(19)	327725	25579	4186077	1000	4540381	838161
Andhra Pradesh	**13(1)**	**236050**	**-**	**1524308**	**-**	**1760358**	**400194**
Cuddapah	(1)	-	-	56148	-	56148	8422
East Godavari	12	236050	-	1460160	-	1696210	390332
Visakhapatnam	1	-	-	8000	-	8000	1440
Gujarat	**2**	**-**	**-**	**61174**	**-**	**61174**	**10400**
Kachchh	2	-	-	61174	-	61174	10400
Karnataka	**1**	**-**	**-**	**120200**	**1000**	**121200**	**52154**
Belagavi	1	-	-	120200	1000	121200	52154
Kerala	**3**	**-**	**-**	**148357**	**-**	**148357**	**61894**
Kannur	2	-	-	44316	-	44316	13560
Kasaragod	1	-	-	104041	-	104041	48334
Madhya Pradesh	**14(18)**	**91675**	**25579**	**472581**	**-**	**589835**	**135172**
Jabalpur	7(8)	82440	-	335675	-	418115	101762
Katni	4(3)	-	25579	72200		97779	18436
Rewa	(2)	9165	-	8623	-	17788	3240
Satna	3(4)	-	-	56083	-	56083	11716
Shahadol	(1)	70	-	-	-	70	18
Maharashtra	**1**	**-**	**-**	**69000**	**-**	**69000**	**9660**
Chandrapur	1	-	-	69000	-	69000	9660
Rajasthan	**1***	**-**	**-**	**-**	**-**	**-**	**-**
Chittorgarh	1*	-	-	-	-	-	-
Telangana	**33**	**-**	**-**	**1900673**	**-**	**1900673**	**218751**
Medak	1	-	-	6248	-	6248	1437
Nizamabad	1	-	-	33200		33200	4022
Rangareddy	13	-	-	1116994	-	1116994	104056
Warangal	18	-	-	744231	-	744231	109236

** Reported production of ochre only.*

Figures in parentheses indicate number of associated mines.

(P) : Provisional, upto January, 2015.

Table 5 (B) : Gradewise Production of Laterite, 2013-14
(By Sectors, States and Districts)

(Quantity in tonnes; value in ₹'000)

State / District	No. of mines	For use in alumina & aluminium extraction, Production by Grades : Al_2O_3 Content		For use in other than alumina & aluminium extraction			Total	
		Below 40%	40-45%	Cement	Abrasive	Chemical	Quantity	Value
India	**73(22)**	**62035**	**19180**	**3392007**	**596**	**1550**	**3475368**	**687807**
Public Sector	2	-	-	158953	-	-	158953	73054
Private Sector	71(22)	62035	19180	3233054	596	1550	3316415	614753
Andhra Pradesh#	**9(1)**	**-**	**-**	**795729**	**-**	**-**	**795729**	**211244**
Cuddapah	1(1)	-	-	83391	-	-	83391	12491
East Godavari	7	-	-	700323	-	-	700323	195209
Visakapatnam	1	-	-	12015	-	-	12015	3544
Gujarat	**2**	**-**	**-**	**18550**	**500**	**-**	**19050**	**3554**
Kachchh	1	-	-	18550	-	-	18550	3154
Porbandar	1	-	-	-	500	-	500	400
Karnataka	**1**	**-**	**-**	**116950**	**-**	**1550**	**118500**	**46386**
Belagavi	1	-	-	116950	-	1550	118500	46386
Kerala	**4**	**-**	**-**	**169576**	**96**	**-**	**169672**	**76063**
Kannur	3	-	-	25403	96	-	25499	7148
Kasaragod	1	-	-	144173	-	-	144173	68915
Madhya Pradesh	**14(21)**	**62035**	**19180**	**524841**	**-**	**-**	**606056**	**141520**
Jabalpur	5(14)	37210	-	363787	-	-	400997	108765
Katni	5(3)	7600	19180	2410	-	-	29190	7128
Rewa	(2)	17225	-	2600	-	-	19825	4475
Satna	4(2)	-	-	156044	-	-	156044	21152
Maharashtra	**1**	**-**	**-**	**53987**	**-**	**-**	**53987**	**7558**
Chandrapur	1	-	-	53987	-	-	53987	7558
Rajasthan	**1***	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Chittorgarh*	1*	-	-	-	-	-	-	-
Telangana#	**41**	**-**	**-**	**1712374**	**-**	**-**	**1712374**	**201482**
Medak	1	-	-	13663	-	-	13663	3142
Nalgonda	1	-	-	1427	-	-	1427	200
Nizamabad	2	-	-	38800	-	-	38800	4045
Rangareddy	15	-	-	798236	-	-	798236	72041
Warangal	22	-	-	860248	-	-	860248	122054

** Reported production of ochre only.*

 # Figures are of districts which are part of present Andhra Pradesh & Telangana States.

Figures in parentheses indicate number of associated mines.

Table – 7 (B) : Mine-head Closing Stocks of Laterite, 2014-15 (P)
(By States / Grades)

(In tonnes)

State	For use in alumina & aluminium extraction Al_2O_3 Content		For use in other than alumina & aluminium metal extraction				Total
	Below 40%	40–45%	Cement	Abrasive	Chemical	Refractory	
India	**229361**	**149327**	**1223869**	**9250**	**383**	**48**	**1612238**
Andhra Pradesh	74950	-	380814	-	-	-	455764
Gujarat	-	-	28632	9250	-	-	37882
Jharkhand	104	-	-	-	-	-	104
Karnataka	-	-	11891	-	383	48	12322
Kerala	-	-	2570	-	-	-	2570
Madhya Pradesh	154307	149327	655484	-	-	-	959118
Maharashtra	-	-	5278	-	-	-	5278
Telangana	-	-	139200	-	-	-	139200

(P): Data upto January, 2015.

USES & SPECIFICATIONS

The compact and ferruginous variety of laterite is used widely as a road metal and as a local stone for culverts and buildings. Limited capacity to withstand heavy pressure has limited the use of laterites in construction of light structures, partition walls, boundary walls, etc. Laterite as a building stone possesses one advantage that it is soft when quarried and can be easily cut and dressed into blocks and bricks which on exposure to air become hard.

The industrial use of laterite is in the Cement Industry. It is used as an additive for lowering the clinkerisation temperature and supplementing aluminous and iron contents required in the manufacture of cement. It is also reported that laterite is capable of removal of phosphorus from solutions and percolating columns of laterite remove cadmium, chromium and lead to very low concentrations. Specifications of laterite for Cement Industry are detailed in Table- 8.

Table – 8 : Specifications of Laterite Consumed in Different Cement Plants

(In Percentage)

Plant	Al_2O_3	Fe_2O_3	SiO_2
ACC Ltd, Wadi Cement Works, Dist. Kalaburagi, Karnataka.	36-45	-	-
Anjani Portland Cement Ltd, Anjanipuram, Dist. Nalgonda, Telangana.	20-40	-	-
Birla Cement Works, Chanderia, Dist. Chittorgarh, Rajasthan.	17	50	18
Birla Corporation Ltd, P.O. Birla Vikas, Dist. Satna, Madhya Pradesh.	26	37	17
Cement Corporation of India, Tandur, Dist. Rangareddy, Telangana.	> 22	> 40	-
The India Cements Ltd, Chilamkur, Dist. Cuddapah, Andhra Pradesh.	22-37	22-36	21-30
The India Cements Ltd, Vishnupuram, Wadapally, Dist. Nalgonda, Telangana.	12-18	45-50	12-18
The India Cements Ltd, Malkapur, Dist. Rangareddy, Telangana.	12-15	40-43	-
Heidelberg Cements (Diamond Cements) P.O. Narsingarh, Dist. Damoh, Madhya Pradesh.	5-8	42-47	-
Jaypee Rewa Cement, Jaypee Nagar, Dist. Rewa, Madhya Pradesh.	15(min.)	30(min.)	10-12
J.K. Cement Works, Nimbahera and Mangrol, Dist. Chittorgarh, Rajasthan.	10-15	40-55	12-27
Kakatiya Cement & Sugar Industries, Dist. Krishna, Andhra Pradesh.	40-45	9	10

(Contd.)

Table - 8 (Contd.)

Plant	Al_2O_3	Fe_2O_3	SiO_2
J.K.Cement Works, P.O. Gotan, Dist. Nagaur, Rajasthan.	-	>50	-
Keerthi Industries Ltd, Mellacheruvu, Dist. Nalgonda, Telangana.	25.52	31.05	30.54
Kesoram Cement, P.O. Basantnagar, Dist. Karimnagar, Telangana.	35-38	-	-
The KCP Ltd, Macherla, Dist. Guntur, Andhra Pradesh.	-	45-55	-
Madras Cements Ltd, Kumarasamy, Raja Nagar Dist. Krishna, Andhra Pradesh.	-	-	12 (max.)
Maihar Cement,(Unit -2) P.O. Sarla Nagar, Maihar, Dist. Satna, Madhya Pradesh.	-	>45	< 18
Malabar Cements Ltd, Walayar, Dist. Palakkad, Kerala.	38	30	10
Manikgarh Cement, Gadchandur, Dist. Chandrapur, Maharashtra.	>25	>30	-
Mancherial Cement Company (P) Ltd, Mancherial, Dist. Adilabad, Telangana.	-	32-40	16-22
Orient Cement, Devapur Cement Works, Dist. Adilabad, Telangana.	22-35	27-45	-
Panyam Cements & Mineral Industries Ltd, Cement Nagar, Dist. Kurnool, Andhra Pradesh.	-	24-42	10-14
Penna Cement Ind. Ltd, Ganeshpahad, Dist.Nalgonda, Telangana.	35	30	14
Penna Cement Ind. Ltd, Boyareddypalli Dist. Anantapur, Andhra Pradesh.	-	38	-
Penna Cement Ind. Ltd, Vill. Talaricheruvu, Dist. Anantapur, Andhra Pradesh.	42	25	14
Rajashree Cements, Malkhed Road, Dist. Kalaburagi Karnataka.	20	44	19

(Contd.)

Table - 8 (Concld.)

Plant	Al_2O_3	Fe_2O_3	SiO_2
Rain Commodities Ltd, Ramapuram, Dist. Nalgonda, Telangana.	-	35(min.)	–
Sanghi Cement Sanghipuram, Kachchh, Gujarat.	15-20	18-25	25-30
Satna Cement Works, Ghurdang, Dist. Satna, Madhya Pradesh.	26	37	17
Shree Cements, Beawar, Dist. Ajmer, Rajasthan.	-	70-94	-
Shri Durga Cement Company Ltd, Hesla, Ramgarh Cantt; Ramgarh, Jharkhand.	36	34	6
Ultra Tech Cement Ltd, Adityanagar, Malkhed Road, Kalaburagi, Karnataka.	21	42	19
Ultra Tech Cement Ltd, (Unit-Vikram Cement Works) Vill. Khor, Kheda Rathore, etc. Teh. Jawad, Neemuch, Madhya Pradesh.	68	58	12-14
Sri Vishnu Cement Ltd, Dondapadu, Dist. Nalgonda, Telangana.	36-42	-	18-22
Toshali Cements Pvt. Ltd, Dist. Koraput, Ampavalli, Odisha.	10	8	10
Vasavadatta Cement, Sedam, Dist. Gulbarga, Karnataka.	-	55	< 30
Vikram Cement, Vikram Nagar, Khor, Dist. Neemuch, Madhya Pradesh.	-	58 (min.)	12-14
Zuari Cement, Krishna Nagar Dist. Cuddapah, Andhra Pradesh.	16-24	24-39	28-35
Zuari Cement Ltd, Sitapuram, P.O. Dondapadu Dist. Nalgonda. Telangana.	35-42	-	20-22

Source: *Individual plants.*
Note: *All references in respect of Andhra Pradesh are as per its undivided Statehood position (prior to its bifurcation).*

CONSUMPTION

Laterite is used as an additive in Cement Industry. The industrial end-use consumption of laterite in 2012-13, 2013-14 and 2014-15 was approximately 4.37 million tonnes, 4.33 million tonnes and 5.35 million tonnes, respectively. Other consuming sectors are building construction and road metal.

FUTURE OUTLOOK

In India, though the resources of laterite are vast and are available in abundance, the work in respect of systematic exploration and estimation of resources have been restricted. There seems to be no major change in the end-use pattern of laterite. The consumption of laterite in cement has scaled up due to increased demand of cement in the country. The plausibility of diverse application of laterite in future could be a viable source for metallic minerals like iron, aluminium, chromite and of trace elements like gallium and vanadium.