Indian Minerals Yearbook 2018

(Part- I)

57th Edition

STATE REVIEWS (Jharkhand)

(FINAL RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
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JHARKHAND

Mineral Resources

Jharkhand is one of the major mineral producing States. It is the sole producer of flint stone in the country and is one of the leading producers of coal, gold, graphite, bauxite, iron ore & limestone. Uranium ore is mined and processed by Uranium Corporation of India Ltd (UCIL) for supply as fuel to the country's nuclear power reactors through six underground mines, one opencast mine and two processing plants. Jharkhand has the sole resources of Emerald mineral. It accounts for about 31% rock phosphate, 23% iron ore (haematite), 30% apatite, 14% andalusite, 20% cobalt ore, 20% copper ore, 9% each granite (Dimension Stone) & graphite and 5% silver ore resources of the country.

Important minerals that occur in the State are **bauxite** in Dumka, Gumla, Latehar, Lohardaga and Palamu districts; **china clay** in Dumka, Hazaribag, Lohardaga, East & West Singhbhum, Sahibganj and Ranchi districts; **coal** in Bokaro, Deoghar, Dhanbad, Giridih, Godda, Hazaribag, Palamu, Pakur and Ranchi districts; **copper** in Hazaribag and East Singhbhum districts; **dolomite** in Garhwa and Palamu districts; **felspar** in Deoghar, Dhanbad, Dumka, Giridih, Hazaribag, Jamtara, Koderma, Latehar, Palamu and Ranchi districts; **fireclay** in Dhanbad, Dumka, Giridih, Godda, Hazaribagh, Latehar, Palamu, Ranchi and West Singhbhum districts; **gold** in East Singhbhum district; **graphite** in Palamu district; **iron ore** (haematite) in West Singhbhum district; **iron ore** (magnetite) in Gumla, Hazaribag, Latehar, Palamu and East Singhbhum districts; **kyanite** in Saraikela-Kharsawan and West Singhbhum districts; **limestone** in Bokaro, Dhanbad, Garhwa, Giridih, Hazaribag, Palamu, Ranchi, East & West Singhbhum districts; **manganese ore** in East & West Singhbhum districts; **mica** in Giridih and Koderma districts; **ochre** in West Singhbhum district; **dunite/ pyroxenite** in East Singhbhum district; **quartz/ silica sand** in Deoghar, Dhanbad, Dumka, Giridih, Godda, Hazaribagh, Jamtara, Koderma, Latehar, Palamu, Ranchi, Sahibganj, Saraikela-Kharsawan and West Singhbhum districts; and **quartzite** in East & West Singhbhum districts.

Other minerals that occur in the State are **andalusite** and **rock phosphate** in Palamu district; **apatite, chromite, cobalt, nickel, gold** and **silver** in East Singhbhum district; **asbestos** in East & West Singhbhum districts; **barytes** in Palamu and East Singhbhum districts; **bentonite** in Pakur and Sahibganj districts; **garnet** in Hazaribag district; **granite** in Deogarh, Dhanbad, Dumka, Giridih, Godda, Gumla, Hazaribag, Koderma, Lohardaga, Palamu, Ranchi and East Singhbhum districts; **sillimanite** in Hazaribag district; **talc/steatite/ soapstone** in Giridih, Koderma, Palamu, East & West Singhbhum districts; **pyrophyllite** in Saraikela-Kharaswan district; **titanium minerals** in Ranchi and East Singhbhum districts; and **vermiculite** in Giridih and Hazaribag districts (Table-1). The reserve/resources of coal and the various coalfields located in Jharkhand are furnished in Table-2.

Exploration & Development

The details of exploration activities conducted by GSI for iron ore, REE and titanium & vanadium minerals and other agencies (MECL) for gold during the year 2017-18 are furnished in Table-3.

Table – 1 : Reserves/Resources of Minerals as on 1.4.2015: Jharkhand

Mineral	Unit	Reserves				Remaining Resources								Total resources (A+B)
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	
			STD121	STD122			STD221	STD222						
Andalusite	'000 tonnes	-	-	-	-	-	-	-	-	-	4000	1	4001	4001
Apatite	tonne	-	-	-	-	-	-	-	2110000	1620000	3540000	-	7270000	7270000
Asbestos	tonne	-	-	-	-	-	3871	18309	2885	5769	124059	-	154893	154893
Barytes#	tonne	-	-	-	-	-	-	-	-	-	35900	-	35900	35900
Bauxite	'000 tonnes	54471	219	8049	62740	9734	6154	15117	17883	17397	54106	55930	176321	239061
Bentonite##	tonne	-	-	609406	609406	-	3067	-	-	-	367527	-	370594	980000
China clay#	'000 tonnes	427	-	6412	6838	9338	2093	4738	3962	7363	149892	18019	195405	202244
Chromite	'000 tonnes	-	-	-	-	-	-	-	15	98	623	-	736	736
Cobalt	million tonnes	-	-	-	-	-	-	-	-	2	-	7	9	9
Copper					-								-	-
Ore	'000 tonnes	5374	-	1940	7314	13195	24511	3990	101168	103484	41726	-	288074	295389
Metal	'000 tonnes	61.33	-	20.54	81.87	142.08	255.74	45.92	1183.99	1058.42	507.38	-	3193.53	3275.40
Dolomite#	'000 tonnes	4510	-	6720	11230	10620	350	860	-	-	1857	-	13686	24916
Dunite#	' 000 tonnes	123	-	262	385	264	-	448	607	780	6121	8637	16857	17242
Emerald	kg	-	-	-	-	-	-	0	-	-	-	55869	55869	55869
Felspar#	tonne	68789	15402	191913	276104	-	40766	348792	32510	120388	836061	-	1378517	1654621
Fire clay#	'000 tonnes	-	-	3	3	-	1125	309	139	122	64755	-	66450	66454
Garnet	tonne	-	-	-	-	-	-	88303	-	-	21768	-	110071	110071
Gold					-								-	-
Ore (Primary)	tonne	9349	-	-	9349	-	-	-	-	5146952	4203337	767000	10117289	10126638
Metal (Primary)	tonne	0.07	-	-	0.07	-	-	-	-	3.61	10.26	0.62	14.49	14.56
Granite## (Dim. Stone)	'000 cu m	-	-	-	-	-	-	-	-	651300	8197110	26930	8875340	8875340
Graphite	tonne	1518581	1204423	1450550	4173555	39262	445703	1959747	5520	1856563	6639828	2440208	13386831	17560386
Iron ore (Haematite)	'000 tonnes	365111	29238	45022	439372	1081242	458866	457724	207324	597413	673009	1371468	4847045	5286417
Iron ore (Magnetite)	'000 tonnes	-	-	-	-	-	518	1986	411	3948	3722	82	10667	10667
Kyanite	tonne	426240	-	-	426240	824472	524467	881313	-	1754900	3182363	-	7167515	7593755
Laterite#	'000 tonnes	-	-	-	-	-	-	-	-	-	570	-	570	570
Limestone	'000 tonnes	88172	-	29116	117288	95008	13529	29265	89572	13220	354319	11803	606715	724003
Manganese ore	'000 tonnes	1840	-	328	2168	1710	795	1476	-	178	4177	1126	9461	11629
Mica#	kg	-	-	-	-	-	-	-	-	-	1494430	170700	1665130	1665130
Nickel ore	million tonnes	-	-	-	-	-	-	-	-	2	7	-	9	9
Ochre#	tonne	-	-	-	-	62	-	4	-	147	-	-	214	214

(Contd.)

Table - 1 (Concld.)

Mineral	Unit	Reserves				Remaining Resources								Total resources (A+B)
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	
			STD121	STD122			STD221	STD222						
Pyrophyllite#	tonne	858	-	328	1185	-	-	-	-	-	-	-	-	1185
Quartz-Silica Sand#	'000 tonnes	-	-	1070	1070	534	985	4533	137	766	143053	112	150122	151192
Quartzite#	'000 tonnes	181	-	-	181	763	49	390	197	275	38854	-	40527	40708
Rock Phosphate	tonne	-	-	-	-	-	-	-	-	-	107370000	-	107370000	107370000
Silver														
Ore	tonne	-	-	-	-	-	-	-	-	-	23840000	-	23840000	23840000
Metal	tonne	-	-	-	-	-	-	-	-	-	5.22	-	5.22	5.22
Sillimanite	tonne	-	-	-	-	-	-	-	-	-	83000	-	83000	83000
Talc-Steatite-Soapstone#	'000 tonnes	336	-	83	419	-	-	54	2	4	243	16	319	739
Vermiculite	tonne	-	-	-	-	-	-	-	-	-	30048	-	30048	30048

Figures rounded off.

***Note**: The proved and indicated balance recoverable reserves of Coal-bed Methane (CBM) in the State as on 01.04.2018 were 722.08 billion cu m.*

*** Resources of ilmenite, rutile, leucoxene and zircon, as per Department of Atomic Energy, are provided in the respective Mineral Reviews.*

 # Declared as Minor Mineral vide Gazette Notification dated 10.02.2015.

Minor Minerals before Gazette Notification dated 10.02.2015.

Table – 2 : Reserves/Resources of Coal as on 1.4.2018 : Jharkhand

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total	**40463.36**	**31438.52**	**6221.80**	**83151.68**
Raniganj	1538.19	466.56	31.55	2036.30
Jharia	15603.71	3826.35	-	19430.06
East Bokaro	3497.43	3922.80	863.32	8283.55
West Bokaro	3800.99	1352.88	33.66	5187.53
Ramgarh	756.11	742.08	58.05	1556.24
North Karanpura	10341.38	6300.92	1864.96	18507.26
South Karanpura	5176.08	1312.28	1143.28	7631.64
Aurangabad	352.05	2141.65	503.41	2997.11
Hutar	190.79	26.55	32.48	249.82
Daltongunj	83.86	60.10	-	143.96
Deogarh	326.24	73.60	-	399.84
Rajmahal	3896.53	11212.75	1691.09	16728.37

Source: *Coal Directory of India, 2017-18.*

Production

Coal is the principal mineral produced in Jharkhand State. The other important minerals produced in the State are bauxite, copper ore & concentrates, gold, iron ore, manganese ore, graphite and limestone.

The value of minor minerals production was estimated at ` 40 crore for the year 2017-18.

The number of reporting mines in Jharkhand was 57 during 2017-18 in case of MCDR minerals. Details are furnished in Table – 4.

Mineral-based Industry

The present status of each Mineral-based Industry is not readily available. However, the principal large and medium-scale mineral-based industries in the organised sector in the State are provided in Table-5.

Table – 3 : Details of Exploration Activities in Jharkhand, 2017-18

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq. km)	No. of boreholes	Meterage		
GSI							
Iron ore and Manganese ore							
Singhbhum	Baraiburu	1:4000	2	-	-	-	Preliminary exploration for iron ore and manganese ore was carried out in the gap areas of iron ore concentrated locales near Baraiburu in the Northwestern part of horse-shoe syncline, West Singhbhum district. Detailed mapping of 2 sq. km area on 1:4000 scale was carried out in Baraiburu block. The ore body was found to be mostly of haematite which contained pockets of blue dust. Two bands of BHJ were present in the form of thin and discontinuous band that occurred as small outcrop in the central portion of the block. At places clast (haematite, BHJ, jasper) supported conglomerate with gritty nature, and conglomerate which was lateritised and contained manganese was found to be present. Mn-ore occurs as pockets within the upper shale. Analytical results of 30 BRS and 6 pitting/trenching samples indicated Fe value ranging from 21.30% (min.) in Fe laterite to 60.44% (max.) in hard lumpy ore and Mn value ranging from 4.89% (min.) in Mn-laterite to 43.05% (max.) in Mn-ore.
Gold							
East Singhbhum	Bhitar dari block	-	-	-	475.15	-	During preliminary exploration for gold in this block a total of 475.15 m drilling was carried out. The suspected gold mineralisation was found associated with sulphide (dissemination, stringers and veins type), wall rock alterations, shearing, silicification (quartz veins/ veinlets) within sheared conglomerate, tuffaceous phyllite, ultramafics, talc-tremolite schist, phyllite, slaty phyllite, quartz sericite schist and main sulphidesvi.,pyrite,chalcopyrite, arsenopyite,pyrrhotite.In borehole JEB-1, sulphide mineralisation was noticed from 39.40 m – 39.58 m for about 0.18 m length. This 18 cm zone indicated very high specific gravity and yielded up to 13.7 ppm of Au and values ranged

(Contd.)

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							from 310 ppb – 800 ppb. Base metals, showed concentration in the range of Cu: 8–8400 ppm, Pb: 9 – 575 ppm and Zn: 8 ppm – 1.28%. Gold grains were found in the 18 cm zone within tuffaceous phyllite in borehole JEB-1. Nano gold grains in the order of 2 µm – 3 µm were also observed in slaty phyllite.
Potash & Phosphate							
Garhwa	Around Muskaniya-Sinduria	1:12500	100.0	-	-	125	G4 level reconnaissance survey for phosphate and potash fertilizer mineral in the area was carried out. Four major folding structures viz, Panda anticline, Amrora syncline, Konmandra anticline, Ghagra syncline, were demarcated in the area. Brecciated, ferruginised variety of cherty (porcelainitic) shale, black splintery calcareous shale, dolomitic limestone, arkosic sandstone and black chert showed good phosphatic values. Chemical analysis of green shale, cherty shale, black and green chert indicated the presence of significant potash (5–8% K_2O). An excavation of 100 cu. m pitting and trenching were also carried out.
Directorate of Mining and Geology, Iron ore & Manganese ore							
Singhbhum	Diriburu, Raika area	1:4000	3.63	2	182	70	Exploration was carried out in Diriburu, Raika area involving mapping of 2.94 sq. km area on 1:4000 scale and drilling of 02 boreholes for cumulative depth of 182.0 m. A total of 70 samples were collected for chemical analysis. Resources will be estimated after completion of drilling. In Thakura, Nuia area, 3.63 sq. km area was mapped on 1:4000 scale and five boreholes were drilled to a cumulative depth of 163.10 m. Besides, 72 core samples were also collected for chemical analysis. The resources will be estimated after completing of drilling.
				5	163.10	72	
Graphite							
Palamu	Ponchi area, Satbarwa block	1:2000	0.10	5	270.00	100	During G2 stage exploration, 04 pitting/trenching were carried out. The carbon content in surface samples varied from 3.55% to 46.28% and in core samples it varied between 2.03% and 10.51%. Resources estimated were

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							at 0.243 million tonnes under Indicated Category.
	Dulsulma, Satbarwa block	1:2000	0.40	23	1004.50	292	Analysis report of the surface samples showed carbon content varying between 2.3% and 13.44% and in core samples it varied between 2.56% and 12.23%. Resources were estimated at 1.48 million tonnes under Indicated Category.
	Rewaratu	1:4000	0.70	7	313.50	86	Six trenches were dug about 180 cu. m material was excavated. Resources were estimated at 0.17 million tonnes.
	Bhusariatola	1:2000	1.50	-	-	9	Four trenches were dug and about 28 cu. m material was excavated. The area falls under eco-sensitive zone.
	Chanpi	1:4000	0.07	-	-	10	Five trenches were dug and about 100 cu. m material was excavated. Further investigation will be proposed after completion of mapping.
Ranchi	Around Papirda-Jopno-Kubasai areas	1:12500	100.0	-	-	245	G4 stage reconnaissance survey for graphite mineralisation in carbonaceous phyllite was carried out and this involved mapping, sampling and 100 cu. m trenching. Two bands of carbonaceous phyllite were delineated. In second band, sulphide mineralisation was noticed. Analytical results of 10 BRS samples indicated more than 4% fixed carbon value. Maximum value of fixed carbon observed was 6.1% and minimum value of fixed carbon was 0.1%, rest 56 samples showed fixed carbon value ranging from 0.2% to 6.0%. Out of 100 PTS samples collected, 30 samples yielded fixed carbon value ranging from 0.3% to 2.8%. Vanadium value from 41 BRS ranged from 178 ppm to 1,231 ppm. In five BRS samples vanadium values ranged from 583 ppm to 1,231 ppm and in one PTS, it was reported as 688 ppm.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Limestone/Dolomite							
Garhwa	Khutia Block-Dhurki	1:4000	1.17	21	705.9	485	i) The estimated indicated category resources of dolomite were at 25.87 thousand tonnes with an average grade of MgO–1.4%, CaO–41.86% and SiO_2–14.67%. ii) Dolomite resources were estimated at 1.528 million tonnes under Indicated Category with an average grade of MgO–18.95%, CaO–30.28% and SiO_2–4.58%.
Ranchi	Piyartanr, Block-Khalari	1:4000	1.12	12	551.8	452	Resources were estimated at about 0.54 million tonnes.
MECL							
Copper							
Singhbhum	Sidheswar copper deposits	-	2.59	14	3636.10	920	Exploration for copper in Sidheswar copper deposits was to establish (i) the depth continuity of lodes at around 5th level, (ii) continuity of lodes up to and beyond 8th level and estimate the total resources of copper and to carry out the deviation survey of the exploratory boreholes. The deposit was found to extend over a strike length of about 2.0 km from the north-eastern side of the Kendadih mine. During G1 level exploration, MECL mapped 2.59 sq. km area, drilled 14 boreholes to a cumulative depth of 3,636.10 m and collected 866 primary samples for Cu, 29 check samples for Cu, 25 polished section and 16 petrographic study and 25 samples for specific gravity determination. Out of a total of 8.923 mt with 1.20% Cu estimated at 0.5% cut-off and 0.8% pay limit, about 3.283 mt with 1.20% Cu were estimated under Measured Category, 3.029 mt with 1.18% Cu under Indicated Category and 2.611 mt with 1.19% Cu under Inferred Category [Estimated up to 9th level].
	Nandup (East) Bayanbil	-	-	-	-	-	During G2 level exploration in Nandup (East)-Bayanbil (combined) block, East Singhbhum district, Jharkhand, MECL mapped 0.54 sq. km area on

(Contd.)

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							1:1000 scale, drilled 10 boreholes to a cumulative depth of 1,883.50 m and collected & analysed 1,158 samples including 60 primary samples for Au, Ag & W and 37 composite samples for Cu, Ni, Co, Mo & W. A total resources of 6.5653 million tonnes under Indicated Category have been estimated with the grade of 1.19% Cu at 0.5% Cu cut-off and 12.315 million tonnes with the grade of 0.89% Cu at 0.2% cut-off. In Surda copper mine block, East Singhbhum district, a G1 level exploration was carried out with the objectives to establish i) the depth continuity of loads at around 17th level, ii) continuity of lodes up to and beyond 20th level and iii) deviation survey of the exploratory boreholes. Exploration involved mapping of 3.02 sq. km on 1:4000 scale, 7483.60 m drilling in 8 boreholes and sampling & chemical analysis of 1,543 primary samples for Cu, 74 check samples for Cu, 34 composite samples for Cu, Ni and Co, 26 samples for Au, 26 samples for XRD & spectroscopy and 85 samples for minerography, petrography and specific gravity determination. About 15.085 million tonnes resources with average thickness of 5.83 m and average grade of 1.00% Cu has been estimated at 0.5% cut-off with 0.8% pay limit under Measured/Indicated Category. The exploration of Surda block and Sidheswar copper deposit was carried out for HCL whereas Nandup-Bayanbill (combined) for Ministry of Mines.
Bauxite & Associated Minerals (Ti,V,Ga etc)							
Gumla	Baraiburu	1:4000	2	-	-	-	Preliminary exploration for bauxite and associated minerals (Ti, V, Ga etc.) in Risahattoli block, Serangdag plateau, Gumla district was carried out. An area of 4.80 sq. km area was mapped on 1:4000 scale. The litho units mapped are granite/ granite gneiss, bauxite,

(Contd.)

Table - 3 (Concld.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							variegated clay, laterite and lateritic soil. A total of 22 boreholes were drilled. The thickness of bauxite zone intersected in the boreholes varied from 1.00 m to 7.25 m. Analytical results of two boreholes showed Al_2O_3 values varying from 36.87 – 45.58 % and SiO_2% values from 3.42 – 7.75%. Preliminary exploration for bauxite and associated minerals (Ti, V, Ga etc.) was carried out in Karmatanr sector. The promising area for bauxite and associated minerals (Ti, V, Ga etc.) was explored by drilling 29 boreholes up to a cumulative depth of 800 m and mapping of around 4.0 sq. km area on 1:4000 scale along with collection of 50 BRS and 200 CS samples were also carried out. The different lithounits intersected in the boreholes include lateritic soil, laterite, lateritic bauxite and clay.

Table – 4 : Mineral Production in Jharkhand, 2015-16 to 2017-18 (Excluding Atomic Minerals)

(Value in `'000)

Mineral	Unit	2015-16			2016-17			2017-18 (P)		
		No. of mines	Quantity	Value	No. of mines	Quantity	Value	No. of mines	Quantity	Value[$]
All Minerals		**62**		**19152954**	**59**		**17561832**	**57**		**21105305**
Coal	'000 t	-	121067	-	-	126435	-	-	123296	-
Bauxite	t	19	2111227	1399189	18	2289825	1642791	25	2590720	2142293
Copper Ore	t	-	267251	-	-	313856	-	-	178700	-
Copper Conc.	t	2	8574	286142	2	9802	332320	2	5072	173106
Gold Ore	t	-	4153	-	-	5581	-	-	4618	-
Gold	kg	1	13	35871	1	15	45424	1	8	24986
Iron Ore	'000 t	21	19198	16494215	21	21224	14623291	19	21848	17786135
Manganese Ore	t	5	509	3161	5	508	3440	3	4785	43579
Flint Stone	t	1	253	76	1	26	8	-	-	-
Graphite (r.o.m.)	t	2	36270	22914	1	10343	11450	2	18734	17094
Limestone	'000 t	11	1076	509938	10	1146	501660	5	1191	516664
Minor Minerals[@]		-	-	401448	-	-	401448	-	-	401448

Note: *The number of mines excludes fuel minerals and minor minerals.*

$ Excluding Fuel minerals.

@ Figures for earlier years have been repeated as estimates because of non-receipt of data.

Table – 5 : Principal Mineral-based Industries in Jharkhand

Industry/plant	Capacity ('000 tpy)
Alumina	
Hindalco Industries Ltd, Muri.	450
Asbestos Products	
Hyderabad Industries Ltd, Jasidih, Distt Deogarh.	60
Cement	
ACC Ltd, Chaibasa, Distt Singhbhum.	870
ACC Ltd, Sindri, Distt Dhanbad (G).	900
Bokaro Cement Plant (formerly JV of Jaypee Cement & SAIL), Bokaro (G).	2100
Lafarge, Jojobera, Distt Singhbhum.	4600
Ceramic	
Bihar Industrial Corp. Ltd, Madhupur, Distt Deoghar.	0.48
Maithan Ceramics Pvt. Ltd, Dhanbad.	NA
Chemicals	
Bihar Caustic & Chemicals Ltd, Garhwa Road, Distt Palamu.	92.75 (caustic soda lye)
Copper Smelter	
HCL, ICC, Ghatsila, Distt Singhbhum (East).	20.5 (copper smelting) 18.5 (copper cathode) 84 (fabricated wire bar) 54 (H_2SO_4), 390 t ($NiSO_4$) 480 kg ($CuSO_4$) 14.6 kg (selenium) 9868 kg (Ag), 698 kg (Au)
Iron & Steel Bokaro Steel Plant, Bokaro	6900 (sinter) 4585 (pig iron) 4360 (Crude/liquid steel) 35.5 (H_2SO_4) 27.2 (ammonium sulphate)
Tata Steel Ltd, Jamshedpur.	6000 (pellets) 7700 (sinter) 9700 (Crude/liquid steel)
Usha Martin Ltd, Jamshedpur.	500 (Sponge iron) 1200 (pellets) 715 (sinter)
Orissa Manganese & Minerals Ltd, Kandra, Sarai Kharsawan.	1200 (pellets)

(Contd.)

Table - 5 (Concld.)

Industry/plant	Capacity ('000 tpy)
Pig Iron	
Usha Martin Industries, Jamshedpur.	110
Sponge Iron	
Ashirwad Steel & Industries Ltd, Gamharia, Jamshedpur.	30
Bihar Sponge Iron Ltd, Chandil, Distt Saraikela-Kharsawan.	210
Brahmaputra Metallics Limited, Kamta, Gola, Distt Ramgarh.	105
Jai Durga Iron Pvt. Ltd, Jhumari Tellaiya, Distt Koderma.	36
Zoom Vallabh Steels Ltd, Dugdha, Distt Saraikela-Kharsawan.	120
Ferro Alloys	
Anjaney Ferro Alloys Ltd, Mihijam.	12
Gautam Ferro Alloys Ltd.	5.5
Tin Plates	
The Tin Plate Co. of India Ltd, Jamshedpur.	379
Glass	
IAG Co. Ltd, Bhandainagar.	66.8
Refractory	
Allied Refractories (P) Ltd, Amaghata.	7.2
SAIL Refractory Unit (formerly Bharat Refractories Ltd), Ranchi Road, Ramgarh.	7.5
SAIL Refractory Unit (formerly Bharat Refractories Ltd), IFICO, Ramgarh.	42
SAIL Refractory Unit (formerly Bharat Refractories Ltd), Bhandaridah, Distt Bokaro.	26
Jharia Firebricks Pottery Works (P) Ltd, Dhansar, Distt Dhanbad.	20
Mineral & Chemical Products, Kendposi, Distt West Singhbhum.	1.5 (calcined china clay)
Raj Refractory (P) Ltd, Hardag, Distt Ranchi.	6

G; Grinding Unit

Note: *Data, for Cement Industries on respective websites, is taken from Survey of Cement Industry & Directory, 2016.*