Indian Minerals Yearbook 2020

(Part- I)

59th Edition

STATE REVIEWS (Gujarat)

(ADVANCE RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

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GUJARAT

Mineral Resources

Gujarat is the sole producer of chalk and is the principal producer of clay (others), fluorite (graded), kaolin, silica sand, lignite, petroleum & natural gas and marl in the country. The State is the sole holder of the country's chalk, marl and perlite resources and possesses 66% fluorite, 28% diatomite, 25% bentonite, 18% granite, 12% wollastonite, 10% limestone and 9% bauxite resources.

The important mineral occurrences in the State are: **bauxite** in Amreli, Bhavnagar, Jamnagar, Junagadh, Kheda, Kachchh, Porbandar, Sabarkantha & Valsad districts; **ball clay** in Banaskantha, Bharuch, Kachchh & Patan districts; **bentonite** in Amreli, Bhavnagar, Jamnagar, Kachchh & Sabarkantha districts; **china clay** in Amreli, Banaskantha, Bhavnagar, Jamnagar, Junagadh, Kachchh, Mahesana & Sabarkantha districts; **chalk** in Porbandar district; **diatomite** in Bhavnagar district; **dolomite** in Bhavnagar & Vadodara districts; **fireclay** in Bharuch, Kachchh, Mehsana, Rajkot, Sabarkantha, Surat & Surendranagar districts; **fluorite** in Vadodara & Bharuch districts; **gypsum** in Bhavnagar, Jamnagar, Junagadh, Kachchh and Surendranagar districts; **lignite** in Bharuch, Bhavnagar, Kachchh & Surat districts; **limestone** in Amreli, Banaskantha, Bharuch, Bhavnagar, Jamnagar, Junagadh, Kheda, Kachchh, Panchmahals, Porbandar, Rajkot, Sabarkantha, Surat, Vadodara & Valsad districts; **marl** in Amreli, Junagadh & Porbandar district; **ochre** in Banaskantha, Bhavnagar & Kachchh districts; **perlite** in Rajkot district; **petroleum and natural gas** in oil fields of Ankaleshwar, Kalol, Navgam, Balol & Cambay in Cambay onshore and offshore basins; **quartz/silica sand** in Bharuch, Bhavnagar, Dahod, Kheda, Kachchh, Panchmahals, Rajkot, Sabarkantha, Surat, Surendranagar, Vadodara & Valsad districts; and **talc/soapstone/steatite** in Sabarkantha district.

Other minerals that occur in the State are: **apatite** and **rock phosphate** in Panchmahals district; **calcite** in Amreli & Bharuch districts; **copper ore** in Banaskantha district; **granite** in Banaskantha, Mahesana & Sabarkantha districts; **graphite** in Panchmahals district; **lead-zinc** and **marble** in Banaskantha & Vadodara districts; **manganese ore** in Panchmahals & Vadodara districts; **vermiculite** in Vadodara district; and **wollastonite** in Banaskantha district. The lignite resources are located in Bharuch, Bhavnagar, Kachchh and Surat districts (Tables - 1 and 2).

Exploration & Development

The details of exploration activities conducted by GSI and various agencies during 2019-20 are furnished in Table - 3.

Production

Lignite, Natural Gas, Petroleum (Crude), Bauxite, Limestone etc. were reported from Gujarat. The value of minor minerals production is estimated as ₹ 6,992 crore for the year 2019-20. There was 167 reporting mines in 2019-20 in case of MCDR minerals (Table-4).

Mineral-based Industry

The present status of each mineral-based industry is not readily available. However, the important mineral-based industries in the Organised Sector in the State are furnished in Table - 5.

Table – 2: Reserves/Resources of Lignite as on 1.4.2020: Gujarat

(In million tonnes)

District	Proved	Indicated	Inferred	Total
Total	**1278.65**	**283.70**	**1159.70**	**2722.05**
Kachchh	335.61	56.40	33.09	425.10
Bharuch	724.76	118.59	491.23	1334.58
Bhavnagar	–	–	299.17	299.17
Surat	218.28	108.71	336.21	663.20

Source: *Coal Directory of India 2019-20.*

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

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						
Apatite	tonne	-	-	-	-	-	-	-	-	-	-	351000	351000	351000
Ball clay#	tonne	20900	-	-	20900	342169	-	-	403801	-	49670	-	795640	816540
Bauxite	'000 tonnes	154911	2094	28229	185234	17324	35470	3925	28953	22107	56857	710	165347	350581
Bentonite	tonne	9221227	-	-	9221227	6838864	-	12460170	2163813	1904	113259150	-	134723901	143945128
Calcite#	tonne	-	-	-	-	-	-	-	-	-	12380	-	12380	12380
Chalk#	'000 tonnes	4215	529	319	5064	741	331	151	196	-	269	-	1687	6751
China clay#	'000 tonnes	54111	3486	19671	77268	25378	4790	28542	1663	4198	49337	4114	118021	195289
Copper														
Ore	'000 tonnes	-	-	-	-	2470	3010	1380	129	-	7131	-	14120	14120
Metal	'000 tonnes	-	-	-	-	30.13	36.72	29.04	0.69	-	113.38	-	209.96	209.96
Diatomite	'000 tonnes	-	-	-	-	-	-	-	-	-	811	-	811	811
Dolomite#	'000 tonnes	34862	15934	20829	71625	11947	27064	68785	20263	63780	280592	-	472431	544056
Fire clay#	'000 tonnes	231	-	56	287	1193	664	966	2120	1053	53526	-	59522	59809
Fluorite	tonne	-	-	-	-	4279230	-	-	-	5723360	2001920	-	12004510	12004510
Granite														
(Dim. stone)	'000 cu m	-	-	-	-	-	-	-	-	-	8501947	-	8501947	8501947
Graphite	tonne	-	-	-	-	-	-	-	-	2520805	835000	-	3355805	3355805
Gypsum#	'000 tonnes	4	5	24	33	4	-	-	616	308	15446	-	16374	16407
Laterite#	'000 tonnes	36019	-	399	36418	8095	-	1467	-	-	-	-	9562	45981
Lead-zinc														
Ore	'000 tonnes	-	-	-	-	2470	3010	1380	129	-	200	-	7189	7189
Lead metal	'000 tonnes	-	-	-	-	74.10	90.30	41.40	3.90	-	-	-	210	210
Zinc metal	'000 tonnes	-	-	-	-	123.5	150.5	69	1.10	-	-	-	344.	344.
Lead & zinc metal	'000 tonnes	-	-	-	-	-	-	-	-	-	0.90	-	0.90	0.90

(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						
Limestone	'000 tonnes	750236	173244	76324	999804	277146	159554	120210	21110	906641	18772852	-	20257514	21257318
Manganese ore	'000 tonnes	708	-	-	708	-	-	-	-	-	2180	-	2180	2888
Marble	'000 tonnes	-	-	-	-	-	26571	45000	-	17129	34871	-	123571	123571
Marl	tonne	117115856	4650000	2090000	123855856	11704870	-	-	-	-	-	-	11704870	135560726
Ochre#	tonne	37862	-	75703	113565	-	32699	4303	-	-	3016066	-	3053068	3166633
Perlite	'000 tonnes	-	-	-	-	140	683	595	-	-	-	988	2406	2406
Quartz-silica sand#	'000 tonnes	27892	5617	15260	48769	26742	6681	17809	2932	3371	26099	21	83656	132425
Phosphorite/ Rock phosphate	tonne	-	-	-	-	-	-	-	-	-	314820	-	314820	314820
Talc/soapstone/ steatite#	'000 tonnes	-	-	4	4	-	20	9	-	-	4	-	33	37
Vermiculite	tonne	-	-	-	-	-	-	-	-	-	1960	-	1960	1960
Wollastonite	tonne	-	-	-	-	-	-	-	-	-	1990000	-	1990000	1990000

Figures rounded off.

 # Declared as minor mineral vide Gazette notification dated 10.02.2015.

Note: *The Proved and Indicated balance recoverable reserves of crude oil and natural gas as on 1.4.2020 (P) in the State are 118.60 million tonnes and 57.13 billion cu. m, respectively.*

Table – 3 : Details of Exploration Activities in Gujarat, 2019-20

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Bauxite							
Kachchh	Julrai and Junagiya area	1:4000	10	-	98	12	Preliminary exploration (G3) was carried out for lateritic bauxite. Detailed mapping covering an area of 10 sq km on 1:4000 scale followed by drilling of 98 m was carried out. Laterite is hard, massive and maroon to brown in colour. Its exposed thickness varied from 0.10 to 2.0 m and in cores its maximum thickness was 4.62 m. Pisolitic and oolitic bauxites were found in the area. Its exposed thickness varied from 1 to 13 m, whereas, in cores it is 1.07 to 4 m. Well-developed pisolitic bauxite was exposed in the SE of Julrai. The chemical analysis showed Al_2O_3 content varying from 21.06 to 49.11%, Fe_2O_3 5.93 to 40.21%, SiO_2 varied from 8.09 to 21.60% and TiO_2 varied from 4.10 to 7.02% (in 09 samples). The Total REE content varied from 16.88 to 370.23 ppm in 12 samples.
Kachchh	Asambiya Nana, & Mandvi	1:4000	1.0	18	-	-	Preliminary exploration (G3) for lateritic bauxite was carried out in this area involving detailed mapping of 1.0 sq km area on 1:4000 scale. Bauxite occurred as pockets and lenses within the laterite deposits. The strike length of laterite/bauxite band was about 4.9 km with width varying from 160 to 730 m. Lithologs of 18 boreholes indicated that the thickness of mottled bauxite varied from 0.45 to 2.3 m, laterite varied from 1.2 to 9.2 m, clayey laterite varied from 2.2 m to 4.0 m and that of detrital bauxite varied from 4.2 m to 8.95 m. Chemical analysis result for major oxides of 7 samples showed that the lateritic bauxite was composed of mainly Al_2O_3 (26.0 to 48.1 wt %), SiO_2 (7.51 to 29.54 wt%), Fe_2O_3 (2.10 to 16.83 wt%) and TiO_2 (1.35 to 4.60 wt%). The chondrite-normalised REE patterns of the bauxite horizons from 16 (contd)

Table - 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							samples showed signatures such as enriched LREE, depleted HREE, relatively flat HREE and visible Eu anomalies.
Rare Earth Elements (REE) & Rare Metals (RM)							
Chhota Udaipur	Kikawada-Ghelvant Area	-	-	-	-	-	Reconnaissance survey (G4) was taken up for Rare-earth Elements (REE) and Rare Metals (RM) in this area. The Godhra granite is REE - bearing (monazite, zircon, apatite and allanite). However, REE mineralisation was seen as not homogenously distributed in it. Pegmatite and aplite, greisenised and albitised zones in granite, skarn zones, epidote-rich allanite-bearing granitic pegmatite were the potential host rocks enriched in REE. Encouraging total REE content was analysed from the panned heavy samples from the Jarwa, Ani and Vaswa rivers. The TREE from Jarwa reported 1,42,171.55 ppm (14.21 %) along with Yttrium (7,622 ppm); from River Ani TREE was reported as 36,367.04 - 1,44,943.05 ppm; and from River Vaswa it was 1,29,840.82 ppm (12.98%). Besides TREE, 398 ppm and 324 ppm of Niobium were recorded from panned sample of Vaswa and Ani rivers, respectively which also suggested the rare metal enrichment in the stream sediments. One of the bedrock samples of garnet-rich quartzo-feldspathic vein, near Village Malu was also characterised by anomalous Nb (264 ppm).
Chhota Udaipur	Lagami-Koliyathar area	1:2000	3.0	-	-	125	Detailed mapping in an area of 3.0 sq km was carried out on 1:2000 scales during G3 level of preliminary exploration for Rare-earth Elements (REE) and Rare Metals (RM) in Manka block of Saidiwasan Carbonatite (contd)

Table- 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							Complex, Kawant Taluka. Carbonatite breccia were identified and demarcated in northern, eastern, southern and central parts in Manka block of Saidiwasan Carbonatite Complex. The exposed thickness of carbonatite breccia was 25-60 m at southern part of the study area. Chemical analysis of 92 samples showed Niobium (Nb) varying from 193-545 ppm, with average of 379 ppm. Analysis of 33 bedrock samples revealed REE value to be varying from 3,574.41 ppm to 5,976.74 ppm, with average of 4,650 ppm. Chemical analysis of 59 PTS samples showed REE value varying from 289.92 to 3,442.37 ppm, with average of 2,432.4 ppm.
Chhota Udaipur	Satum-Virpur area	-	-	-	-	22	Reconnaissance survey (G4) was taken up for Rare-earth Elements (REE) and Rare Metals (RM) in this area. Apart from the primary nature of REE mineralisation, the area was found suitable for secondary type of REE hosted in stream placers and regolith. Out of 13 BRS and 9 PTS, chemical analysis for two BRS and one PTS were reported and these analysed more than 1,000 ppm total REE. For estimation of secondary REE mineralisation, heavy minerals were separated in different fractions by panning and sieving of the stream sediments. The non-magnetic fractions were mainly xenotime, monazite, zircon and apatite.

(contd)

Table- 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Chhota Udaipur	Moriyagaon-Amba-Dareri-Sorwa area	1:1000	0.3	-	2100	871	General exploration (G2) for Rare-earth Elements (REE) and Rare Metals (RM) in this area involved detailed mapping of 0.3 sq km on 1:1000 scale and a cumulative drilling of 2,100.0 m in the study area. During the course of exploration, 980 m drilling, 846 core samples, 07 PCS samples, 06 petrological samples, 06 samples for XRD studies and 06 for EPMA were collected. Analytical results of one of the borehole revealed total REE at 0.13% to 1.89% with average of 0.95% and Nb value at 45 ppm to 2,452 ppm with average of 483 ppm. REE values in another borehole varied from 0.048% to 1.52% with average of 0.53%.
Limestone							
Junagadh	Jujarpur block, Mangrol Taluka	1:4000	5.76	36	794.5	-	General exploration (G2) of limestone suitable for Steel Melting Shop (SMS), Cement grade and BF in the limestone in the area, mapping along with fixing of boreholes at 400 m X 400 m grid interval were completed. Boreholes were drilled up to the depth of 20 to 50 m below ground level. In the eastern part of the study area, in between limestone, A thick litho unit of calcareous soil and mud was observed as compared to western side of the block.
Gir-Somnath	Chamoda-Tantivela Block of Patan -Veraval	1:4000	5.6	-	200.0	8	Preliminary exploration (G3) of limestone suitable for (SMS)/ Cement grade and BF in the limestone of Chamoda-Tantivela block of Patan-Veraval Taluka was conducted. About 35 boreholes were proposed and marked at 400 m grid interval. Eight samples of limestone of Miliolite Formations revealed (contd)

Table- 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							average CaO as 48.07% with minimum 44.69% & maximum 53.41%. During the course of drilling, it was observed that the average thickness of limestone was 17 m. The Gaj Formation was observed mainly composed of deep ochrous marly limestone, dark grey calcareous clay and grey fossiliferous limestone. The calcareous conglomerate/gravels bed of 1.5 m thick was encountered at the contact between Miliolite Formation and Dwarka Formation. A total of 200 m drilling were carried out.
Tin							
Sabarkantha	south eastern part of Nadri block	-	-	-	-	-	Preliminary exploration (G3) for strategic minerals / rare metals (Sn-W-Ta-Nb) in Nadri granite and pegmatites intrusive into Delhi supergroup of rocks, Sabarkantha district was carried out. The chemical data of a few samples suggests Sn (2-2,281 ppm), Li (13-2,800 ppm), Rb (76-2,742 ppm) and Cu (4-2,415 ppm) in the southern part of the block. The elemental dispersion map of Sn, Cu and Nb were overlapping that formed an anomalous zone in the south-eastern part of the Nadri Block. The Li-mineralisation associated with Ta-Rb-F, was seen hosted in pegmatite along the lithological contact, mica-fluorite-rich greisen zones and mica-rich granitoids and pegmatites.
	RajchandraVihar and Sarangpur area	1:12500	100	-	-	-	Reconnaissance survey (G4) for strategic minerals / rare metals (Sn-W-Ta-Nb) was taken up in late magmatic phase of Idar granite in Sabarkantha district. A total area of 100 sq. km were mapped on 1:12,500 scale. The pegmatites and aplites occurred as vertical as well as sub-horizontal intrusions into the (contd)

Table- 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							Idar Granites. Dimension of these bodies varied from 15 cm to 1.5 m in width and 5 to 120 m in length. Presence of beryl and fluorite indicated the possibility of rare metals in pegmatites. Panning of soil samples carried out in Rajchandra Vihar and Sarangpur area also indicated presence of some heavy minerals. Aplites and microgranites hold the possibility of hosting rare metals. Molybdenite was also observed in Sendra Ambaji granite in Bhavangarh area.
Nickel							
Aarvalli	Hathipura and Phojdar Kampa	1:12500	100	-	-	84	Reconnaissance survey (G4) was carried out for Ni, Co and PGE in and around Hathipura and Phojdar Kampa, in the eastern part of Dadhaliya ultramafic complex, Aravalli district, A Large-scale mapping of 100.0 sq km area on 1:12500 scale was conducted. The mineralisation in the rocks of the area was sporadic in nature. Apart from this, secondary manganese mineralisation in fracture planes of quartzite was reported near Village Ghanta. Chemical analysis results showed 84 BRS samples (collected from ultramfic bodies), 57 samples showed of MgO value at 18.89 % to 42.12%, Co value at 100 to 382 ppm, Cr value at 1,019 to 3,172 ppm and Ni value at 1,006 to 2,709 ppm.
Phosphorite							
Kachchh	Deshalpur Vandhay, Samatra, Bharasar area	1:12500	100	-	-	-	Phosphate rock reported mostly in the cherty limestone, pisolitic limestone & calcareous fossiliferous coarse-grained sandstone. These lithounits showed positive indication for phosphorous with Shapiro kit. The limestone was seen as two bands with cumulative thickness 3-5 m. Pisolitic limestone was found occuring as thin bands & patches of 10-15 cm thickness and highly fossiliferous. The bands were very thin & mostly occurred as dislocated blocks on the surface. Calcareous fossilferous coarse-grained sandstone showed relatively less indication for phosphorous.

(contd)

Table- 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Commissioner of Geology & Mining, Gujarat							
Limestone							
Gir Somnath	Barevala Singhar, Madhavpur Ablash, Pipalva, Gangetha, Bhuva Timbi, Kodidra, Sindhaj, Kukras	-	-	90	3723	1339	The exploration was taken up with an objective to establish auctionable mineral reserves/resources. Exploration is under progress.
Devbhumi Dwarka	Pachtar	-	-	5	109	424	The exploration was taken up with an objective to establish auctionable mineral resources. About 7.49 million tonnes of reserves/resources were estimated during the year.
Amreli	Jafrabad	-	-	27	1350	621	The exploration was taken up with an objective to establish auctionable mineral reserves/resources. Exploration is under progress.
Bentonite							
Kachchh	Khirsara/Miyani, Rajdhanjar I & II & Nundhatad	-	-	604	23779.7	3139	The exploration was taken up with an objective to establish auctionable mineral reserves/resources. Exploration is under progress.
China clay							
Kachchh	Nadapa,Kal Talavadi & Mokhana	-	-	383	24139	4090	The exploration was taken up with an objective to establish auctionable mineral reserves/resources.Exploration is under progress.

(contd)

Table- 3 (concld)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Commissioner of Geology & Mining, Gujarat							
Bauxite							
Devbhumi Dwarka	Virpur Lusri, Mevasa, Lamba, Magadevia, Satapara & Nandana	-	-	234	495.00	1457	During 2019-20, an exploration in Virpur Lusri, Mevasa, Lamba, Mahadevia, Satapara & Nandana Mevasa villages of Devbhumi Dwarka district, Gujarat, was taken up with an objective to establish auctionable bauxite mineral resources in the area. During study, a total of 234 boreholes were drilled to a cumulative depth of 1,313 m and 1,457 samples for chemical analysis were collected. About 66.845 million tonnes resources were estabilised in the area.
Commissioner of Geology & Mining, Gujarat							
Limestone							
Dwarka	Devbhumi, Dwarka	-	-	12	495.00	104	-
Junagadh	Junagadh	-	-	18	905.00	91	-
Gir Somnath	Gir Somnath	-	-	85	2879.50	393	-
China clay							
Kachchh	Kachchh	-	-	37	3071.00	-	-
Bentonite							
Kachchh	Kachchh	-	-	11	574.60	-	-

Table – 4 : Mineral Production in Gujarat, 2017-18 to 2019-20 (Excluding Atomic Minerals)

(Value in ₹ '000)

Mineral	Unit	2017-18			2018-19			2019-20 (P)		
		No. of mines	Quantity	Value$	No. of mines	Quantity	Value$	No. of mines	Quantity	Value$
All Minerals		**207**		**74236544**	**200**		**74901900**	**167**		**76444846**
Lignite	'000t	-	13781	-	-	12566	-	-	10357	-
Natural Gas (ut.)	m cu. m	-	1607	-	-	1402	-	-	1342	-
Petroleum (crude)	'000t	-	4591	-	-	4626	-	-	4707	-
Bauxite	t	81	3559241	2129517	78	2185325	1412294	66	2074098	1348770
Manganese Ore	t	1	18362	11496	1*	-	-	1*	-	-
Limestone	'000t	125	26019	5414111	121	26651	5662241	100	22845	4915419
Marl %	t	-	1870836	295367	-	1794940	324720	-	1606673	262581
Sulphur#	t	-	95343	-	-	91962	-	-	97107	-
Minor Minerals		-	-	66386053	-	-	67502645	-	-	69918076

Note : *The number of mines excludes Fuel and Minor minerals.*
$: Excludes the value of Fuel minerals.
**: Only labour reported.*
%: Associate with Limestone.
#: Recovered as by-product from oil refineries.

Table – 5 : Principal Mineral-based Industries

Industry/plant	Capacity ('000 tpy)
Abrasives	
Bombay Mineral Limited Jam Khambhalia	86.4 (Abrasive Grain)
Carborandum Universal Ltd, Okha, Distt Jamnagar.	NA
Carborandum Universal Ltd, Bhatia, Distt Jamnagar.	NA
Flexo-Plast Abrasives, Ahmedabad.	NA
Orient Abrasive Ltd. Porbandar	75 (Abrasive Grain) 150 (Calcined Bauxite) 30 (Castable Refractory)
Asbestos Products	
Ramco Industries Ltd, Singura, Distt Kachchh.	72
Sanghi Industries Ltd, Sanghipuram, Distt Kachchh.	36
U.P. Asbestos Ltd, Valsad.	36

(contd)

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
Cement	
Ambuja Cements Ltd, Ambuja Nagar, Distt Junagadh.	5700
Ambuja Cement Ltd, Magdalla, Distt Surat (G).	1560
Mehta Group Gujarat Sidhee Cement, Sidheegram, Sutrapada Distt Junagadh.	1200
Mehta Group Saurashtra Cement Ltd, Porbandar, Distt Junagadh.	1500
Saurashtra Cement Ltd, Ranavav Porbandar,	3063
Hi Bond Cement, Gondal.	1200
J. K. Laxmi, Kalol, Distt Ganghinagar (G).	1000
J. K. Laxmi, Surat	1350
Sanghi Industries Ltd, Sanghipuram, Distt Kachchh.	4000
Shree Digvijay Cement Co. Ltd, Digvijaygram, Sikka Distt Jamnagar.	1200 (43 Gr.) 1200 (53. Gr.) 1200 (PPC) 1200 (Oil well cement) 1200 (Sulphate Resisting P.C.)
Tata Chemicals Ltd, Mithapur, Distt Jamnagar.	500
UltraTech Cement Co. Ltd, Pipavav,	6400

(contd)

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
Distt Amreli.	
UltraTech Cement Ltd, (Narmada Cement), Jafrabad, Distt Amreli.	1450
UltraTech Cement Ltd, (Gujrat Cement), Kovaya Babarkot Rajula Jafrabad,	6400
UltraTech Cement (formerly a unit of JCCL), Sewagram, Abdasa, Distt Kachchh.	2400
UltraTech Cement (formerly a unit of JCCL), Wanakbori, Distt Kheda (G).	2400
UltraTech Cement Ltd, Magdalla (G).	750
Sparta Cements & Infra Ltd. Bhuj	1000
Vadraj Cement, Mora, Surat	6000
Ceramic	
Unifrax India, Lakhtar	7.5 (Ceramic fiber product)
Orient Glazes Ltd, OGPL Kheda Unit Radhu	35.53
Chemical	
Baroda Rayon Corpn. Ltd, Surat.	15000 (yarn) 21600 (H_2SO_4) 2.2 (sodium sulphate)
Century Chemicals, Nava Nanga, Distt Jamnagar.	108 (refined salt)
Gujarat Alkalies & Chemicals Ltd, Baroda.	14.9 (caustic soda)
Gujarat Alkalies & Chemicals Ltd, Dahej, Distt. Bharuch.	242.6 (caustic Soda) 151.4 (Cl) 33.408 (phosphoric acid)
GHCL Limited, Sutrapada.	1100 (Soda Ash) 71 (Sodium bicarbonate)
Indian Rayon Industries Ltd, Veraval, Distt Junagadh.	21 (yarn) 35.7 (H_2SO_4) 10 (carbon disulphide) 9.3 (sodium sulphate) 91.3 (caustic soda)
Kamadhenu Nutrients Pvt.ltd. Panoli, Ankleshwar	10.8 (Dicalcium phosphate)
Kohler India Corp. Pvt. Ltd, Jhagadia,Talodara	15.02 (2Pc B) 8.29 (lav) 2.25 (Pedestal) 4.73 (tank)
Navin Fluorine Industries Ltd, Surat.	22 (HF)
Nirma Cement Ltd, Ranavav	421.2 (Soda ash)
Nirma Soda Ash Plant Kalatalav, Bhavnagar	1008 (Soda Ash Light) 648 (Soda Dense) 144 (Refined Sodium Bicarbonate) Vacuum Salt (864)
Saurashtra Chemicals Ltd, Porbandar, Distt Porbandar	365 (soda ash) 20.4 (caustic soda) 26.4 (refined bicarbonate)

(contd)

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
Shree Sulphurics Pvt. Ltd, Ankleshwar, Distt Bharuch.	58 (H_2SO_4) 12 (chloro-sulphuric acid)
Tata Chemicals Ltd, Mithapur, Distt Jamnagar.	875 (soda ash)
Copper Smelter	
Hindalco Industries Ltd, Birla Copper, Dahej, Distt Bharuch.	500 (copper smelting) 1670 (H_2SO_4) 15 tonnes (Au) 150 tonnes (Ag)
HCL, Gujarat Copper Project, Jhagadia, Distt. Bharuch.	50 (electrolytic copper) 20 (copper anodes)
Electrode	
Power Elctrode Varaval Shapar Kotda Sangani	0.60
Fertilizer	
Aarti Fertilizers, Vapi, Valsad	132 (SSP)
Coromandel International Ltd (Formerly Liberty Phosphate Ltd), Nandesari, Vododara	100 (SSP)
GSFC, Vadodara	367 (urea) 108 (DAP) 200 (complex) 196 (AS)
GSFC, Sikka (Sikka - I & II), Jamnagar	326 (DAP)
GNFC, Bharuch	636.9 (urea) 142.5 (complex)
Hindalco Industries Ltd, Dahej, Distt Bharuch	400 (DAP/ complex)
IFFCO Ltd, Kandla, Distt. Kachchh	2420
IFFCO Ltd, Kalol, Distt. Gandhinagar	602 (urea)
Khaitan Chemicals & Fertilizers Ltd, Dahej, Bharuch	200 (SSP)
KRIBHCO Ltd, Hazira, Distt. Surat	2195 (urea)
Narmada Agro Chemicals Pvt. Ltd, Mangrol, Junagadh	33000 (SSP)
Narmada Bio-chem Pvt. Ltd, Kalyangadh, Ahmedabad	196000 (SSP)
Nirma Ltd, Moraiya, Ahmedabad	100 (SSP)
Sona Phosphates Ltd, Sarigam, Valsad	15 (SSP)
T J Agro Fertilizers Pvt. Ltd, Navsari	22 (SSP)
Foundry	
Steelcast Ltd, Ruvapuri Road, Bhavnagar	30
Intolcast Pvt. Ltd, 16, 17 & 19 Ankur Industrial Complex, Rajkot Gundal Road Shaper, Rajkot	2.4 (steel casting)
Intricast Pvt. Ltd, 25/28 Galaxy Industrial Estate, Rajkot Gundal Road Shaper, Rajkot	1.08 (steel casting)
Invac Cast Pvt. Ltd, 444, 453 & 455 Nana Fofadia Road Bamangam, Vadodra	2.4 (steel casting)

(contd)

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
Gujarat Intuxt Ltd.184/P, Rajkot Gundal Road Shaper, Rajkot	1.8 (steel casting)
Iron & Steel	
Essar Steel Ltd, Hazira, Distt Surat	6700 (sponge iron) 10000 (crude/liquid steel)
Jindal Saw Ltd, Samaghogha, Mundra	900 (Sinter) 580 (Pig Iron)
Ferro Alloys	
Baroda Ferro Alloys Ltd, Panchmahals.	3.5
Essel Mining & Industries Ltd, Vapi, Distt Valsad.	9
Electro Ferro Alloys Ltd, Ahmedabad.	0.3
Sponge Iron	
Electrotherm India Pvt. Ltd, Samakhalli, Distt Kachchh	75
Gallant Metal Ltd, Samakhialli, Distt Kachchh	225000
Global Hi-Tech Industries Ltd, Bhuj, Distt Kachchh	105
Welspun Steel Ltd, Versamedi, Anjar	144
Glass	
Alembic Glass Industries Ltd, Baroda.	35.0
Bhagwati Glass Containers Ltd, Kalol.	8.7
Bharat Glass Tube Ltd, Bharuch.	7.2
Gobind Glass & Industries Ltd, Kadi.	NA
Gopal Glass Works Ltd, Budasan, Distt Mehsana.	40.6
Gujarat Borosil Ltd, Govali, Distt. Bharuch.	62.5
Piramal Glass Ltd, Jambusar.	355 (tpd)

(contd)

Table - 5 (concld)

Industry/plant	Capacity ('000 tpy)
Piramal Glass Ltd, Kosamba.	340 (tpd)
Haldyn Glass (Gujarat) Ltd, Padra, Vadodara.	320 TPD
Prestige Glass Industries Pvt Ltd, Vagra.	11.5
Petroleum Refinery	
IOCL, Koyali.	13700
RPL, Jamnagar	33000
RPL, Jamnagar (SEZ).	27000
Essar Oil Ltd, Vadinar.	20000
Refractory	
Calders India Refractorie Ltd, Bhayati Jambudiya, Wankaner	42
Lilanand Magnesite Pvt. Ltd, Dharmpur, Ranavav	10.8
Synthetic Gas	
Reliance Industries Ltd, JG-DTA Gasification Area, Kunalus Lalpur	13122.48
Calcined Bauxite	
Birla VXL Ltd, Porbandar	36
Bombay Minerals Ltd, Jamkhambhaliya	96
Gujarat Credo Mineral Industries Ltd, Naredi, Abdasa	500 (dry beneficiated) 10 (processed bauxite)
Saurashtra Calcine Bauxite & Allied Industries Ltd, Bhatia	39
Shri Natraj Ceramics & Chemical Industries Ltd, Khambhaliya	24

G: Grinding Unit

Data, not readily available for fertilizer and cement industries on respective websites, is taken from Indian Fertilizer Scenario, FAI Statistics, and Survey of Cement Industry & Directory, respectively.