Indian Minerals Yearbook 2013

(Part- I)

52nd Edition

STATE REVIEWS
(Tamil Nadu)

(FINAL RELEASE)

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MINISTRY OF MINES
INDIAN BUREAU OF MINES

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September, 2015

TAMIL NADU

Mineral Resources

Tamil Nadu is the leading holder of country's resources of vermiculite, magnetite, dunite, rutile, garnet, molybdenum and ilmenite. The State accounts for the country's 81% lignite, 75% vermiculite, 69% dunite, 59% garnet, 52% molybdenum and 30% titanium minerals resources.

Important minerals that are found to occur in the State are: **bauxite** in Dindigul, Namakkal, Nilgiris & Salem districts; **dunite/pyroxenite** in Salem district; **felspar** in Coimbatore, Dindigul, Erode, Kanchipuram, Karur, Namakkal, Salem & Tiruchirapalli districts; **fireclay** in Cuddalore, Kanchipuram, Perambalur, Pudukottai, Sivagangai, Thiruvallur, Tiruchirapalli, Vellore & Villupuram districts; **garnet** in Ramanathapuram, Tiruchirapalli, Tiruvarur, Kanyakumari, Thanjavur & Tirunelveli districts; **granite** in Dharmapuri, Erode, Kanchipuram, Madurai, Salem, Thiruvannamalai, Tiruchirapalli, Tirunel-veli, Vellore & Villupuram districts; **graphite** in Madurai, Ramnathapuram, Shivgangai & Vellore districts; and **gypsum** in Coimbatore, Perambalur, Ramnathapuram, Tiruchirapalli, Tirunelveli, Thoothukudi & Virudhunagar districts. Similarly, occurrences of minerals, such as, **lignite** deposits are located in Cuddalore Ariyalur, Thanjavur, Thiruvarur, Nagapattinam & Ramanathapuram districts; **limestone** in Coimbatore, Cuddalore, Dindigul, Kanchipuram, Karur, Madurai, Nagapattinam, Namakkal, Perambalur, Ramnathapuram, Salem, Thiruvallur, Tiruchirapalli, Tirunelveli, Vellore, Villupuram & Virudhunagar districts; **magnesite** in Coimbatore, Dharmapuri, Karur, Namakkal, Nilgiris, Salem, Tiruchirapalli, Tirunelveli & Vellore districts; **quartz/silica sand** in Chennai, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Kanchipuram, Karur, Madurai, Namakkal, Periyar, Perambalur, Salem, Thiruvallur, Thiruvarur, Nagapattinam, Tiruchirapalli, Villupuram, Virudhunagar & Vellore districts; **talc/steatite/soapstone** in Coimbatore, Salem, Tiruchirapalli & Vellore districts; **titanium minerals** in Kanyakumari, Nagapattinam, Ramanathapuram, Thiruvallur, Tirunelveli & Thoothukudi districts; **vermiculite** in Dharmapuri, Tiruchirapalli & Vellore districts; and **zircon** in Kanyakumari district have been established.

Other minerals that occur in the State are **apatite** in Dharmapuri & Vellore districts; **barytes** in Erode, Madurai, Perambalur, Tirunelveli & Vellore districts; **bentonite** in Chennai district; **calcite** in Salem district; **china clay** in Cuddalore, Dharampuri, Kanchipuram, Nilgiris, Sivagangai, Thiruvallur, Tiruvannamalai, Tiruchirapalli & Villupuram districts; **chromite** in Coimbatore & Salem districts; **copper, lead-zinc** and **silver** in Villupuram district; **corundum** and **gold** in Dharmapuri district; **dolomite** in Salem & Tirunelveli districts; **emerald** in Coimbatore district; **iron ore (magnetite)** in Dharmapuri, Erode, Nilgiris, Salem, Thiruvannamalai, Tiruchirapalli & Villupuram districts; **kyanite** in Kanyakumari & Tirunelveli districts; **molybdenum** in Dharmapuri, Dindigul & Vellore districts; **pyrite** in Vellore district; **sillimanite** in Kanyakumari, Karur & Tirunelveli districts; **tungsten** in Madurai & Dindigul districts; and **wollastonite** in Dharmapuri & Tirunelveli districts (Table-1). Districtwise reserves/resources of lignite are provided in Table-2.

In addition to the above, **petroleum and natural gas** deposits are found to be located in Cauvery basin area.

Table – 1 : Reserves/Resources of Minerals as on 1.4.2010 : Tamil Nadu

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	-	-	-	-	-	-	-	-	-	240000	-	240000	240000
Barytes	tonne	-	-	-	-	-	-	-	-	500	221919	-	222419	222419
Bauxite	'000 tonnes	708	-	-	708	-	1141	3564	960	10084	8363	-	24112	24820
Bentonite	tonne	-	-	-	-	-	-	-	-	3725333	5818519	-	9543852	9543852
Calcite	tonne	-	-	-	-	-	-	-	-	-	116632	-	116632	116632
China clay	'000 tonnes	-	-	-	-	-	-	-	-	327	56570	-	56897	56897
Chromite	'000 tonnes	-	-	-	-	-	-	-	7	-	276	-	282	282
Copper														
Ore	'000 tonnes	-	-	-	-	-	-	-	200	590	-	-	790	790
Metal	'000 tonnes	-	-	-	-	-	-	-	1.08	2.73	-	-	3.81	3.81
Corundum	tonne	-	-	-	-	-	-	-	-	-	4000	-	4000	4000
Dolomite	'000 tonnes	-	-	-	-	-	-	-	2010	135	-	-	2145	2145
Dunite	'000 tonnes	7466	-	1450	8916	-	-	102190	-	-	5773	-	107963	116879
Felspar	tonne	613184	6450	31302	650936	2328227	70156	416162	18870	69822	5447875	-	8351111	9002047
Fireclay	'000 tonnes	322	3269	423	4014	4833	171	1611	1561	-	102069	-	110244	114258
Garnet	tonne	334469	1511397	10595388	12441254	-	-	92051	15000	1408995	19871019	-	21387065	33828319
Gold														
Ore (primary)	tonne	-	-	-	-	-	-	-	-	-	67000	-	67000	67000
Metal(primary)	tonne	-	-	-	-	-	-	-	-	-	1.00	-	1.00	1.00
Granite														
(Dim. stone)	'000 cu m	-	1448	238	1686	-	45690	8234	7	-	503818	-	557749	559435
Graphite	tonne	2807113	-	810450	3617563	-	39486	2486	65330	647500	3866390	-	4621193	8238756
Gypsum	'000 tonnes	-	-	64	64	313	469	6584	25	249	19540	10	27191	27255
Iron ore														
(Magnetite)	'000 tonnes	-	-	-	-	-	-	-	-	169388	110728	226921	507037	507037
Kyanite	tonne	-	-	-	-	-	-	-	-	167000	81359	-	248359	248359

(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						
Lead-zinc														
Ore	'000 tonnes	-	-	-	-	-	-	-	200	590	-	-	790	790
Lead metal	'000 tonnes	-	-	-	-	-	-	-	2.26	5.48	-	-	7.74	7.74
Zinc metal	'000 tonnes	-	-	-	-	-	-	-	11.76	24.76	-	-	36.52	36.52
Limestone	'000 tonnes	199243	115705	55165	370112	19229	55984	42014	69951	32169	460412	-	679759	1049871
Magnesite	'000 tonnes	12462	5968	7474	25904	997	27	474	17	737	12355	-	14608	40511
Molybdenum														
Ore	tonne	-	-	-	-	-	1500000	-	36000	569304	7692728	167800	9965832	9965832
Contained MoS_2	tonne	-	-	-	-	-	1050	-	83.00	287.00	4430.53	50.34	5900.87	5900.87
Pyrite	'000 tonnes	-	-	-	-	-	-	-	-	-	24	-	24	24
Quartz-silica sand	'000 Tonnes	60063	9	93	60166	29644	4892	7523	3387	95837	27150	-	168432	228598
Sillimanite	tonne	331800	-	561766	893566	-	4000	13525323	-	-	3529577	-	17058900	17952466
Silver														
Ore	tonne	-	-	-	-	-	-	-	-	330000	460000	-	790000	790000
Metal	tonne	-	-	-	-	-	-	-	-	15.87	26.68	-	42.55	42.55
Talc-steatite/ soapstone	'000 tonnes	-	-	333	333	194	210	1400	-	-	524	-	2328	2661
Titanium minerals*														
	tonne	1181486	-	2367410	3548896	-	-	-	76454	19687147	93466694	-	113230295	116779191
Tungsten														
Ore	tonne	-	-	-	-	-	-	-	-	-	-	250000	250000	250000
Contained WO_3	tonne	-	-	-	-	-	-	-	-	-	-	50	50	50
Vermiculite	tonne	1526417	-	-	1526417	-	-	-	-	-	343051	-	343051	1869468
Wollastonite	tonne	-	-	-	-	-	-	-	-	-	3533	-	3533	3533
Zircon*	tonne	53318	-	175443	228761	-	-	-	-	-	-	-	-	228761

Figures rounded off.
The proved and indicated balance recoverable reserves of crude oil and natural gas in the State as on 1.4.2013 are 9.21 million tonnes and 45.83 billion cu m, respectively.
** Resources as per Department of Atomic Energy are provided in the respective Mineral Reviews.*

Table – 2 : Reserves/Resources of Lignite as on 1.4.2013 : Tamil Nadu

(In million tonnes)

District	Proved	Indicated	Inferred	Total
Total	**3735.23**	**22900.05**	**7712.43**	**34348.16**
Cuddalore	2831.00	2530.74	1199.78	6561.52
Ariyalur	904.23	302.50	481.07	1687.80
Thanjavur	-	2290.71	72.66	2363.37
Thanjavur & Thiruvarur	-	17248.06	3123.46	20371.52
Thanjavur & Nagapattinam	-	359.66	534.19	893.85
Thiruvarur & Nagapattinam	-	-	574.05	574.05
Ramanathapuram	-	168.83	742.01	910.84
Ramnad	-	-	964.97	964.97
Ramnad & Sivagangai	-	-	20.24	20.24

Source: *Coal Directory of India, 2012-13.*

Exploration & Development

The details of exploration activities conducted by GSI & various agencies for lignite and other minerals during 2012-13 are furnished in Table - 3.

Production

The value of mineral production in Tamil Nadu at ₹6,152 crore in 2012-13 increased by about 2% as compared to that in the previous year. The state contributed about 2% to the total value of mineral production in the country. The principal minerals produced in the state were lignite, natural gas (utilised), petroleum (crude), garnet (abrasive), graphite (r.o.m.), limestone, magnesite, marl and lime kankar which together accounted for about 93% of the total value of the minerals produced in the State in 2012-13. The State was the leading producer of lime kankar (almost entire output), garnet (abrasive) (91%), dunite (90%), magnesite (70%), lignite (53%) and graphite (r.o.m.) (52%) and second largest producer of vermiculite (20%) and fireclay (18%) in the country.

During the year under review, the production of clay (others) increased manifolds. The production of silica sand and dunite doubled and that of ball clay increased three times. Increase in output was also observed in bauxite (39%), fireclay (35%), limeshell (22%), graphite (r.o.m.) (19%), quartz (8%), limestone (7%) and lignite (1%). While the production of magnesite remained at the level of previous year, it decreased for vermiculite (1%), felspar (3%), petroleum (crude) (4%), natural gas (ut.) (6%), garnet (abrasive) (29%), lime kankar (30%) and marl (59%) as compared to the previous year (Table - 4).

The production value of minor minerals was estimated at ₹389 crore for the year 2012-13.

The number of reporting mines was 346 in 2012-13 as against 302 in the previous year.

The index of mineral production in Tamil Nadu (base 2004-05 = 100) was 117.2 in 2012-13 as compared to 118.4 in the previous year.

Table –3 : Details of Exploration Activities in Tamil Nadu, 2012-13

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
PGE							
Erode	Karattadipalaiyam, Gobichettipalayam Dasampalaiyam	1: 12,500	100.0	-	180	-	Reconnaissance stage (G-4) investigation for Platinum Group of Element (PGE) was carried out with the objective to map all the ultramafic bodies within MUB and to assess the PGE potential. The major rocks are banded gneiss, biotite gneiss, hornblende-biotite gneiss (HBG), dunite, peridotite, pyroxenite, gabbro, tremolite-actinolite schist, charnockite, K-feldspar rich pegmatoids, granite and quartz veins. An area was initially covered by large-scale mapping. A total of seven mafic-ultramafic bodies has been demarcated. These are located mainly in the central part of the study area namely, Polavakkalipalayam, Kamrajnagar, Pavalamalai, Pachchamali, north-east of Vellalapalayam, north of Chinnakollttupalaayam and Komal Karady with strike length ranging from 150 m to 1000 m and thickness varying from 10 m to 100 m. A quantum of 500 cu.m of pitting/trenching was carried out and pit/trench samples were collected and submitted for PGE analysis. Geophysical surveys comprising gravity, magnetic and IP were carried out in the block. The investigation will be continued in F.S.2013-14.

(Contd.)

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
PGE							
Erode	Solavanur block	-	-	-	-	-	Prospecting stage (G-3) investigation for PGE was carried out to systematically prove the persistence of the PGE mineralised zone. The Mettuppalayam Ultramafic Complex (MUC) is characterised by a group of mafic ultramafic rock ranging in composition from dunite through peridotite, meta pyroxenite, amphibolites, garnetiferous gabbro, gabbroic anorthosite to anorthosite with or without chromite layers occurring as large enclaves within the Bhavani Gneissic complex. Initially, an area of about 213 sq km has been covered by LSM during 2006-08. The samples collected from different segments have indicated higher PGE values of 484 ppb. Scout drilling was initiated in FS 2009-10 & 2010-12 to ascertain the depth persistence of the mineralised zone in Solvanur, Mallanayakan Palayam and Karappadi blocks. Four boreholes have been completed along positive trench profiles. All the boreholes have intersected mineralisation at expected depth. As a follow up of this, systematic drilling of the Solvanur block was carried out during FS 2012-13 to test the depth-wise persistence of mineralisation at two levels: Ist level (10 boreholes/30 m depth) and 2nd level (5 boreholes/60 m depth) at 100 m & 200 m spacing respectively. Seven boreholes (SL-1, 2, 3, 4, 6, 7 & 8) have been drilled. The investigation will be continued in F.S.2013-14.

(Contd.)

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
PGE							
Erode	Solavanur Extension block	-	0.5	-	-	180	Reconnaissance stage (G-4) investigation was carried out to prove the persistence of the PGE mineralised zone in Solavanur Block and to trace PGE mineralised meta pyroxenite bands in Solavanur Extension Blocks. Field traverses were taken in parts of toposheet no. 58E / 3 in and around Solavanur area. The area is mostly soil covered with scanty outcrops. The meta gabbro with its variants gabbroic anorthosite and anorthositic gabbros dominate the mafic-ultramafic sequence. The garneti ferous meta gabbro also occurs within the mafic-ultramafic suite and was observed in the Solavanur area. An area was covered by detailed mapping. The various litho units belonging to mafic-ultramafic differentiated sequence are present as discontinuous lensoidal bodies running parallel to regional foliation. Meta gabbro, gabbroic anorthosite and anorthositic gabbro dominate the mafic-ultramafic sequence. Discontinuous bands of meta pyroxenite are also common. The hornblende biotite gneiss is another major limit. Quartz veins traverse all the rocks types. A total of 270 cu.m of trenching has been completed and P & T samples have been collected and sent for PGE analysis. The investigation will be continued in F. S. 2013-14.

(Contd.)

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
PGE							
Namakkal	Tasampalayam block	-	-	09	869.80	226	Prospecting stage (G-3) investigation for Platinum Group of Elements was carried out to prove the depth persistence of the PGE mineralisation in the eastern part of Tasampalayam Block and to evaluate the resource potential of this block. The Sitampundi Anorthosite complex (SAC) exposes hornblende anorthosite gneiss with bands and lenses of chromitite/chromiferous meta-pyroxenite, garnet-pyroxene granite and amphibolites within the Bhavani Gneissic Complex. The SAC has been divided into three block (east to west) viz Karungalpatti, Chettiyampalayam and Tasampalayam for the purpose of exploration. Preliminary investigation (2009-10) for PGE in Tasampaliyam block led to the delineation of a prominent zone of chromitite and chromiferous metapyroxenite bands for a cumulative strike length of about 2.5 km in T1 and T2 sectors of the block. Trench samples from the zone have analysed Pt + Pd values ranging from 0.5 to 2.0 ppm with occasional high values of 21 ppm. PGE mineralisation is mostly confined to the chromitite and chromiferous meta pyroxenite bands/ layers within the meta anorthosite. Eight scout boreholes have been drilled in T1 and T2 sectors along positive trench profiles to test the depth persistence of these mineralised zones at 30 m vertical depth. In order to bring out the subsurface configuration of the mineralised zone, it was proposed to intersect the mineralised zone at two levels (a) at 30 m vertical depth with spacing of 100 m (b) at 60 m vertical depth with spacing of 200 m. A total of nine boreholes (1 to 9) were drilled in T1 Sector involving 869.80 m of drilling and these boreholes intersected bands/ layers of chromitite / chromiferous meta pyroxenite bands and sulphide rich zones. The core logging and sampling of six boreholes were completed and core samples prepared were submitted for PGE analysis. Two more boreholes will be drilled in T1 sector and nine boreholes are planned in T1 sector. The investigation will be continued in F. S. 2013-14. (Contd.)

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
PGE							
Tirupur	Tirumankaradu area	-	-	-	-	120	Reconnaissance stage (G-4) investigation for Platinum Group of Element (PGE) was carried out to delineate the potential zones of PGE mineralisation. A total area of 75 sq. km bounded by 77°36' to 77°42' E latitudes and 10°57' to 11°00' N longitude was mapped. The various litho units mapped include peridotite, pyroxenite, charnockite, pegmatoidal granite, banded magnetite, quartzite (BMQ) and younger pegmatite intrusives. The general foliation direction in the area is N70°-80°E to S70°-80°W which dip vertically. In Tirumankaradu where area one ultramafic body was exposed. The body comprised dark pyroxenite and peridotite, made up of olivine, and hornblende with minor constituents of biotite which contained pyrite, magnetite and chalcopyrite. A total no. of thirteen trenches with a cumulative volume of 230 cu. m. were opened in Tirumankaradu to examine the strike continuity of peridotite body. Trenches yielded rich peridotite/ pyroxenite bodies in the northern part whereas poor peridotites/pyroxenites occur in the trenches in the south-western part. A total of 120 nos. of trench samples were collected, processed and sent for PGE analysis. The investigation has been completed.
Lignite							
Ramanathapuram	Uttarakosamangal	-	-	3	5182.65	-	Prospecting stage (G-3) exploration was carried out for lignite in Uttarakosamangal sector, Ramnad sub basin. Regional exploration was continued to (a) delineate lignite bearing areas and (b) assess the resource potentiality of the area. A total of 3954.00 m of GP logging was completed. The boreholes intersected Quaternary sediments, Cuddalore/Tittacheri Formation and Neyveli Formation. Neyveli Formation of Eocene Age, which host economically significant lignite deposit, underlies the Cuddalore/ Tittacheri Formation. In the area of investigation three regionally persistent lignite seams, which tends to coalesce along dip have been recorded within Neyveli Formation between 315 m and 385 m depths. Maximum thickness about (21.00 m) of lignite seam was intersected in borehole (BH-2). The exploration has so far established a strike continuity of lignite seams for about 9 km and dip continuity of about 5.5 km. The work is in progress.

(Contd.)

Table - 3 (Concld)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
MECL							
Lignite							
Ramanathapuram	Sikkal	-	-	9	3156.00	-	Promotional drilling on behalf of Minisry of Coal was carried out. Exploration work is underway. However, as per the data generated, it is inferred that this block has got substantial lignite resources.
Thanjavur & Nagapattinam	Kadalangudi	-	-	49	17786.00	-	Promotional drilling on behalf of Minisry of Coal was carried out. Exploration work is underway. However, as per the data generated, it is inferred that this block has got substantial lignite resources.

Table – 4 : Mineral Production in Tamil Nadu, 2010-11 to 2012-13 (Excluding Atomic Minerals)

(Value in ₹'000)

Mineral	Unit	2010-11			2011-12			2012-13 (P)		
		No. of mines	Qty	Value	No. of mines	Qty	Value	No. of mines	Qty	Value
All Minerals		**192**		**46756551**	**302**		**60045129**	**346**		**61520555**
Lignite	'000t	3	23144	28755300	3	24590	36964800	3	24844	37346600
Natural Gas (utilised)	m cu m	-	1119	7162719	-	1285	9243414	-	1206	9973774
Petroleum (crude)	'000t	-	233	4254156	-	247	4487484	-	238	4325834
Bauxite	t	3	45898	8789	3	69078	17295	3	95777	38264
Ball Clay	t	1	20001	16461	1	4485	4678	1	13334	13352
Clay (others)	t	-	-	-	2	260	34	3	8920	1231
Dunite	t	*	21745	6519	*	35164	24966	*	77745	74604
Felspar	t	1	14555	3768	1	37604	11465	1	36400	12846
Fireclay	t	4	52620	9948	14	106512	15953	16	143815	18898
Garnet (abrasive)	t	62	1954289	1025423	65	1643802	631223	53	1167878	660115
Graphite (run of mine)	t	2	50079	24991	2	58305	29091	2	69109	36315
Gypsum	t	-	-	-	2	11906	2858	-	-	-
Sillimanite	t	**	150	1593	-	-	-	-	-	-
Limestone	'000t	90	20566	3765907	154	23643	4365037	183	25203	4782287
Lime Kankar	t	1	383202	84688	2	310389	59114	2	217643	38391
Limeshell	t	1	365	274	1	86	86	1	105	105
Magnesite	t	5	165601	276628	6	149494	240578	9	149059	251179
Marl	t	***	660686	83242	**	239281	27610	**	97620	17576
Quartz	t	11	8674	18045	38	12631	14611	61	13689	17640
Silica Sand	t	6	8886	5466	7	4502	6518	6	10609	13182
Talc/soapstone/steatite	t	1	1295	259	-	-	-	1	282	76
Vermiculite	t	1	2153	4818	1	1542	3454	1	1520	3426
Minor Minerals@		-	-	1247557	-	-	3894860	-	-	3894860

Note:*The number of mines excludes petroleum (crude), natural gas (utilised) and minor minerals.*

** Associated with magnesite.*

*** Associated with kyanite.*

**** Associated with limestone.*

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

Mineral-based Industry

The important large and medium-scale mineral-based industries in organised sector in the State are given in Table -5.

Table – 5 : Principal Mineral-based Industries in Tamil Nadu

Industry/plant	Capacity ('000 tpy)
Abrasives	
Carborandum Universal Ltd, Chennai.	NA
Cutfast Abrasives Tools Pvt. Ltd, Chennai.	NA
Aluminium	
MALCO, Mettur Dam (Non-operational).	85 (alumina) 40 (aluminium)
Asbestos Products	
Hyderabad Industries Ltd, Kannigaiper.	100.0
Ramco Industries Ltd, Arakkonam, Dist. Kancheepuram.	NA
Tamil Nadu Asbestos, Alangulam, Dist. Virudhunagar.	28.5
Cement	
ACC Ltd, Madukkarai, Dist. Coimbatore.	960
Chettinad Cement Corpn. Ltd, Karur, Dist. Dindigul.	600
Chettinad Cement Corpn. Ltd, Karikalli Dist. Tiruchirapalli.	1200
Dalmia Cements, Dalmiapuram, Dist. Tiruchirapalli.	4000
Grasim South, Reddipalayam.	1030
The India Cements Ltd, Sankarnagar, Dist. Tirunelveli.	2050
The India Cements Ltd, Sankari, Dist. Salem (G)	700
The India Cements Ltd, Dalavoi, Ariyalur.	2160
Ultra-Tech Cement Ltd Reddipalayam, Dist. Ariyalur.	1400
Ultra-Tech Cement Works, ARCW, Arakkonam (G).	1200

(Contd.)

Table - 5 (Contd.)

Industry/plant	Capacity ('000 tpy)
Madras Cements, R.S. Raja Nagar, Dist. Virudhunagar.	750
Madras Cements, Alathiyur.	3120
Tamil Nadu Cements, Alangulam, Dist. Virudhunagar.	400
Tamil Nadu Cements, Ariyalur, Dist. Ariyalur.	500
Ceramics	
Carborandum Universal Ltd, Hosur.	NA
Parryware Glamourooms Pvt. Ltd, Ranipet Dist. Vellore.	15
Murugappa Morgan Thermal Ceramics Ltd, Ranipet, Dist. Vellore.	5.44
Neycer India Ltd, Vadalur, Dist. Cuddalore.	9.0
Spartek Ltd, Chennai.	NA
Copper Smelter	
Sterlite Industries (I) Ltd, Thoothukudi.	400 (Cu anode) 205(Cu cathode) 90 (wire rods) 1050 (H_2SO_4)
Fertilizer	
CPFL, Muthugoundanpadur Dist. Coimbatore.	60 (SSP) 30 (H_2SO_4) 3 (oleum)
Coramandal Fertilizer Ltd, Ranipet Dist. Vellore.	132 (SP) 33 (H_2SO_4)
Coramandal Fertilizer Ltd, Ennore, Dist. Thiruvallur.	330 (NPK) 492 (phospho-gypsum)
EID-Parry (I) Ltd, Ranipet Dist. Vellore.	132.00 (super) 33.00 (H_2SO_4)
KICL, Ennore	82.00 (SSP) 41.00 (SAP)
Madras Fertilizer Ltd, Manali, Dist. Thiruvallur.	486.7 (urea) 840 (NPK)
Southern Petrochemical Industries Corpn. Ltd, Thoothukudi.	512 (urea) 606 (DAP) 2.56 (AlF_3)
Chemicals	
Tanfac Industries Ltd, Cuddalore.	17 (HF) 17 (AlF_3)

(Contd.)

Table -5 (Contd.)

Industry/plant	Capacity ('000 tpy)
Tuticorin Alkali Chemicals & Fertilizers Ltd, Thoottukudi	115 (soda ash) 115 (NH_4Cl)
Synthetic Rutile	
DCW Ltd, Sahupuram, Dist. Thoothukudi.	48
TiO_2 Pigment	
VVTi Pigments (P) Ltd, (formerly, Kilburn Chemicals) Dist. Thoothukudi.	13
Foundry	
Raja Foundry, Singanallur, Dist. Coimbatore.	NA
CPC Premier (P) Ltd, Coimbatore.	NA
Hinduja Foundries Ltd, Ennore.	NA
Krishna Engineering Co. Pvt Ltd, Tiruchirapalli.	NA
The KCP Ltd, Thiruvottiyur, Chennai.	NA
Iron & Steel	
Salem Steel Plant (SAIL), Salem.	320 (saleable steel)
Southern Iron & Steel Co. Ltd, Salem.	180 (pig iron) 300 (saleable steel)
Sponge Iron	
Adhunik Metalics Ltd, Eguvarpalayam, Dist. Thiruvallur.	60
Arshara Industries Ltd, Equvarpalayam, Dist. Thiruvallur.	60
Kaushik Steel Industries Ltd, Pappen Kuppam Dist. Thiruvallur.	60
Agni Steels Pvt Ltd, Olappalayam Road, Ingur, Dist. Erode	30
Refractory	
ABREF Pvt. Ltd, Gummudipoondi, Dist. Thiruvallur.	1.3
Sharda Ceramics Pvt. Ltd, Ambattur, Chennai.	9.9

(Contd.)

Table -5 (Concld.)

Industry/plant	Capacity ('000 tpy)
Shri Natraj Ceramic & Chemical Industries Ltd, Dalmiapuram, Dist. Tiruchirapalli.	42
VRW Refractories, Vanagaram.	21.6
DBM & Calcined Magnesite	
Badrinath Refractories, Salem.	0.9 (DBM) 2 (calcined)
Burn Standard Co. Ltd, Salem.	18 (calcined magnesite) 54 (DBM) 48 (refractory)
Carborandum Universal Ltd, Ranipet, Dist. Vellore.	NA
Carborandum Universal Ltd, Pallikkaranai.	NA
Dalmia Magnesite Corpn., Chettichavadi Dist. Salem.	125 (DBM)
Khaitan Hostambe Spinels, Salem.	30 (DBM) 10 (Mg-Cr clinker)
Ramkrishna Magnesite Mines, Salem.	3 (calcined)
Salem Refractories, Salem.	18 (DBM)
Tamil Nadu Magnesite Ltd, Kurumbapatty, Dist. Salem.	19.5 (calcined magnesite) 30 (DBM)
Tata Refractories Ltd, Salem.	25 (DBM) 2 (Calcined)
Tamil Nadu Products, Salem.	3 (Calcined)
Pon Kumar Magnesite Ltd, Salem	26.5 (DBM)
Khetan Hostambe Spinels Ltd, Salem.	30 (DBM) 10 (Cr magnesite)
Silicon Carbide	
Carborandum Universal Ltd, Tiruvottiyur	NA
Petroleum Refinery	
CPCL, Manali, Dist. Thiruvallur.	10500
CPCL, Narimanam.	1000

(G) : Grinding unit.