Indian Minerals Yearbook 2012

(Part- I)

51st Edition

STATE REVIEWS
(Kerala)

(FINAL RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

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KERALA

Mineral Resources

Kerala is well-known for its deposits of excellent quality china clay and beach sands containing valuable minerals like ilmenite, rutile, sillimanite, zircon, garnet, leucoxene and monazite. The State is the principal producer of kaolin, limeshell and sillimanite. The State also accounts for 88% zircon, 33% titanium minerals and 25% china clay, 13% kyanite and 11% sillimanite of the country's resources. Important mineral occurrences in the State are **bauxite** in Kannur, Kasargod, Kollam & Thiruvanantha-puram districts; **china clay** in Alappuzha, Ernakulam, Kannur, Kasargod, Kollam, Kottayam, Palakkad, Thiruvananthapuram & Thrissur districts; **limestone** in Alappuzha, Ernakulam, Kannur, Kollam, Kottayam, Kozhikode, Malappuram, Palakkad & Thrissur districts; **quartz/silica sand** in Alappuzha, Kasargod, Thiruvananthapuram & Wayanad districts; **sillimanite** in Kollam and Thiruvananthapuram districts; and **titanium minerals** in Kasargod, Kollam, Pathanamthitta & Thiruvananthapuram districts; and **zircon** in Kollam district.

Other minerals that occur in the State are **fire clay** in Alappuzha, Ernakulam, Kannur & Kollam districts; **garnet** in Kollam & Thiruvananthapuram districts; **gold** in Malappuram & Palakkad districts; **granite** in Palakkad and Thiruvananthapuram districts; **graphite** in Ernakulam, Idukki, Kollam, Kottayam & Thiruvananthapuram districts; **iron ore (magnetite)** in Kozhikode and Malappuram districts; **kyanite** in Kollam and Thiruvanantha-puram districts; **lignite** in Alappuzha, Kollam and Kannur districts; **magnesite** in Palakkad district; and **steatite** in Kannur and Wayanad districts (Tables - 1 and 2).

Exploration & Development

GSI carried out exploration for PGE at Attapady Valley in District Palakkad in 2011-12. Details of exploration are furnished in Table-3.

Production

The value of mineral production in Kerala during 2011-12 at ₹ 1,278 crore decreased marginally as compared to that in the previous year. The important minerals produced in the State during 2011-12 were kaolin, laterite, limestone, limeshell, silica sand and sillimanite which together accounted for only 4% of the value of mineral production in the State (rest of the value is attributed to minor minerals). Kerala was the largest producer of limeshell; second largest producer of kaolin; third largest producer of sillimanite with a share of 71% , 23% and 13% to the total production of respective minerals in the country.

Among important minerals, production of limeshell and laterite increased by 27% and 26% respectively whereas it decreased for sillimanite 8% and kaolin 9% as compared to the previous year (Table-4).

The production value of minor minerals was estimated at ₹ 1,227 crore for the year 2011-12.

The number of reporting mines in Kerala was 39 during 2011-12 as against 30 in the previous year.

The index of mineral production in Kerala (base 2004-05=100) was 176.17 in 2011-12 as compared to 193.68 in the previous year.

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

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						
Bauxite	'000 tonnes	-	-	-	-	29	-	24	2037	9284	2722	-	14096	14096
China clay	'000 tonnes	3352	792	-	4144	2447	463	2985	43930	20439	569226	20200	659690	663834
Fireclay	'000 tonnes	-	-	-	-	-	-	-	8200	51	9929	-	18181	18181
Garnet	tonne	-	-	45797	45797	-	-	-	100874	-	52190	-	153064	198861
Gold					-									
Ore (Primary)	tonne	-	-	-	-	-	-	-	462280	96180	-	-	558460	558460
Metal (Primary)	tonne	-	-	-	-	-	-	-	0.17	0.03	-	-	0.20	0.20
Ore (Placer)	tonne	-	-	-	-	-	-	-	-	2552000	23569000	-	26121000	26121000
Metal (Placer)	tonne	-	-	-	-	-	-	-	-	2.29	3.57	-	5.86	5.86
Granite (Dimen. Stone)	'000 cum	140	-	-	140	-	-	-	-	99	2570	-	2669	2808
Graphite	tonne	-	-	-	-	-	8300	17762	134900	1088550	335818	-	1585330	1585330
Iron Ore (Magnetite)	'000 tonnes	-	-	-	-	-	-	-	-	59912	23523	-	83435	83435
Kyanite	tonne	-	-	-	-	-	-	-	192360	-	10000	-	202360	202360
Laterite	'000 tonnes	180	-	1500	1680	-	-	-	-	-	-	16717	16717	18397
Limestone	'000 tonnes	12959	-	-	12959	122659	77	1576	21161	2888	35228	-	183589	196548
Magnesite	'000 tonnes	-	-	-	-	-	-	-	2	-	38	-	40	40
Quartz-silica sand	'000 tonnes	-	38	-	38	404	1959	3354	14611	30241	77528	-	128096	128135
Sillimanite	tonne	698056	-	-	698056	317569	120000	-	2479816	165408	3369200	-	6451993	7150049
Talc-Steatite-Soapstone	'000 tonnes	-	-	-	-	-	-	-	-	-	14390	-	14390	14390
Titanium Minerals*	tonne	13796194	-	-	13796194	5198882	-	-	-	22668876	87048716	-	114916474	128712668
Zircon	tonne	972624	-	-	972624	649938	-	-	81741	338525	716279	-	1786483	2759107

Figures rounded off.

** Resources as per Department of Atomic Energy are provided in the respective Mineral Reviews.*

Table –2 : Reserves/Resources of Lignite as on 1.4.2012 : Kerala

(In million tonnes)

District	Proved	Indicated	Inferred	Total
Total	**-**	**-**	**9.65**	**9.65**
Kannur	-	-	9.65	9.65

Source: *Coal Directory of India, 2011-12.*

Table –3 : Details of Exploration Activities in Kerala, 2011-12

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area	No. of	Metreage		
GSI PGE Palakkad	Attapadi valley	-	-	-	-	-	Sulphide-bearing BIF reported for the first time from this area extends intermittently over a cumulative strike length of 8 km in a zone between Anaikatti in the East and Sholayer in the West. The width of sulphide rich zone in BIF and associated rocks is about 1 km. EPMA and SEM Studies led to the identification of PGE in significant proportions in the form of Copper-Osmium alloy within the sulphide-bearing Banded Iron Formation (BIF) exposed around Nallasinge as well as in the meta-pyroxenites found near Narasimu-kku and Kalkandi. EPMA studies done on the chromite rock at Kalkandi revealed that the chromite-like minerals was in fact, chrome-spinel. A single grain of Cu-Os alloy was found during SEM studies. The work has been completed.
DGM, China clays	Alapadambu	-	-	02	-	73	The area is covered with hard laterite cappings below which there is variegated clay with yellow, red, pink patches and yellowish clay underlain by the gneissic charnockite. The object of exploration was to identify the china clay resources and to assess the reserve for the development of clay based industries. Resources is yet to be estimated.
-do- Kannur	Pazhangadi	-	-	04	82	-	The area is covered with hard laterite cappings below which there is variegated clay with yellow, red, pink patches and yellowish clay underlain by the gneissic charnockite.

(Contd.)

Table - 3 (Concld.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area	No. of	Metreage		
DGM, China clays Kannur	-	-	-	04	82	-	The object of exploration was to identify the china clay resources and to assess the reserve for the development of clay based industries. Resources is yet to be estimated.
-do- Kundara, Kollam	Pattamukku area	-	-	06	-	-	The investigated area is partly covered with laterite. The laterites are underlain by sedimentary forms of cross bedded ferrugenous sandstone, variegated clay to sandy clay, pinkish clayey sand, pale white clay, dull white clay, yellowish white sandy clay and black carbonaceous clay. The residual clay lies uncomformable below the sedimentary clay. Garnetiferous quartz of felspathic gneiss from the basement rock. About 0.25 milion tonnes resources of clay (sandy clay and variegated clay were estimated).
-do-	-do- Kakkolil area	-	-	02	-	-	The object of exploration is to identify the china clay resources and to assess the reserve for the development for the clay based industries. The investigated area is partly covered with laterite. The laterites are underlain by sedimentary forms of cross bedded ferrugenous sandstone, variegated clay to sandy clay, pinkish clayey sand, pale white clay, dull white clay, yellowish white sandy clay and black carbonaceous clay. The residual clay lies uncomformable below the sedimentary clay. Garnetiferous quartz of felspathic gneiss from the basement rock. The average thickness of clay was found to be 20 m. Resources is yet to be estimated.

Table – 4 : Mineral Production in Kerala, 2009-10 to 2011-12
(Excluding Atomic Minerals)

(Value in ₹ '000)

Mineral	Unit	2009-10			2010-11			2011-12 (P)		
		No. of mines	Qty	Value	No. of mines	Qty	Value	No. of mines	Qty	Value
All Minerals		**30**		**12114392**	**30**		**12790336**	**39**		**12783842**
Kaolin	t	15	698915	214303	15	704360	228105	14	641203	153755
Sillimanite	t	1	7939	75460	1	8243	89981	1	7578	83028
Laterite	t	4	69171	15322	3	88444	34913	3	110992	41210
Limestone	'000t	1	533	169645	1	530	115506	1	539	122185
Limeshell	t	2	22335	25511	2	18467	23020	3	23451	32203
Silica Sand	t	7	33988	20220	8	30975	26188	17	58732	78838
Minor Minerals@		-	-	11593931	-	-	12272623	-	-	12272623

Note : *The number of mines excludes minor minerals.*
@ Figures for earlier years have been repeated as estimates, wherever necessary, 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 Kerala

Industry/plant	Capacity ('000 tpy)
Abrasives	
Carborandum Universal Ltd, Ernakulam.	NA
Carborandum Universal Ltd, Thrissur.	NA
Carborandum Universal Ltd, Pathanamthitta.	NA
Asbestos Products	
Hyderabad Industries Ltd (formerly Malabar Building Products Ltd) Mulagunnathukavu, Dist. Thrissur.	84
Cement	
Malabar Cements, Walayar, Dist. Palakkad.	620
The Travancore Cements Ltd, Kottayam.	81
Ceramic	
Kerala Ceramics Ltd, Kundara, Dist. Kollam.	23
Tata Ceramics, Kozhikode.	NA
Chemical	
Tecil chemicals and Hydro Power Ltd, Chingavanam, Dist. Kottayam.	30 (calcium carbide) 2 (acetylene black) 7.5 (ferro silicon)

(Contd.)

Table - 5 (Concld.)

Industry/plant	Capacity ('000 tpy)
Synthetic Rutile	
CMRL, Ernakulam.	45
KMML, Chavara.	50
TiO_2 Pigment	
TTPL, Thiruvananthapuram.	17.5
KMML, Chavara	40
Fertilizer	
FACT Ltd, Udyogmandal, Dist. Ernakulam.	225 (AS) 148.5 (AP)
FACT Ltd, Ambalamedu, Dist. Ernakulam.	485 (NP)
Ferro-alloys	
INDSIL Electrosmelts Ltd, Pallatheri, Dist. Palakkad.	14
The Silcal Metallurgic Ltd, Wayalur.	3.6
Foundry	
HMT Machine Tools Ltd, Bengaluru.	NA
Glass	
Excel Glass Ltd, Pathirapally, Dist. Alleppey.	72
Lead-Zinc	
BZL Zinc Smelter, Binanipuram.	38 (Zn ingot) 80 (Cd ingot) 50 (H_2SO_4)
Petroleum Refinery	
KRL, Cochin.	7500