

STATE REVIEWS



Indian Minerals Yearbook 2020

(Part- I)

59th Edition

**STATE REVIEWS
(Kerala)**

(ADVANCE 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, leucogene and monazite. The State is the principal producer of limeshell and sillimanite. The State also accounts for 23% china clay and 10% sillimanite of the country's resources. As per AMD of the Department of Atomic Energy, Kerala state accounts for 144.02 million tonnes of ilmenite (in-situ), 7.83 million tonnes of rutile and 7.96 million tonnes of zircon resources.

Important mineral occurrences in the State are: **bauxite** in Kannur, Kasaragod, Kollam & Thiruvananthapuram districts; **china clay** in Alappuzha, Ernakulam, Kannur, Kasaragod, Kollam, Kottayam, Palakkad, Thiruvananthapuram & Thrissur districts; **limestone** in Alappuzha, Ernakulam, Kannur, Kollam, Kottayam, Kozhikode, Malappuram, Palakkad & Thrissur districts; **quartz/silica sand** in Alappuzha, Kasaragod, Thiruvananthapuram & Wayanad districts; **sillimanite** in Kollam & Thiruvananthapuram districts; and **titanium minerals** in Kasaragod, Kollam, Pathanamthitta & Thiruvananthapuram districts.

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 & Thiruvananthapuram districts; **graphite** in Ernakulam, Idukki, Kollam, Kottayam & Thiruvananthapuram districts; **iron ore (magnetite)** in Kozhikode & Malappuram districts; **kyanite** in Kollam & Thiruvananthapuram districts; **lignite** in Kannur districts; **magnesite** in Palakkad district; and **steatite** in Kannur & Wayanad districts (Tables - 1 and 2).

Exploration & Development

GSI carried out exploration for gold and platinum group of minerals in Palakkad District during 2019-20. Details of exploration carried out by GSI are furnished in Table-3.

Production

Limestone and Limeshell are the important minerals produced in Kerala State. The value of minor mineral's production is estimated as ₹ 3,848 crore for the year 2019-20. There were 2 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 organised sector in the State are given in Table - 5.

Table -2 : Reserves/Resources of Lignite as on 1.4.2020 : Kerala

(In million tonnes)

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

Source: Coal Directory of India, 2019-20.

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Table -1: Reserves/Resources of Minerals as on 1.4.2015: 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	7097	200	725	4573	463	4112	43930	20439	571644	20200	665360	673383	
Fireclay [#]	'000 tonnes	-	-	-	-	-	-	8200	51	9929	-	18181	18181	
Garnet	tonne	-	-	45797	-	-	-	100874	-	52190	-	153064	198861	
Gold		-	-	-	-	-	-	-	-	-	-	-	-	
Ore		-	-	-	-	-	-	462280	96180	-	-	558460	558460	
(Primary)	tonne	-	-	-	-	-	-	-	-	-	-	-	-	
Metal		-	-	-	-	-	-	0.17	0.03	-	-	0.2	0.2	
(Primary)	tonne	-	-	-	-	-	-	-	-	-	-	-	-	
Ore		-	-	-	-	-	-	-	2552000	23569000	-	26121000	26121000	
(Placer)	tonne	-	-	-	-	-	-	-	-	-	-	-	-	
Metal		-	-	-	-	-	-	-	2.29	3.57	-	5.86	5.86	
(Placer)	tonne	-	-	-	-	-	-	-	-	-	-	-	-	
Granite		-	-	-	-	-	-	-	-	-	-	-	-	
(Dim. Stone) ^{##}	'000 cu. m	140	-	-	-	-	-	-	99	2570	-	2669	2808	
Graphite	tonne	-	-	16518	-	8376	-	-	1088550	322606	-	1419532	1436050	
Iron Ore		-	-	-	-	-	-	-	59912	23523	-	83435	83435	
(Magnetite)	'000 tonnes	-	-	-	-	-	-	-	-	-	-	-	-	
Kyanite	tonne	-	-	-	-	-	-	192360	-	10000	-	202360	202360	
Laterite [#]	'000 tonnes	-	-	1156	953	-	-	-	-	-	16717	17670	18826	
Limestone	'000 tonnes	11472	-	-	123106	77	-	21161	2888	35228	-	182459	193931	
Magnesite	'000 tonnes	-	-	-	-	-	-	2	-	38	-	40	40	
Quartz-		-	-	-	-	-	-	-	-	-	-	-	-	
Silica Sand [#]	'000 tonnes	221	33	136	179	1985	3588	14611	30241	77489	-	128092	128481	
Sillimanite	tonne	-	-	-	1015625	120000	-	2479816	160300	3369200	-	7144941	7144941	
Talc/steatite/ soapstone [#]	'000 tonnes	-	-	-	-	-	-	-	-	14390	-	14390	14390	

Figures rounded off.

Declared as Minor Minerals vide Gazette Notification dated 10.02.2015.

Minor Mineral before Gazette Notification dated 10.02.2015.

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

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Platinum Group of Metals (PGM)							
Palakkad	Kalkandi Block, Attapadi Valley	1:1000	1	03	-	31	Preliminary Exploration (G3) for Platinum Group of Elements in this area has been carried out by detailed Mapping on 1:1000 scale, in 1.0 sq km area. Hornblende gneiss is the dominant litho unit in the mapped area, followed by quartzofeldspathic gneiss. The mafic and ultramafic rocks are found as enclaves within these Proterozoic gneisses. These litho units are intruded by younger meta-dolerite dykes of varying dimensions. A potential PGE mineralised zone in the sulphide-rich zone has been traced for a strike length of 400 m, having a width varying from 0.50 to 3 m towards northern part of the mapped area. This is identified as the eastern extension of the already established mineralised zone in the adjacent Vellamari Block. Samples collected from the trench KTR-02 showed anomalous Pt+Pd values ranging from 30 to 4,233 ppb over a 6 m wide zone. Analytical results of 31 BRS did not show any encouraging PGE values. Different sulphide-bearing PGE potential zones were intersected in boreholes BH- 01, BH- 02 and BH- 03.
Palakkad	Vellamari block, Attapadi Valley	-	-	-	-	-	General Exploration (G2) for Platinum Group of Elements in this area has been carried out PGE mineralisation in Vellamari Block was found restricted to the sulphide-bearing meta-pyroxenite and at the contact of meta-pyroxenite and metagabbro, which occur as bands in the area. The sulphide bearing PGE mineralised meta-pyroxenite body was about 2 to 7 m wide and has a strike length of 620 m. The analytical result showed that the PGE mineralised zone is continuous in Vellamari block. In trench VMTR-04, the analytical results revealed 6 m wide PGE mineralised zone with average grade of 3.96 ppm

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Table – 3 (concl'd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							Pt+Pd. Pt values in all the analysed rock types ranged from <5 ppb to 2,257 ppb, Pd values ranged from 7 ppb to 15,887 ppb, Ir values ranged from <3 ppb to 20 ppb, Ru values ranged from <3 ppb to 48 ppb and Rh ranged from <3 to 53 ppb. The total PGE content in this trench samples ranged from <3 to 18,266 ppb. Different sulphide-bearing PGE potential zones were intersected at Boreholes BH-07, BH-08, BH-09, BH-10 and BH-13 showing lithounits of meta- pyroxenite, meta-gabbro, gabbroic anorthosite and anorthositic gabbro.
Rare Earth Elements (REE)							
Wayanad	In and around Vazhavatta	1:12500	100	-	-	-	Reconnaissance Survey (G4) for the possible occurrence of REE and PGE mineralisation has been carried out by LSM. An area of 100 sq km was covered by large scale mapping on 1:12,500 scale. The investigated area forms part of Nilgiri block of Northern Granulite Terrain (NGT).

**Table-4: Mineral Production in Kerala, 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		8		46682670	8		38807569	2		38796189
Graphite (r.o.m.)	t	1	240	1937	1	-	-	-	-	-
Sillimanite	t	2	7538	74012	3	7318	82173	-	-	-
Limestone	'000t	1	444	366075	1	325	230958	1	398	303154
Limeshell	t	4	10228	38639	3	3996	17081	1	3583	15678
Sulphur #	t	-	155695	-	-	225857	-	-	227253	-
Minor Minerals @		-	-	46202007	-	-	38477357	-	-	38477357

Note: The number of mines excludes Minor minerals.

Recovered as by-product from oil refinery.

@ Figures for earlier years have been repeated as estimates because of non-receipt of data for 2019-20.

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Table – 5 : Principal Mineral-based Industries

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, Distt Thrissur	84
Cement	
J K Tex Coats Nadama, Kanayannur	0.030 (Cerastone) 0.025 (Rock tiles) 0.35 (Others)
Malabar Cements, Walayar, Distt Palakkad	660
Malabar Cement, Cherthala, Distt Alappuzha (G)	200
The Travancore Cements Ltd, Nattakom, Distt Kottayam	81
Ceramic	
Kerala Ceramics Ltd, Kundara, Distt Kollam	18000
Tata Ceramics, Kozhikode	NA
FACR-RCF Building Product Ltd (FRBL), Kochi.	NA
Chemical	
Tecil Chemicals and Hydro Power Ltd, Chingavanam, Distt Kottayam	30 (calcium carbide) 2 (acetylene black) 7.5 (ferrosilicon)
Cochin Minerals and Rutile Ltd, Kadungalloor, Alwaye	50 (Synthetic Rutile) 82.5 (Ferrous chloride) 30 (Ferric chloride) 8 (Recovered TiO ₂) 6 (Recovered Upgraded Ilmenite)

(contd)

Table – 5 (concl'd)

Industry/Plant	Capacity ('000 tpy)
Electrode	
Super Electrode, Patlla	0.6
Synthetic Rutile	
CMRL, Edayar, Distt Ernakulam	50
KMML, Chavara, Distt Kollam	50
TiO₂ Pigment	
TTPL, Kochuveli, Distt Thiruvananthapuram	1.8
KMML, Chavara, Distt Kollam	40
Fertilizer	
FACT Ltd, Udyogmandal, Distt Ernakulam	148.5 (Complex) 225 (AS)
FACT Ltd, Ambalamedu (Cochin II), Distt Ernakulam	485 (NP/NPKs)
Ferro-alloys	
INDSIL Electrosmelts Ltd, Pallatheri, Distt Palakkad.	14
The Silcal Metallurgic Ltd, Wayalur.	3.6
Foundry	
HMT Machine Tools Ltd, Bengaluru.	1500
Glass	
Excel Glass Ltd, Pathirapally, Distt Alappuzha.	72
Lead-Zinc	
BZL Zinc Ltd, Binanipuram. (Edayar Zinc Ltd)	38 (Zn ingot) 0.08 (Cd ingot) 50 (H ₂ SO ₄)
Petroleum Refinery	
BPCL, Kochi.	12400

G; Grinding Unit

Note: Data for Fertilizer Industries is taken from Indian Fertilizer Scenario, FAI Statistics.