

STATE REVIEWS



# Indian Minerals Yearbook 2018

(Part- I)

57<sup>th</sup> Edition

**STATE REVIEWS  
(Meghalaya)**

**(FINAL RELEASE)**

**GOVERNMENT OF INDIA  
MINISTRY OF MINES  
INDIAN BUREAU OF MINES**

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**MEGHALAYA****Mineral Resources**

Coal and limestone are the only major minerals mined in the State. **Coal** occurs in Mikir Hills, Khasi Hills, Jaintia Hills and Garo Hills districts. Resources of **limestone** occur in West Garo Hills, East Khasi Hills, West Khasi Hills and Jaintia Hills districts. Other mineral occurrences are **apatite** in Jaintia Hills district; **china clay** in East Garo Hills & West Garo Hills, Jaintia Hills & East Khasi Hills districts; **copper, lead-zinc, silver** and **titanium minerals** in East Khasi Hills district; **felspar** and **rock phosphate** in East Garo Hills & Jaintia Hills districts; **fireclay** in East Khasi Hills & West Garo Hills districts; **granite** in West Khasi Hills district; **iron ore (magnetite)** in East Garo Hills district; **quartz** and **silica sand** in East Garo Hills, West Garo Hills & East Khasi Hills districts; and **sillimanite** in West Khasi Hills district (Table -1). The various coalfields and their reserves/resources in the State are furnished in Table-2.

**Exploration & Development**

Details of exploration activities conducted by GSI and various agencies during 2017-18 are furnished in Table - 3.

**Production**

Coal and limestone were the important minerals produced in Meghalaya during the year 2017-18.

The value of minor minerals production was estimated at ` 721 lakh for the year 2017-18.

There were 19 reporting mines in 2017-18 in the State for limestone (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 provided in Table - 5.

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

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
<b>Total</b>	<b>89.04</b>	<b>16.51</b>	<b>470.93</b>	<b>576.48</b>
West Darangiri	65.40	-	59.60	125.00
East Darangiri	-	-	34.19	34.19
Balphakram-Pendenguru	-	-	107.03	107.03
Siju	-	-	125.00	125.00
Langrin	10.46	16.51	106.19	133.16
Mawtong Shelia	2.17	-	3.83	6.00
Khasi Hills	-	-	10.10	10.10
Bapung	11.01	-	22.65	33.66
Jaintia Hills	-	-	2.34	2.34

Source: Coal Directory of India, 2017-18.

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Table – 1 : Reserves/Resources of Minerals as on 01-04-2015: Meghalaya

Mineral	Unit	Reserves				Remaining Resources				Total resources (A+B)	
		Proved STD111	Probable		Total (A)	Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334		Total (B)
			STD121	STD122							
Apatite	tonne	-	-	-	-	-	1300000	-	1300000	1300000	
China clay#	'000 tonnes	-	-	-	-	1200	76242	5167	88875	88875	
Copper											
Ore	'000 tonnes	-	-	-	-	-	880	-	880	880	
Metal	'000 tonnes	-	-	-	-	-	9	-	9	9	
Felspar#	tonne	-	-	-	-	-	37449	-	37449	37449	
Fireclay#	'000 tonnes	-	-	-	-	-	10999	-	10999	10999	
Granite##											
(Dimension Stone)	'000 cu m	-	-	-	-	-	-	286467	286467	286467	
Iron ore											
(Haematite)	'000 tonnes	-	-	-	-	-	225	-	225	225	
Iron ore											
(Magnetite)	'000 tonnes	-	-	-	-	-	3380	-	3380	3380	
Lead-Zinc											
Ore	'000 tonnes	-	-	-	-	-	880	-	880	880	
Lead metal	'000 tonnes	-	-	-	-	-	16.5	-	16.5	16.5	
Zinc metal	'000 tonnes	-	-	-	-	-	14	-	14	14	
Limestone	'000 tonnes	135836	87904	1822	225562	68457	39289	46200	14048758	17704116	
Quartz-											
Silica sand#	'000 tonnes	-	-	-	-	-	177	-	6906	7083	
Rock											
Phosphate	tonne	-	-	-	-	-	1311035	-	1311035	1311035	
Sillimanite	tonne	-	-	-	-	-	55807	-	55807	55807	
Silver											
Ore	tonne	-	-	-	-	-	880000	-	880000	880000	
Metal	tonne	-	-	-	-	-	19.8	-	19.8	19.8	

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 Meghalaya, 2017-18

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
<b>GSI</b>							
<b>Bauxite (Lateritic)</b>							
West Khasi Hills	Umsung area	1: 12500	50.0	-	-	-	Preliminary exploration for lateritic bauxite and associated minerals in the eastern part of Umsung area, was carried out with mapping of 50 sq. km on 1:12500 scale and 1.5 sq. km on 1:2000 scale. Bauxite deposits of significantly higher levels were delineated which included 9 major bodies and 6 small bodies of lateritic bauxite. Bauxite profile thickness varied from 3 m to more than 7 m. The chemical results from 35 BRS samples showed Al <sub>2</sub> O <sub>3</sub> content varying from 30.99% to 67.15% (average 50.29%), SiO <sub>2</sub> content varying from 0.10% to 45.51% (average 9.65%) and Fe <sub>2</sub> O <sub>3</sub> content varying from 3.79% to 37.81% (average 16.98%) with associated gallium values in the range of 36 to 113 ppm, avg. 84.14 ppm.
		1:2000	1.50	-	-	-	
<b>Limestone</b>							
East Jaintia Hills	Umkyrpong area Litang Valley	-	-	-	-	-	Estimated a net total of 361.909 million tonnes of limestone resources in this area.
	Mynthning block	-	-	-	-	-	Estimated about 289.269 million tonnes of cement-grade limestone resources in this area.
	Laphet area	-	-	-	-	-	Estimated about 630.02 million tonnes of blendable/beneficial/portland cement-grade limestone resources in this area.
	Samasi- Pala block	1:4000	3.0	15	15	1267.12	G3 stage preliminary exploration for limestone was carried out in this area. The Prang limestone is the target horizon and has an average thickness of 70.93 m. The common Foraminiferan remains noticed were <i>Nummulites sp.</i> , <i>Discocyclina sp.</i> , <i>Assilina sp.</i> , <i>Alveolina sp.</i> and <i>Nummulites</i> . The overall grade of limestone is Cement (Portland) grade and resources estimated were at 289.269 million tonnes.

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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		
	Umkyrpong area	-	-	9	959.10	-	Preliminary exploration for limestone in this area was carried out over an area of 3 sq. km. The major litho-units exposed are splintery shale, siltstone and marl which are underlain by a very thick highly fossiliferous Upper Sylhet (Prang) Limestone. The average thickness of Upper Sylhet limestone intersected along nine boreholes was 93 m. Net reserves of 361.909 million tonnes have been estimated. Highly enriched phosphorite nodules horizons in lower part of Kopili Formation have been noticed. The phosphatic nodules are of various shapes and sizes varied from 2 mm to 8 cm their. Chemical analysis of marl and phosphate nodules showed P <sub>2</sub> O <sub>5</sub> of 4.4% and 15.75%, respectively.
	East of Laphet area	1:4000	3.0	-	953.2	-	During G3 level exploration, it was observed that Upper Sylhet Limestone was overlain by Kopili Formation with Upper Sylhet Sandstone lying beneath. The thickness of limestone varied from 60.05 m to 115.2 m. The Kopili Formation overlying Upper Sylhet Limestone was encountered in four boreholes with an average thickness of 25.97 m. Limestone resources in the area were estimated at 630.02 million tonnes mostly of Blendable/ Beneficial Cement /Portland grade.
	South of Akshe area	1:4000	3.0	5	662.3	-	G3 level preliminary exploration for Prang limestone in Litang Valley showed an average thickness of 120 m. The common foraminiferan remains noticed were <i>Nummulites sp.</i> , <i>Discocyclina sp.</i> , etc. Studies showed that the bio-clast was represented mainly by foraminifera shells and broken shell fragments which formed a coarser framework of grains and were cemented by calcite and contained carbonate mud as the matrix.

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Table - 3 (Contd)

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Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
<b>Titaniferous Vanadiferous– Magnetite</b>							
West Jaintia Hills Sung Valley	Mawkyndoor area	1:12500	50	-	-	110	Reconnaissance survey for titaniferous vanadiferous–magnetite was taken up in this area by large-scale geological mapping on 1:12500 scale covering 50 sq. km area in Sung Valley Ultramafic-Alkaline–Carbonatite Complex (SUACC) and its adjacent areas. A total of 110 samples were collected for analysis of major oxides and trace elements. Analytical results of different rock types except apatite/magnetite rocks showed Fe <sub>2</sub> O <sub>3</sub> values less than 20%, Ti up to 5.83% and vanadium up to a maximum of 273 ppm.
<b>REE</b>							
Ri-Bhoi	Umsophria- Warmawsaw,	1:12500	50	-	-	-	Reconnaissance survey for REE was carried out in this area. The study involved mapping of 50 sq. km on 1:12500 scale. The main litho units noted in the area are granite gneiss, cordierite gneiss and migmatites. The analytical results of 50 bedrock samples showed that the tREE values ranged from 198 ppm to 1,067 ppm. Soil samples collected from the weathered granitic rocks near Jirang area showed tREE values ranging from 397 ppm to 1,075 ppm. The tREE values of the pit samples collected from “A” horizon and “B” soil horizons ranged from 203 ppm to 780 ppm.
<b>REE and associated elements</b>							
West Khasi Hills	Nongbyrki block	1:12500	50	-	-	-	Reconnaissance survey for REE and associated elements in laterite in Nongbyrki block was carried out by large-scale mapping of 50 sq.km on 1:12500 scale followed by surface exploration of 25 cu.m by pitting/trenching. Analytical results showed average alumina (Al <sub>2</sub> O <sub>3</sub> ~ 45%) concentration in laterite. ICP-MS results of five bedrock samples showed high anomaly of tREE (Total REE ~ 2500 ppm) in A, B & C horizons on top of potash-rich porphyritic granite of South Khasi batholith. During reconnaissance survey in Nongjyllieh block laterite for REE and

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Table-3 (Concl'd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
	Nongjyllieh block	1:12500	50	-	-	-	associated elements, an area of 50 sqkm was mapped on 1: 12500 scale and three bauxite bodies, over gneissic charnockite, covering an area of 0.033 sq.km were identified in Lawse (0.019 sq.km), Mawduh (0.003 sq.km) and Nongjyllieh (0.011 sq.km) villages. In Lawse, the bauxite body contains 37.17 to 27.04% of Al <sub>2</sub> O <sub>3</sub> . The tREE value of Lawse section ranged from 154.06 to 1,799.74 ppm.

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

(Value in ` '000)

Mineral	Unit	2015-16			2016-17			2017-18 (P)		
		No. of mines	Qty	Value\$	No. of mines	Qty	Value\$	No. of mines	Qty	Value\$
<b>All Minerals</b>		<b>13</b>		<b>2694333</b>	<b>14</b>		<b>2612627</b>	<b>19</b>		<b>2861675</b>
Coal	'000t	-	3712	-	-	2308	-	-	1529	-
Sillimanite	t	-	-	-	1	-	-	1	459	3335
Limestone	'000t	13	3834	2622258	13	5095	2540552	18	6593	2786265
Minor Minerals@		-	-	72075	-	-	72075	-	-	72075

*Note: The number of mines excludes fuel and Minor Minerals.*

\$ Excluding Fuel minerals.

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

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**Table – 5 : Principal Mineral-based Industries in Meghalaya**

Industry/plant	Capacity (’000 tpy)
<b>Cement</b>	
Adhunik Cement (Subsidiary of Dalmia Cement), Distt Jaintia Hills.	1500
Amrit Cement Industries Ltd, Khleriat, Distt Jaintia Hills.	3000
Cement Manufacture Co. Ltd, Lumshnong, Distt Jaintia Hills.	600
Green Valley Industries, Nongsning, Distt Jaintia Hills.	1000
JUD Cement Ltd, Norpuh, Distt Jaintia Hills.	500
Mawmluh Cherra Cements Ltd, Cherrapunjee, Distt East Khasi Hills.	210
Meghalaya Cements Ltd, Thangskai, Distt Jaintia Hills.	530
Megha Technical & Engineering (P) (Subsidiary of CMCL), Lumshnong, Distt Jaintia Hills.	700
Hills Cement, Jaintia Hills	
RNB Cement, East Khasi	400
<b>Ferroalloys</b>	
Jaintia Ferro Alloys Pvt. Ltd, Byrnihat.	6
Maithan Alloys Ltd, Ribhoi.	15 MVA
Nalari Ferro alloys Pvt. Ltd, Norbhog.	11
Khasi alloys Pvt. Ltd, EPIP Meghalaya.	4.1
<b>Iron &amp; Steel</b>	
Jai Kamakhya Alloy Pvt. Ltd	815 tpd

*Source: Data extracted from respective websites of cement industries as well as Survey of Cement Industry & Directory, 2016.*