सत्यमेव जयते

# THE
# JHARKHAND GAZETTE
## EXTRAORDINARY
## PUBLISHED BY AUTHORITY

**No. 38** **3 Poush, 1940(S)**

**Ranchi, Wednesday, 23th January, 2019**

## DEPARTMENT OF INDUSTRY, MINES & GEOLOGY
## MINES & GEOLOGY DIVISION

---

## Notification
## 22 February, 2018

**Notification No -547--** In exercise of the powers conferred by section 15 of the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957) and in the light of Jharkhand Minor Mineral (Auction) Rules, 2017, the Government of Jharkhand hereby makes the following rules, namely:-

**1. Short title and commencement:**

1) These rules may be called the Jharkhand Minor Minerals (Evidence of Mineral Contents) Rules, 2018.
2) It shall come into force on the date of its publication in the Official Gazette.

**2. Application:** These rules shall extend to the whole State of Jharkhand and shall apply to minor minerals as specified in clause (e) of section 3* of Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957) (Schedule-II).

**3. Definitions and interpretation:**

In these rules, unless the context otherwise requires, -

a. "**Act**" means the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957);
b. "**Evidence of mineral contents"** means the existence of mineral contents established by the process of geological exploration according to the norms fixed in Schedule-I of these Rules.
c. "**Threshold value of minerals**" means the limits prescribed by the Indian Bureau of Mines or Government of Jharkhand from time to time based on the beneficiability and marketability of a mineral for a given region and for given

time, below which the material obtained after mining can be discarded as waste;

d. "Schedule" means the Schedule annexed to these rules;

e. The expressions General Exploration (C2) & Detailed Exploration (C1), Feasibility Study (FS) used in these rules shall have the meanings assigned to them in Part-I of the Schedule-I.

f. All other words and expressions used in these rules, but not defined, shall have the same meaning as assigned to them in the Act or the rules made there under.

***minor minerals" means building stones, gravel, ordinary clay, ordinary sand other than sand used for prescribed purposes, and any other mineral which the Central Government may, by notification in the Official Gazette, declare to be a minor mineral.***

**4. Preparation of mineral blocks:-**

A mineral block may be defined as an area where there is evidence to show the existence of mineral contents in accordance with the parameters prescribed in **Schedule-I**. The Government may grant a mining lease/ composite license through Electronic Auction, in the manner specified in Jharkhand Minor Mineral (Auction) Rules, 2017. Mineral Blocks should be prepared in defined geometrical shapes as far as possible.

**5. Existence of mineral contents for grant of composite license**

(1) An area may be notified for auction to grant a composite license under chapter III of Jharkhand Minor Mineral (Auction) Rules, 2017 if, in respect of such area:-

a) General Exploration (C2) has been completed to establish Inferred Mineral Resource.

b) A geological report has been prepared conforming to Part-III A of the schedule.

**6. Existence of mineral contents for grant of mining lease**

An area shall be considered for grant a mining lease under Chapter II of Jharkhand Minor Mineral (Auction) Rules, 2017 if, in respect of such area:-

a) Detailed Exploration (C1) has been completed to establish Indicated/ Measured Mineral Resource.

b) A geological report has been prepared conforming to Part-III A of Schedule-I.

**7. Relaxation**

Depending upon the local geological setup, mode of occurrence and nature of mineralization, the Government (State Cabinet) may relax the exploration norms as specified in Part III of Schedule-I, in whole or in part for any mineral or any area.

By order of Governor of Jharkhand

**Robin Toppo,**
Joint Secretary of Government

## SCHEDULE I

## EVIDENCE OF MINERAL CONTENTS

Existence of mineral content will have to be established in an area for the purpose of auction of Mineral Block by carrying out exploration as per the suggested geological parameters and exploration norms given in **Part-I, II and III** of **Schedule-I**.

### Part – I

**Definitions**

1. The exploration for any minor mineral deposit involves two stages namely, General Exploration (C2) and Detailed Exploration (C1). These stages of exploration lead to resource categories namely Inferred Mineral Resource and Indicated/ Measured Mineral Resource respectively reflecting the degree of geological assurance.
2. **General Exploration (C2)** involves the initial delineation of an identified deposit. Methods used include surface mapping, pitting/ trenching/ drilling, followed by sampling for evaluation of mineral quantity and quality (including mineralogical tests on laboratory scale if required), and limited interpolation based on indirect methods of investigation. The objective is to establish the main geological features of a deposit, giving a reasonable indication of continuity and providing an initial estimate of size, shape, structure and grade.
3. **Detailed Exploration (C1)** involves the detailed three-dimensional delineation of a known deposit achieved through sampling, such as from outcrops, pits, trenches, boreholes, shafts and tunnels etc. Sampling grids are closely spaced such that size, shape, structure, grade and other relevant characteristics of the deposit are established with a high degree of accuracy. Processing tests involving bulk sampling may be required.
4. **Mineral Resource** is a concentration or occurrence of solid material of economic interest in or on the earth‘s crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are subdivided, in order of increasing geological confidence into Reconnaissance, Inferred, Indicated and Measured resource categories which are defined as follows:-

   **(a) Inferred Mineral Resource** is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling achieved through a stage of preliminary exploration. An Inferred Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and shall not be converted to a Mineral Reserve.

The majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

**(b) Indicated Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

**(c) Measured Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved Mineral Reserve or to a Probable Mineral Reserve.

**5. A Feasibility Study (FS)** is a detailed comprehensive economic study of the selected development option for a mineral project that includes appropriately detailed assessments of applicable Modifying Factors together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable).

**6. Feasibility Mineral Resource:** A Feasibility Mineral Resource is that part of Indicated/ Measured Mineral Resource which is not economically mineable as, defined by studies at feasibility level. This material is identified as being possibly economically viable subject to changes in technological, economic, and environmental and/ or other relevant conditions.

**7. Mineral Reserve** is the economically mineable part of a Measured and Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Feasibility level as appropriate that include application of **Modifying Factors** which are factors those are taken into consideration while conducting a Pre-feasibility or feasibility study so as to convert Mineral Resources to Mineral Reserves. These include, but are not restricted to, mining, processing, end use, cut-off grade, threshold value, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors. Mineral reserve may further be categorized as:-

**(a) Probable Mineral Reserve** is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proved Mineral Reserve.

**(b) Proved Mineral Reserve** is the economically mineable part of a Measured Mineral Resource. A Proved Mineral Reserve implies a high degree of confidence in the Modifying Factors.

## Part-II

## Geological Parameters and Exploration Norms

| | |
|---|---|
| 1. | **Aerial reconnaissance:** Satellite imagery/ aerial photograph studies, as per necessity. |
| 2. | **Topographic & Geological survey (Mapping):** General Exploration stage: 1:50,000 to 1:4,000 scale and Detailed Exploration stage: larger than 1:4,000 to 1:1,000 scale as per type of mineral deposit. Geological mapping during general and detailed exploration to be carried out with the help of Total Station, Theodolite and other Electronic Survey Instruments. Exploration block to be geo-coordinated with the help of DGPS/ GPS. |
| 3. | **Ground Geophysical and Geochemical survey:** Geophysical and geochemical survey using appropriate techniques, as may be necessary, for the style of mineralization as per requirement. |
| 4. | **Technology:** Exploration and sampling using appropriate techniques from locations such as outcrops, trenches, pits, old workings and drill holes. The sampling locations are spaced suitably (in a grid pattern to the extent possible and may be modified depending on structural complexity) for establishing existence of mineralized body and its lateral and vertical continuity.<br>The lateral extension to be considered for resource assessment shall depend on geological considerations supplemented by geological continuity by mapping or by other means and in any case shall not be more than 50% of the grid spacing of the probe points.<br>Assessment based on selected information such as isolated assays, isolated drill holes, assays of panned concentrates etc. is not recommended. |
| 5. | **Sampling & sub sampling:**<br>a. Random grab/ chip/ channel sampling from surface exposure/ escarpments/ nala cuttings/ pit/ channel etc.<br>b. Systematic sampling from pits/ trenches/ outcrops/ workings etc. spaced closely enough to confirm geological and grade continuity for other stages of geological assessment.<br>c. Geological logging and sampling of drill core/ chip samples at regular interval, preferably metre wise or less for the mineralized portions.<br>d. The drill technique to be deployed shall depend on the rock type to be penetrated and with an aim to achieve maximum sample/ core recovery.<br>e. The exploration samples including surface samples, drill core/ chip samples shall be preserved for future use. |
| 6. | **Assay data & Laboratory tests:** Analysis of all samples generated for major radicals appropriate to the mineral under investigation. |
| 7. | **Petrographic & Mineragraphic studies:** Petrographic analysis of mineralized portions to ascertain the rock types and mineral assemblages including grain size, texture, gangue and its liberation characteristics etc. if considered necessary. |
| 8. | **Bulk density study**: The bulk density must be measured by methods that adequately account for incipient void spaces (vugs, porosity etc.) in mineral/ ore body. |
| 9. | **Bulk Sampling for Beneficiation studies:** Bulk sampling, if necessary, for testing processing technology. |
| 10. | **Environmental setting:** Details about local infrastructure, host population, historical sites, forests, sanctuaries, national park and base line information on environmental setting of the area to be collected. |
| 11. | **Any other relevant data:** Groundwater, geotechnical and rock characteristics etc. that may be relevant. |

## Part-III

### Exploration Norms (category-wise) for different types of Minor Mineral Deposits/ Mineralization

| Category | Type of deposit & Principal Minerals | General Exploration (C-2) | Detailed Exploration (C-1) |
|---|---|---|---|
| A | **Building materials/ Road materials/ General stones**<br><br>**Bedded Stratified and Tabular deposits of regular and irregular habit:**<br>Road Metal, Boulder, Murrum, Calcareous Sand, Diaspore, Laterite, Lime Kankar, Sand (others), Quartzite and Sand Stone (for making road metal), ordinary earth (used or filling or leveling purposes in construction or embankments, roads, railways, building) Brick-earth, Ordinary Earth, Soft & Murrum, Felsite, Shale, Slate, Shingle, Chalcedony pebbles used for ball mill purpose only, Lime shell, Kankar and Limestone used in kilns for manufacture of lime used as building materials, Gneissic & schistose rocks, Acid and Basic rock, Gabbro, Dolerite, Basalt, Norite etc. Phyllite, Quartzite, Sandstone, Slate, Boulder, Chalcedony Pebbles, Gravel, Ordinary Sand and Quartzite Pebbles, Trachyte, and Ordinary Clay. | **1.Geological Survey:**<br>i. Geological Mapping on 1:50,000 to 1:4,000 scale with boundary demarcation with GPS.<br>ii. Broad assessment of lithology, structure, surface extension of mineral.<br>iii. Recording of broad geomorphology, drainage, weather profile.<br>2. Geochemical Survey: not necessary<br>3. Ground geophysical survey: not necessary.<br>4. Technology:<br>i. Pitting/ Trenching: As per requirement to proof mineralization in the area.<br>ii. Scout drilling: not necessary.<br>iii. Sampling: Regional and random grab/ chip sample for geotechnical, specific gravity studies as per necessity.<br>iv. Bulk density/ specific gravity.<br>5. Integration of all data and identification of blocks for further exploration. | **1. Geological Survey:**<br>iv. Mapping on 1:4,000 to 1:1,000 scale with boundary demarcation with GPS.<br>v. Assessment of lithology, structure, surface extension of mineral.<br>vi. Recording of geomorphology drainage, weather profile.<br>2. Geochemical Survey: not necessary<br>3. Geophysical survey: not necessary.<br>4. Technology:<br>i. Pitting/ trenching: 2 to 5 per sq km per prospect.<br>ii. Drilling: not necessary.<br>iii. Sampling: systematic, grab chip, pit & trench sampling for geotechnical studies.<br>iv. Geotechnical studies: measurement of compressive strength, tensile strength etc., if necessary.<br>v. Bulk density/ specific gravity study.<br>5. Petrographic and mineralogical studies as per requirement. |
| B | **Industrial minerals**<br>**(i) Bedded Stratified and Tabular deposits of regular and irregular habit:**<br><br>Ball Clay, Red Clay Lithomargic Clay, Pozzolanic Clay, Natural Clay, Diatomaceous Clay, Bentonite, Chalk, Dolomite, Fireclay, Fuller's Earth, Gypsum, | **1. Geological Survey:**<br>i. Geological Mapping on 1: 50,000 to 1:4,000 scale with boundary demarcation with GPS.<br>ii. Broad assessment of lithology, structure, surface extension of mineral.<br>iii. Recording of broad geomorphology, drainage, weather profile.<br>2.Geochemical Survey: not | 1. Geological Survey:<br>i. Mapping on 1:4,000 to 1:1,000 scale with boundary demarcation with GPS.<br>ii. Assessment of lithology, structure, mineralization extent.<br>2.Geochemical Survey: Not Necessary<br>3. Geophysical survey: Not Necessary.<br>4. Technology:<br>i. Pitting/ Trenching: 2 to 5 per sq km or as per requirement.<br>ii. Drilling: Core drilling on grid spacing of 400m or closer for |

| | | | |
|---|---|---|---|
| | Quartzite, Molding Sand, Silica sand, Barytes, Chinaclay, Kaolin, Reh Matti, Ochre, Calc-Tuffa | necessary<br>3.Ground geophysical survey: not necessary.<br>4. Technology:<br>iv. Pitting/ Trenching: As per requirement to proof mineralization in the area.<br>v. Scout drilling: not necessary.<br>vi. Sampling: Regional and random grab/ chip sample for geotechnical, specific gravity studies as per necessity.<br>vii. Bulk density/ specific gravity.<br>5. Integration of all data and identification of blocks for further exploration. | deposits of regular habit and 200m or closer for irregular habit.<br>iii. Sampling: systematic pit & trench sampling. Core/ sludge sampling mineralization wise.<br>iv. Chemical analysis of all samples.<br>v. Bulk density/ specific gravity study.<br>1. Petrographic and mineralogical studies as per requirement. |
| | **(ii) Lenticular bodies of all dimensions including Bodies occurring en echelon, silicified linear zones of composite veins. Lenses, pockets, stockworks; irregular shaped modest to small sized bodies**<br>**a. <u>General Industrial Minerals</u>**<br>Calcite, Clay (Others), Feldspar, Ochre, Quartz, Steatite or Talc or Soapstone, China Clay, Kaolin and White Clay. | **1. Geological Survey:**<br>i. Geological Mapping on 1: 50,000 to 1:4,000 scale with boundary demarcation with GPS.<br>ii. Broad assessment of lithology, structure, surface extension of mineral.<br>iii. Recording of broad geomorphology, drainage, weather profile.<br>2. Geochemical Survey: not necessary<br>3. Ground geophysical survey: not necessary.<br>4. Technology:<br>i. Pitting/ Trenching: As per requirement to proof mineralization in the area.<br>ii. Scout drilling: not necessary.<br>iii. Sampling: Regional and random grab/ chip sample for geotechnical, specific gravity studies as per necessity.<br>iv. Bulk density/ specific gravity.<br>5. Integration of all data and identification of blocks for further exploration. | 1. Geological Survey:<br>i. Mapping on 1:4,000 scale to 1:1,000 scale with boundary demarcation with GPS.<br>ii. Assessment of lithology, structure, mineralization extent.<br>2.Geochemical Survey: Not Necessary<br>3. Geophysical survey: Not Necessary.<br>4. Technology:<br>i. Pitting/ Trenching: 2 to 5 per sq km or as per requirement.<br>ii. Drilling: Core drilling on grid spacing of 400m or closer for deposits of regular habit and 200m or closer for irregular habit.<br>iii. Sampling: systematic pit & trench sampling. Core/ sludge sampling mineralization wise.<br>iv. Chemical analysis of all samples.<br>v. Bulk density/ specific gravity study.<br>5. Petrographic and mineralogical studies as per requirement. |
| | **b. Precious & Semi Precious Stones, Pegmatite, Ultra basic rocks and Mica**<br>Agate, Corundum, Diaspore (gem varities), Dunite, Peridotite, | **1. Geological Survey:**<br>i. Geological Mapping on 1: 50,000 to 1:4,000 scale with boundary demarcation with GPS.<br>ii. Broad assessment of lithology, structure, surface extension of mineral.<br>iii. Recording of broad | 1. Geological Survey:<br>i. Mapping on 1:4,000 scale to 1:1,000 scale with boundary demarcation with GPS.<br>ii. Assessment of lithology, structure, mineralization extent.<br>2.Geochemical Survey:<br>Not Necessary<br>3. Geophysical survey: |

| | | | |
|---|---|---|---|
| | Pyroxenite and Mica all varities. | geomorphology, drainage, weather profile.<br>2.Geochemical Survey: not necessary<br>3.Ground geophysical survey: not necessary.<br>4.Technology:<br>i. Pitting/ Trenching: As per requirement to proof mineralization in the area.<br>ii. Scout drilling: not necessary.<br>iii. Sampling: Regional and random grab/ chip sample for geotechnical, specific gravity studies as per necessity.<br>iv. Bulk density/ specific gravity.<br>5. Integration of all data and identification of blocks for further exploration. | Not Necessary.<br>4. Technology:<br>i. Pitting/Trenching: 2 to 5 per sq km or as per requirement.<br>ii. Drilling: Not required.<br>iii. Sampling: systematic pit & trench sampling.<br>iv. Chemical analysis of all samples.<br>v. Bulk density/ specific gravity study.<br>5. Petrographic, Gem Testing and mineralogical studies as per requirement. |
| **C** | **<u>Dimension and Decorative Stones</u>**<br><br>Granite (Granite means dolerites, granite gneisses, migmatites, gabbros, anorthosites, rhyolites, syenites, leptynites, charnockites and any other igneous and ortho-metamorphic rock types) Marble (marble means crystalline metamorphosed calcareous or dolomitic rocks and serpentine rock types) BHJ, Fuschite Quartzite | **1. Geological Survey:**<br>i. Geological Mapping on 1: 50,000 to 1:4,000 scale with boundary demarcation with GPS.<br>ii. Broad assessment of lithology, structure, surface extension of mineral.<br>iii. Recording of broad geomorphology, drainage, weather profile.<br>2. Geochemical Survey: not necessary<br>3. Ground geophysical survey: not necessary.<br>4. Technology:<br>i. Pitting Trenching: As per requirement to proof mineralization in the area.<br>ii. Scout drilling: not necessary.<br>iii. Sampling: Regional and random grab/ chip sample for geotechnical, specific gravity studies as per necessity.<br>iv. Bulk density/ specific gravity.<br>5. Integration of all data and identification of blocks for further exploration. | 1. Geological Survey:<br>i. Mapping on 1:4,000 to 1:1,000 scale with boundary demarcation with GPS.<br>ii. Assessment of lithology, structure, mineralization extent.<br>2.Geochemical Survey:<br>Not Necessary<br>3. Geophysical survey:<br>Not Necessary.<br>4. Technology:<br>i. Pitting/ Trenching: 2 to 5 per sq km or as per requirement.<br>ii. Drilling: Not required.<br>iii. Sampling: 2 to 3 grabs per prospect.<br>iv. Geotechnical: Further refinement of blockability data, polishing index measurement, measurement of compressive strength, tensile strength etc.<br>v. Bulk density/ specific gravity study.<br>5. Petrographic and mineralogical studies as per requirement. |

## Part-III A

## Reporting of Minor Mineral Resources

A Geological Study Report for estimation and reporting of Minor Mineral Resources may be prepared integrating all data of exploration (sampling and testing generated through aerial, geophysical, geochemical, geological surveys and technological study) collected for assessing the resources as per the stage of exploration. The report may incorporate, among other things, the following contents:

| Sl. | Contents | Explanation |
|---|---|---|
| 1 | Title & Ownership | • Title of Report.<br>• Details of period of prospecting/ mineral right if any.<br>• Details of exploration agency, qualification, experience of associated technical persons engaged in exploration. |
| 2 | Details of the area | • Mauza/ Village, Post Office, Taluka, District, State.<br>• Survey of India Toposheet/ OSM Sheet Number and Geo-coordinates of the area of all corner points.<br>• Mineral(s) under investigation. |
| 3 | Infrastructure & Environment | Local infrastructure, host population, historical sites, forests, sanctuaries, national park and environmental settings of the area. |
| 4 | Previous exploration | • Details of previous exploration carried out by other agencies/ parties. |
| 5 | Geology | • Brief regional geology of the area outlining the broad geological, structural frame work.<br>• Local Geology: Deposit/ mineralization type, geological setting and details of dip, strike, old workings, surface exposures etc. of the area under study also of adjoining nearby areas if the information is likely to have an impact on the area under study.<br>• Geological map of appropriate scale with geo-coordinates showing major litho-logical units, structural features; extent of surface mineralization, location of boreholes, pits, trenches, old workings etc. |
| 6 | Aerial/ ground geophysical/ geochemical Data | Details of aerial, geophysical & geochemical survey results taken up if any and their results (if carried out). |
| 7 | Technological investigation | Details of technological investigation (pitting/ trenching/ drilling etc.). |

| | | |
|---|---|---|
| 8 | Type of Sampling | Grab, channel, random etc. |
| 9 | Drilling technique & drill sampling employed | • Drill type and details like core diameter, collar R.L, azimuth, inclination, coordinates of bore holes etc.<br>• Whether core and chip sample recoveries have been properly recorded and results assessed.<br>• Measures taken to maximize sample recovery and ensure representative nature of the samples.<br>• Whether a relationship exists between sample recovery and grade.<br>• Logging: -Whether core and chip samples have been logged to a level of detail to support<br>• Appropriate Mineral Resource estimation, mining studies. |
| 10 | Grade and chemical analysis | Chemical analysis data for grade determination and procedures. |
| 11 | Bulk Density/ Specific Gravity | Whether assumed or determined. |
| 13 | Resource estimation techniques | • Discussion on mineralization and techniques for resource estimation.<br>• The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, maximum distance of extrapolation from data points. |
| 14 | Geotechnical Studies For Dimensional stone report | • Assessment of Blockability.<br>• Polishing Index.<br>• measurement of compressive strength, tensile strength etc. |
| 15 | Annexure/ enclosures to the report | The report shall include all relevant data including maps, sections, logs, analysis reports, photographs etc. in support of the estimates made. |
| 16 | Any other information | Any other information as may be available or required by any authority as prescribed. |

## SCHEDULE II
## MINOR MINERALS
## Categorization of Minor Minerals for conditions relating to grant of Mineral Concessions

| | |
|---|---|
| **Category- A** | **Building materials/ Road materials/ General stones**<br>**Bedded Stratified and Tabular deposits of regular and irregular habit:**<br>Road Metal, Boulder, Murrum, Calcareous Sand, Diaspore, Laterite, Lime Kankar, Sand (others), Quartzite and Sand Stone (for making road metal), ordinary earth (used or filling or leveling purposes in construction or embankments, roads, railways, building) Brick-earth, Ordinary Earth, Soft & Murrum, Felsite, Shale, Slate, Shingle, Chalcedony pebbles used for ball mill purpose only, Lime shell, Kankar and Limestone used in kilns for manufacture of lime used as building materials, Gneissic & schistose rocks, Acid and Basic rock, Gabbro, Dolerite, Basalt, Norite etc. Phyllite, Quartzite, Sandstone, Slate, Boulder, Chalcedony Pebbles, Gravel, Ordinary Sand and Quartzite Pebbles, Trachyte, and Ordinary Clay. |
| Category- B | **Industrial minerals**<br>**(i) Bedded Stratified and Tabular deposits of regular and irregular habit:**<br>Ball Clay, Red Clay Lithomargic Clay, Pozzolanic Clay, Natural Clay, Diatomaceous Clay, Bentonite, Chalk, Dolomite, Fireclay, Fuller's Earth, Gypsum, Quartzite, Molding Sand, Silica sand, Barytes, Chinaclay, Kaolin, Reh Matti, Ochre, Calc-Tuffa |
| | **(ii)Lenticular bodies of all dimensions including Bodies occurring en echelon, silicified linear zones of composite veins. Lenses, pockets, stockworks; irregular shaped modest to small sized bodies**<br>**a. General Industrial Minerals**<br>Calcite, Clay (Others), Feldspar, Ochre, Quartz, Steatite or Talc or Soapstone, China Clay, Kaolin and White Clay.<br>**b. Precious & Semi Precious Stones, Pegmatite, Ultra basic rocks and Mica**<br>Agate, Corundum, Diaspore (gem varities), Dunite, Peridotite, Pyroxenite and Mica all varities. |
| **Category- C** | **Dimension and Decorative Stones**<br>Granite (Granite means dolerites, granite gneisses, migmatites, gabbros, anorthosites, rhyolites, syenites, leptynites, charnockites and any other igneous and ortho-metamorphic rock types) Marble (marble means crystalline metamorphosed calcareous or dolomitic rocks and serpentine rock types) BHJ, Fuschite Quartzite |

Sd/-

**Robin Toppo,**
Joint Secretary of Government

---

Printed & Published by the Superintendent of Jharkhand Government Press, Doranda, Ranchi.
Jharkhand Gazette (Extraordinary) 38 -- 50.