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## **Minerals (Evidence of Mineral Contents) Amendment Rules, 2021**

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# MINISTRY OF MINES

## NOTIFICATION

New Delhi, the 18th June, 2021

**G.S.R. 421(E).**— In exercise of the powers conferred by section 13 of the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957), the Central Government hereby makes the following rules to amend the Minerals (Evidence of Mineral Contents) Rules, 2015, namely:—

1. (1) These rules may be called the Minerals (Evidence of Mineral Contents) Amendment Rules, 2021.
- (2) They shall come into force on the date of their publication in the Official Gazette.
2. In the Minerals (Evidence of Mineral Contents) Rules, 2015 (hereinafter referred to as the said rules), for the word “Schedule”, wherever it occurs [other than in clause (f) of rule 3], the word and figure “Schedule-I” shall be substituted.
3. In the said rules, in rule 3, —
  - (i) clause (b) shall be omitted;
  - (ii) in clause (d), the word and figure “rule 4,” shall be omitted.
4. In the said rules, rule 4 shall be omitted.
5. In the said rules, in rule 5,—
  - (i) in the marginal heading, after the words “Existence of mineral contents”, the words, brackets, letter and figures “for grant of mining lease under clause (a) of sub-section (2) of section 5 and” shall be inserted;

(ii) in the opening portion, after the words “ contents under”, the words, brackets, letter and figures “clause (a) of sub-section (2) of section 5 and” shall be inserted;

(iii) after clause (b), the following proviso shall be inserted, namely:—

“Provided that for the minerals specified in Schedule-II occurring in such type of deposits as specified therein, the existence of mineral contents for the purpose of auction shall be deemed to have been established under this rule, if, in respect of such area—

(a) at least Preliminary Exploration (G3) has been completed to establish Inferred Mineral Resource (333), which shall be considered akin to Indicated Mineral Resource (332), and

(b) a geological study report has been prepared conforming to Part IV of Schedule-I.”.

6. In the said rules, in rule 6—

(a) in the marginal heading after the word “surrendered,” the word “terminated,” shall be inserted;

(b) in clause (b), after the word “surrendered,” the word “terminated,” shall be inserted;

(c) the following proviso shall be inserted, namely:—

“Provided that detailed reassessment of resources shall not be required to be carried out in cases where the estimate of Mineral Resource required for auction can be assessed on the basis of the available report of exploration or geological study report or last approved mining plan for the said area, after adjusting for the mineral already produced from the mine.”.

7. In the said rules, in rule 7—

(a) in sub-rule (1), for clause (a), the following clause shall be substituted, namely:—

“(a) at least Reconnaissance Survey (G4) has been completed to estimate Reconnaissance Mineral Resource (334) or mineral potentiality of the block has been identified based on the available geoscience data but resources are yet to be established; and”;

(b) for sub-rule (2), the following sub-rule shall be substituted, namely:—

“(2) On completion of prospecting operations under sub-section (10) of section 11 of the Act, Geological Study Report shall be prepared in accordance with the parameters specified in rule 5, which shall include at least a Pre-Feasibility Study Report to establish Probable Mineral Reserve (121 and 122) conforming to Part V of Schedule-I.”.

8. In the said rules, in Schedule-I—

(a) for Part I, the following Part shall be substituted, namely:—

#### “PART I

#### DEFINITIONS

1. The definitions and codes used in this Part are drawn mainly from the United Nations Framework Classification (UNFC) and Committee for Mineral Reserves International Reporting Standards (CRIRSCO) Template and have been suitably modified to suit the needs of the country.

#### (a) Definition of stages of exploration:

The exploration for any mineral deposit involves four stages namely, Reconnaissance Survey (G4), Preliminary Exploration (G3), General Exploration (G2) and Detailed Exploration (G1) and these stages of exploration lead to four resource categories, namely, Reconnaissance Mineral Resource, Inferred Mineral Resource, Indicated Mineral Resource and Measured Mineral Resource respectively reflecting the degree of geological assurance, which are explained as follows:

Sl. No.	Stages of Exploration	Definition with explanation
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1	<b>Reconnaissance Survey (exploration) (G4)</b> Quantity with grade estimated mostly based on indirect evidences	Reconnaissance Survey (G4) identifies areas of enhanced mineral potential based primarily on results of regional geological studies, regional geological traverses and mapping, airborne geophysical survey, remote sensing or satellite data study; identifying the mineralised zones through spectral signatures; combination of geophysical surveys like ground gravity and magnetic, Resistivity surveys, Induced Potential (IP) surveys and other such advanced techniques; geochemical study and other indirect methods as well as geological inference and extrapolation; delineation of mineralised area boundaries and surface contouring by Lidar and Drone surveys and sampling data from existing pits, old workings, nala cuttings, dug wells etc., and also sampling data extrapolated from nearby mining lease areas or explored blocks having similar surface geological features may be used for assessment of resources, if possible. Limited ground truthing by means of few drill-holes, as may be required, may be carried out to substantiate the information so collected and assess the quantity and grade of resources, if any.
2	<b>Preliminary Exploration (G3)</b> Quantity with grade estimated with low level of confidence	(1) Preliminary Exploration involves the initial delineation of an identified mineral deposit area of previous stage by furthering the exploration to extend and identify both laterally and vertically down (third dimension) of the ore body. The methods utilised are outcrop identification, surface geological mapping, and indirect methods such as geophysical and geochemical studies or mapping on appropriate scale based on nature of mineralisation. Limited wide spaced pitting or trenching and drilling to ensure maximum core recovery depending on the geological formation with appropriate spacing to understand nature, style and control of mineralisation followed by systematic sampling to identify a deposit, which will be the target for further exploration. (2) Estimates of quantities are inferred, based on interpretation of geological, geophysical, geochemical and geo-technical investigation results. Certain degree of extrapolation beyond the normal sample spacing may be allowed with proper justification depending upon the style and mode of occurrence of a mineral deposit.
3	<b>General Exploration (G2)</b> Quantity with grade estimated with moderate level of confidence	General Exploration involves increasing the geological confidence level and understanding style and mode of occurrence of mineralisation. Methods used include surface geological mapping (if not done in the previous stage of exploration), pitting or trenching or drilling (appropriate spacing closer than the previous stage, according to nature of mineralisation), followed by sampling for evaluation of mineral quantity and quality (including beneficiation tests on laboratory scale if required). The objective is to establish the main geological features of a deposit, giving a reasonable indication of continuity along lateral and vertical (third dimension) extensions which provide an initial estimate of size, shape, structure of mineralised zone, quantity and grade of the mineral deposit.
4	<b>Detailed Exploration (G1)</b> Quantity with grade estimated with high level of confidence	Detailed Exploration involves the detailed three-dimensional delineation of a known mineral deposit achieved through sampling, such as from outcrops, pits, trenches, boreholes, shafts and tunnels etc. Sampling locations are closely spaced such that size, shape, structure, quantity, grade and other relevant characteristics of the deposit are established with a high degree of accuracy. Bench scale beneficiation tests involving bulk sampling may be required in certain cases to understand the recovery and any additional by products.

**(b) Definition of stages of feasibility study:**

Sl. No.	Category	Definition with explanation
1	<b>Geological Study (F3)</b>	A geological study involves reporting of all the exploration activities undertaken during each stage of exploration including the assessment of the mineral resources with quantity and grade. A preliminary economic evaluation of the deposit should be done based on the gathered field data and a comparison with the similar deposits already in operation. This is achieved by applying meaningful threshold values, cut off values for grade, thickness and depth of the mineralised zone.
2	<b>Pre-Feasibility Study (F2)</b>	Pre-Feasibility Study is the study to demonstrate the possible techno-economic and socio-environmental viability of a mineral deposit through application of various modifying factors wherein a preferred mining method has been ascertained including the mineral beneficiation method, if any. The study shall also include a preliminary financial analysis based on reasonable assumptions on the applicable modifying factors and the evaluation of any other relevant factors which are sufficient to convert all or part of the resources to reserves. The study should lead to part or whole of the Mineral Resource being converted to Mineral Reserve. A Pre-Feasibility Study has a lower confidence level than a Feasibility Study (wherein the cost estimates of the project will have $\pm 30\%$ degree of accuracy).
3	<b>Feasibility Study (F1)</b>	Feasibility Study is a detailed comprehensive techno-economic and socio-environmental evaluation of a mineral deposit through application of various modifying factors to establish the technical feasibility, economic and financial viability of a mineral deposit. At this stage the preferred mining method, beneficiation technology of the deposit has been adequately established with detailed assessments of the applicable modifying factors, relevant operational factors and detailed financial analysis to demonstrate that extraction is reasonably justified. It is expected that all Governmental clearances to start mining operations are already in place and where such clearances have not been obtained on the date of commencement of the Minerals (Evidence of Mineral Contents) Amendment Rules, 2021, the same shall be obtained in due course. The study may lead to part or whole of the Mineral Resource being converted to Mineral Reserve. The result of the study may reasonably serve as a basis for final decision by a proponent or financial institution to proceed with or finance the development of the project. (wherein the cost estimates of the project will have $\pm 20\%$ degree of accuracy)
4	<b>Modifying Factors</b>	<b>Modifying Factors</b> are those factors which are taken into consideration while conducting a Prefeasibility or feasibility study so as to convert mineral resources to mineral reserves. These include, but are not limited to, mining, processing, end use, cut-off grade, threshold value, metallurgical, infrastructure, economic, marketing, legal, environmental, social and Governmental factors.

## (c) Definition of stages of economic viability:

Sl. No.	Category	Definition with explanation
1	<b>Intrinsically Economic (E3)</b>	Quantities, reported in tonnes or volume with grade or quality, estimated by means of a Geological Study identified to be of intrinsic economic interest, implying that the resources identified may or may not have any immediate economic value. The economic viability of the resources is further ascertained through a prefeasibility or feasibility study by application of appropriate modifying factors. The classes defined are Measured, Indicated, Inferred and Reconnaissance Mineral Resources.
2	<b>Potentially Economic (E2)</b>	Quantities with grade reported by means of a Prefeasibility or Feasibility Study in order of increasing accuracy, not justifying extraction under the prevailing technological, economic, environmental and other relevant conditions,

		realistically assumed at the time of the determination, but possibly so in the future. The classes defined as per the mineral resources for which are Pre-feasibility Mineral Resources and Feasibility Mineral Resources, including only indicated and measured resources.
3	<b>Economic (E1)</b>	Quantities with grade identified on the basis of a Prefeasibility or Feasibility Study in order of increasing accuracy that justify extraction under the prevailing techno-economic, socio-environmental and other relevant conditions, realistically assumed at the time of the determination. The classes defined are Proved and Probable Mineral Reserves.

**(d) Definition of classes of mineral resources and reserve:**

Sl. No	Classes	Definition with explanation
1	<b>Mineral Resource</b>	Mineral Resource is a concentration or occurrence of solid material in or on the earth's surface for which quantities with grade or quality have been estimated based on certain geological considerations and understanding which may or may not have any immediate or near-term economic value but are assessed for their future prospective value.
2	<b>Reconnaissance Mineral Resource (334)</b>	Reconnaissance mineral Resources (334) are estimates of quantity and grade based on indirect evidences including data and information generated through a reconnaissance survey, limited surface and subsurface sampling data from within the exploration block or data extrapolated from nearby mining or explored areas as may be required. The quantity and grade estimates have a lower level of confidence than that of inferred mineral resources.
3	<b>Inferred Mineral Resource (333)</b>	(1) Inferred mineral resource is the quantity with grade associated with a mineral deposit which can be estimated with a low level of confidence. (2) This is achieved through application of appropriate exploration techniques involving widely spaced drilling, pitting, trenching etc. followed by appropriate sampling and analysis to assume geological continuity of the mineralised body, both laterally and vertically. Certain level of extrapolation beyond the sampling points may be allowed with suitable justification depending upon the type of deposit and its mode of occurrence. (3) This resource cannot be converted to mineral reserve but may be upgraded to indicated mineral resource with additional information.
4	<b>Indicated Mineral Resource (332)</b>	(1) Indicated mineral resource is the quantity with grade associated with a mineral deposit which can be estimated with a moderate level of confidence. (2) This is achieved through application of appropriate exploration techniques involving close spaced drilling than the previous stage, pitting, trenching, etc., having spacing wider than that required for estimation of measured resources which ensures assumption of the geological continuity of the mineralised body, both laterally and vertically. This also includes the laboratory scale beneficiation studies to understand the recovery and by-products, if any. (3) Indicated Mineral Resource may be wholly or partly converted to Probable Mineral Reserve through a prefeasibility study.
5	<b>Measured Mineral Resource (331)</b>	(1) Measured mineral resource is the quantity with grade associated with a mineral deposit which can be estimated with a very high level of geological confidence. (2) This is achieved through application of appropriate exploration techniques involving sufficiently close spaced drilling, pitting, trenching etc. followed by appropriate sampling and analysis to ensure geological continuity of the mineralised body both laterally and vertically. Bench scale beneficiation studies to confirm the percentage recoverability with additional minerals, if any recovered. (3) Measured Mineral Resource may be wholly or partly converted to Proved or Probable Mineral Reserve through a feasibility or a prefeasibility study.

<b>6</b>	<b>Mineral Reserve</b>	Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted. The quantity and grade of the mineral Reserves is ascertained through suitable prefeasibility or feasibility study by application of appropriate Modifying Factors.
<b>7</b>	<b>Proved Mineral Reserve (111)</b>	Proved mineral reserve is the economically mineable part of a Measured Mineral Resource. The quantity with grade is demonstrated to be economically mineable by means of a feasibility study. A Proved Mineral Reserve implies a high degree of confidence in the Modifying Factors.
<b>8</b>	<b>Probable Mineral Reserve (121 and 122)</b>	(1) Probable mineral reserve is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The quantity with grade is demonstrated to be economically mineable by means of a prefeasibility study. (2) The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proved Mineral Reserve.
<b>9</b>	<b>Feasibility Mineral Resource (211)</b>	Feasibility Mineral Resource is that part of Measured Mineral Resource which is not economically mineable and has been defined by studies at feasibility level as appropriate that extraction is presently not justified. This material is identified as being possibly economically viable subject to changes in technological, economic, and environmental or other relevant conditions.
<b>10</b>	<b>Pre-Feasibility Mineral Resource (221 and 222)</b>	Pre-feasibility Mineral Resource that part of an Indicated mineral resource, and in some circumstances Measured Mineral Resource, which is not economically mineable and has been defined by studies at Pre-feasibility level as not appropriate for extraction at present. This material is identified as being possibly economically viable subject to changes in technological, economic, and environmental and/or other relevant conditions.”;

(b) in Part II, in the table,—

- (i) In serial number 2, for the words, figures, bracket and letters, “On 1:50,000 or smaller scale for reconnaissance (G4) stage”, the words, figures, bracket and letters, “On 1:50,000 or larger scale for reconnaissance (G4) stage” shall be substituted;

- (ii) in serial number 4, after the first paragraph, the following paragraph shall be inserted, namely:—

“For Reconnaissance Survey (G4) stage sampling data from existing pits, old workings, nala cuttings, dug wells, etc., and also sampling data extrapolated from nearby mining lease areas or explored blocks having similar surface geological features may be used for assessment of resources, if possible.”;

(c) in Part III, in the table, in serial number I,—

- (i) in column (3) relating to ‘G3 stage’, after the words ‘irregular habit’ occurring at the end, the following shall be inserted, namely:—

“Provided that for deposits specified in Schedule II, 3 bore holes drilled so as to form a polygon in blocks of less than 100 hectares and 5 bore holes in blocks of more than 100 hectares may be sufficient.

The lateral influence beyond the bore hole spacing may be limited to a maximum of 50 per cent. of the spacing depending on the results of surface geological mapping.”;

- (ii) in column (6) relating to ‘Remarks’, before the words “for shallow surfacial deposits”, the following paragraph shall be inserted, namely:—

“For G4 and G3 stages, sampling data from existing pits, old workings, nala cuttings, dug wells, etc., within the block and also sampling data extrapolated from nearby mining lease areas or explored blocks having similar surface geological features may also be used for assessment of resources if possible.”;

(d) for Part IV-A in the table, the following Part shall be substituted, namely:—

#### “PART IV- A

#### REPORTING OF MINERAL RESOURCES

**Standard Template for a Geological study Report which shall also form a part of the pre-feasibility or feasibility report**



1. A Geological Study Report for estimation and reporting of Mineral Resources integrating all data of exploration, sampling and testing generated through geophysical (aerial and ground), geochemical, geological surveys and technological study shall be undertaken for every stage of exploration, i.e., from G4 to G1 for assessing the resources.

2. Mineral resource assessment is normally a collective effort involving a multidisciplinary approach. It is expected that individuals/ subject matter experts involved in each part of the report preparation are given due credit for that part with proper acknowledgement in the report and also, they are willing to take due responsibility regarding the accuracy and authenticity of that part. However, the final responsibility of the report shall lie with the lead expert or a group of experts who, after proper due diligence of all the parts of the report have arrived at the final estimation of the resources and reserves and are convinced about the methodology and processes followed in arriving at the resource estimates. These experts taking the final responsibility for the report shall be referred to as the qualified persons and shall certify the report by signing off the report with their credentials.

Sl No.		Criteria with parameters of reporting
1.		<b>Executive Summary</b>
	i	The executive summary shall include details about the location of the mineral deposit, purpose of the mineral investigation and the stage of the exploration, brief geology, mineralization, exploration plan with spacing of the sample points, depth of exploration and whether the mineralisation extends beyond the depth of direct evidence. Outcome of the exploration studies including the quantity of resources identified with grade and quality under various classes.
	ii	The summary shall also include observation on the issues regarding the future plan or strategy for the deposit including likely mineability of the deposit based on present technological, environmental, social and market conditions.
2.		<b>Details of the Qualified Person(s) / Exploration Agency</b> (To be provided separately for all the qualified persons signing off the report)
	i	(a) Name: (b) Address: (c) Contact Mobile No: (d) E-Mail id: (e) Qualification: (f) Experience: (g) Affiliation to any organization/ company, if yes, specify the name of the organisation or company:
	ii	Details of qualification and experience of persons associated with various aspects of exploration assessment of resources and reserves
3.		<b>Title and ownership</b>
	i	Name of the explorer/ Mining or prospecting rights holder: Address: Telephone No: E-Mail i.d.:
	ii	Details of period of prospecting/mineral right if any: In case of a licence or lease: (a) Date of grant:



		(b) Date of execution: (c) Period of licence or lease: (d) Date of completion:
4.		<b>Details of the Area Under Study</b>
	(i)	Village, District, State
	(ii)	Survey of India Toposheet No., Differential Global Positioning System(DGPS) coordinates of all corner points of the area and borehole points in latitude and longitude (Degree Minutes Second) format WGS-84 Datum
	(iii)	Cadastral details of the area with land use, area under forest with type of forest. In case the cadastral details are not available an indicative data of breakup of government, private and forest land
	(iv)	Mineral(s) under investigation or granted under licence or lease
5.		<b>Physiography and environment</b> (Data to be furnished up to five km. radius from the peripheral boundary of project area in case of G3, G2 and G1 stage of exploration)
	(i)	Relief of the area with minimum and maximum elevation, drainage pattern, natural water courses, reservoirs, etc.
	(ii)	Roads, railway track, electric transmission line, telephone line, etc., passing through the area or nearby
	(iii)	Host population (local tribes), Human settlements within and nearby the area
	(iv)	Socio Demographic profile of the area and nearby
	(v)	Historical sites and archaeological monuments, places of worship, public utilities etc. within or near by
	(vi)	Forests, sanctuaries, national park and wild life sanctuaries; grazing land and gochar land within or near by the area with distance from periphery of the area explored.
	(vii)	Flora and Fauna within and nearby
	(viii)	Water bodies such as river, nala, stream, reservoir, etc., within or nearby
	(ix)	Climatic conditions: (a) Temperature (annual) min____max____ Avg____ (b) Rain fall (annual) min____max____ Avg____ (c) Humidity (annual) min____max____ Avg____
	(x)	Any other physiographic, social and environmental factor having potential to affect the viability of the project and assessment of resources and reserves.
6.		<b>Infrastructure</b>
		Local infrastructure with roads, railways, port facilities, electricity, water etc. with distance from the area. Details of nearby industries in the area which may use the mineral commodity likely to be mined
7.		<b>Geology</b>
	(i)	Brief regional geology of the area outlining the broad geological, stratigraphical and structural frame work.
	(ii)	Local geological setting detailing the common rock types, controls of mineralization, details of old workings if any, 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.
	(iii)	Structural details of the area such as dip, strike, folds, faults, etc.

	(iv)	A discussion on the type of the deposit based on the style of mineralisation and minerals under investigation. Suggested exploration plan with spacing of the sampling points and depth of exploration commensurate with the stage of exploration.
	(v)	The extent and variability of the mineralisation expressed as length (in meter) (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.
8.		<b>Previous Exploration</b>
	(i)	Name and address of prospecting agency or permit holder or licensee involved in the exploration of the area with year and period of exploration (if more than one agency is involved details to be given separately for each agency)
	(ii)	Brief details of the exploration carried out (to be given separately for each agency)
	(iii)	Reserves or resources estimated, if any, during the previous exploration campaign with quantity and grade under various categories
9.		<b>Aerial or ground geophysical or geochemical data</b>
		Details of aerial, ground geophysical and geochemical survey taken up and their results.
10.		<b>Exploration undertaken during current investigation</b>
	(i)	Details of pitting, trenching, drilling, etc., with spacing and distribution of the sample points along with geographical co-ordinates.
	(ii)	<b>Data spacing for reporting of exploration results:</b> Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the mineral resource estimation procedure(s) and classifications applied.
11.		<b>Location of data point</b>
	(i)	Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys, azimuth, inclination, coordinates of bore holes etc), trenches, mine workings and other locations used in mineral resource estimation.
	(ii)	Quality and adequacy of topographic control.
12.		<b>Sampling technique</b>
		Nature and quality of sampling (eg. cut channels, random chips, etc.) and measures taken to ensure sample representation.
13.		<b>Drilling technique and drill sampling employed</b>
	(i)	Drill type (eg. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (eg. core diameter, triple or standard tube).
	(ii)	Whether core and chip sample recoveries have been properly recorded and results assessed.
	(iii)	Measures taken to maximise sample recovery and ensure representative nature of the samples.
	(iv)	Whether a relationship exists between sample recovery and grade and whether sample bias could have occurred due to preferential loss or gain of fine or coarse material.
	(v)	Logging: -Whether core and chip samples have been logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.
	(vi)	Discussion on the analysis results of handheld X-ray fluorescence (XRF), if used in the investigation.
14.		<b>Sub-sampling techniques and sample preparation</b>
	(i)	If core, whether cut or sawn and whether quarter, half or all core taken.
	(ii)	(a) If non-core, whether riffled, tube sampled, rotary split, etc., and whether sampled

		wet or dry.  (b) For all sample types, the nature, quality and appropriateness of the sample preparation technique.
	(iii)	Quality control procedures adopted for all sub-sampling stages to maximize representation of samples.
	(iv)	Measures taken to ensure that the sampling is representative of the in-situ material collected.
	(v)	Whether sample sizes are appropriate to the grain size of the material being sampled.
15.		<b>Quality of assay data and laboratory tests</b>
	(i)	(a) The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.  (b) Nature of quality control procedures adopted (eg. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie. lack of bias) and precision have been established.  (c) Check analysis of at least 10% of samples should be analyzed from third party National Accreditation Board for Testing and Calibration Laboratories (NABL) accredited or Department of Science and Technology (DST) or Bureau of Indian Standards (BIS) recognized laboratories or government laboratories for assessing the acceptable levels of accuracy.  (d) Security and chain of control of samples should be clearly mentioned.
16.		<b>Moisture</b>
		Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.
17.		<b>Bulk Density</b>
		Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.
18.		<b>Beneficiation studies as may be required</b>
		Details of beneficiation studies carried out at laboratory scale of bench scale involving bulk sampling tests to understand and suggest technological factors for optimum recovery of explored mineral commodity, any additional by-products or co-products that may be available in the ore which is recoverable should also be discussed. The detailed flow sheet with yield recovery factors and to be discussed
19.		<b>Resource estimation techniques</b>
	(i)	Discussion on sufficient data density to assure continuity of mineralisation and synthesis adequate data base for estimation procedure used.
	(ii)	Whether previous exploration data has been used and integrated with the current exploration data for assessment of the updated resources.
	(iii)	The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters, maximum distance of extrapolation from data points
	(iv)	The basis for the classification of the mineral resources into varying confidence classes.
	(v)	The assumptions made regarding recovery of by-products.
	(vi)	Detailed description of the method used and the assumptions made to estimate tonnages and grades (section, polygon, inverse distance, geostatistical, or other method).
	(vii)	Description of how the geological interpretation was used to control the resource estimates.

	(viii)	Discussion of basis for using or not using grade cutting or capping. If any computer software was used for estimation of resources then name of the software with the version and method chosen, description of programmes and parameters used.
	(ix)	Geostatistical methods are extremely varied and should be described in detail. The method chosen should be justified. The geostatistical parameters, including the variogram, and their compatibility with the geological interpretation should be discussed. Experience gained in applying geo-statistics to similar deposits should be taken into account.
	(x)	Data verification or validation procedures used, including peer review report.
20.		<b>Reporting of resources</b>
		Basis of reporting of resources into various classes. The criteria and methods used for the classification to be specified. The quantities with grades, for each class are to be specified. The average grade under each class is to be specified. Grade wise classification should also be reported under suitable cases. In case of metallic deposits such as gold, precious metals and base metals the metal content is to be specified and resources should be estimated at various cut off grades. Factor, if any, applied to take care of the confidence level from the actual estimates should also be specified. The inferred, indicated and measured resources should be highlighted in a table.
21.		<b>Summary and recommendations</b>
	(i)	(a) A discussion on the outcome of the exploration work detailing the nature of the deposit, the dimension of the deposit, general structural trend, depth of occurrence and depth up to which exploration has been done, possibility of continuity of mineralisation beyond the depth of exploration and future exploration requirements, if any. (b) The resources estimated under various classes with grade. (c) The possibility of economic extraction based on present technological, environmental, social and market conditions. (d) Hindrances, if any, anticipated in the economic extraction of the deposit.
	(ii)	Discussion on the suggested future plan or strategy for the deposit for further exploration and mining.
22.		<b>Plates and maps</b>
	(i)	Location plan of the area on 1:50000 showing various topographic and physiographic features nearby the project site.
	(ii)	Topographic Map/ Cadastral plan on 1:4000, if available.
	(iii)	A physiography or surface topography plan showing various topographical and physiographical features.
	(iv)	Surface geological plan on appropriate scale showing reliable geological map of appropriate scale with Differential Global Positioning System (DGPS) - global coordinates of the corner points showing major lithological units, structural and tectonic features; extent of surface mineralisation, structure, location of boreholes, pits, trenches, old workings, etc. If the area or part of it has been covered under exploration earlier then the same with the location details should be shown in a map in appropriate scale.
	(v)	Cross sections at suitable intervals showing vertical projections of litho-units and mineralisation.
	(vi)	Level plan or slice plan at suitable intervals showing horizontal projections of mineralisation, if necessary.
23.		<b>Annexures or enclosures to the report</b>
	(i)	The report shall include all relevant data including maps, sections, logs, analysis reports, photographs, etc., in support of the estimates made.
	(ii)	In case of a Prospecting Licences or Reconnaissance Permit, all relevant orders of grant, execution of licence, permissions to carry out exploration from forest department, Letter of Intent, etc., shall also form part of the report.

24.		<b>Any other information</b>
		Any other information as may be available or required by any authority as prescribed
25.		Certificate from the qualified person with name, date and signature.

(e) in Part V,—

(i) for the heading “Contents of Prefeasibility Report”, the following heading shall be substituted, namely:—

**“CONTENTS OF PRE-FEASIBILITY AND FEASIBILITY REPORT”;**

(ii) for the opening portion, the following opening portion shall be substituted, namely:—

“Criteria for Prefeasibility or Feasibility Report for Estimation and Reporting of Mineral Reserves (the criteria listed in the geological study report shall also constitute an integral part of this template).”;

(iii) in serial number 2, in clause (2), for the words, “Cut off parameters”, the words “Cut-off grade or quality parameters” shall be substituted;

(iv) after serial number 8 and the entries relating thereto, the following serial number and entries shall be inserted, namely:—

“9.Certificate	Certificate from the qualified person	Name, date & signature.”.
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9. In the said rules, after the Schedule I, the following Schedule shall be inserted, namely:—

**“Schedule-II**

[See proviso to rule 5]

**PARAMETER FOR ESTABLISHING THE EXISTENCE OF MINERAL CONTENT IN CERTAIN AREA IN RESPECT OF CERTAIN MINERALS**

Sl. No.	Principle mineral	Type of deposit
1.	Limestone, iron ore and bauxite	Bedded, stratiform and tabular deposits of homogenous, regular sedimentary and metasedimentary basins without significant structural deformations of limestone and iron ore and residual high level tabular deposits of bauxite.”.

[F. No. 16/97/2020-M-VI]

Dr. VEENA KUMARI DERMAL, Jt. Secy.

**Note:-** The Minerals (Evidence of Mineral Contents) Rules, 2015 were published in the Gazette of India, Part II, section 3, sub-section (i) *vide* number G.S.R.304(E), dated the 17th April, 2015.