



GOVERNMENT OF TAMIL NADU

TAMIL NADU M-SAND POLICY 2023

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1. Preamble

- 1.1 Rivers, Forests, Minerals and such other natural resources constitute a Nation's wealth. These resources are not to be frittered away and exhausted by one generation. The principles of intergenerational equity are recognized world over, as one generation of human kind has an obligation to conserve natural resources for the benefit of succeeding generations.
- 1.2 M-Sand/Crushed Sand is produced by crushing rock quarry stones or larger aggregate pieces into sand sized particles. The produced sand is then sieved and washed to remove fine particles and impurities, and tested for various quality aspects before it is deemed fit as a construction aggregate. The manufactured sand (M-Sand)/Crushed Sand so produced is required to pass through 4.75 mm IS Sieve and shall have the minimum required size of 150 microns.

- 1.3 Rampant sand mining and continuous depletion of natural aggregates have led to the implementation of new environmental/land use legislations which has made river sand a scarce commodity. The Government of Tamil Nadu considers M-Sand/Crushed Sand production as an alternate to river sand for construction



activities and infrastructural development of the State. M-Sand/Crushed Sand also helps to reduce the wastage of the quarrying process as the stones left, as small sized blocks in the granite and roughstone quarries could be used for the production of M-Sand/Crushed Sand. The object of this policy is thus also to ensure zero waste quarrying in the State. Low-value blocks/waste generated can be utilized efficiently to create a high value product such as M-Sand/Crushed Sand, while at the same time public will have access to cost effective building material in comparison to the high cost river sand.

- 1.4 M-Sand/Crushed Sand also offers higher flexural strength, better abrasion resistance, higher unit weight and lower permeability, if standards for manufacturing are adopted properly. Due to these advantages M-Sand/Crushed Sand is being used now a days on a large scale in the construction sector.

2. Objectives of M-Sand/ Crushed Sand policy

- 2.1 To prevent damage to river ecosystem by rationalizing the use of river sand in a conserved manner.
- 2.2 To promote the usage of quality M-Sand/Crushed Sand having greater compressive strength adhering to BIS prescribed standard, as an easy and cost - effective alternate building material to river sand.
- 2.3 To enable M-Sand/Crushed Sand manufacturing units in Tamil Nadu to become compliant of relevant statutes, rules and regulations and to formalise the sectors.
- 2.4 To standardise the procedure for approval of M-Sand/Crushed Sand manufacturing units.
- 2.5 To hand hold stand-alone crushing/manufacturing units who depend solely on the stone quarries for getting required raw material.
- 2.6 To promote recycling of the coarse and fine aggregates in construction and demolition waste of buildings/concrete structures and quarry waste in the State.
- 2.7 Promote zero-waste mining/quarrying in the State.



3. Characteristics of sources that could be used for M-Sand/Crushed Sand

The source materials used for the production of sand shall not contain any harmful minerals or materials which may adversely affect the properties, strength, durability and appearance of the concrete/plaster and/or may cause corrosion of metal lathing or other metal in contact with the concrete/plaster above the permitted level.



3.1 Rocks/Natural Gravel/Granite Waste: The Rocks/ Natural Gravel/ Granite Waste should not contain iron pyrites, alkaline minerals, calcareous minerals, mica and other flaky minerals, sulphates, salts, organic impurities above the permitted level. Charnockite, Quartzite, Granite and Sandstone are the best suited rock types available in Tamil Nadu for the manufacture of M-Sand/Crushed Sand.



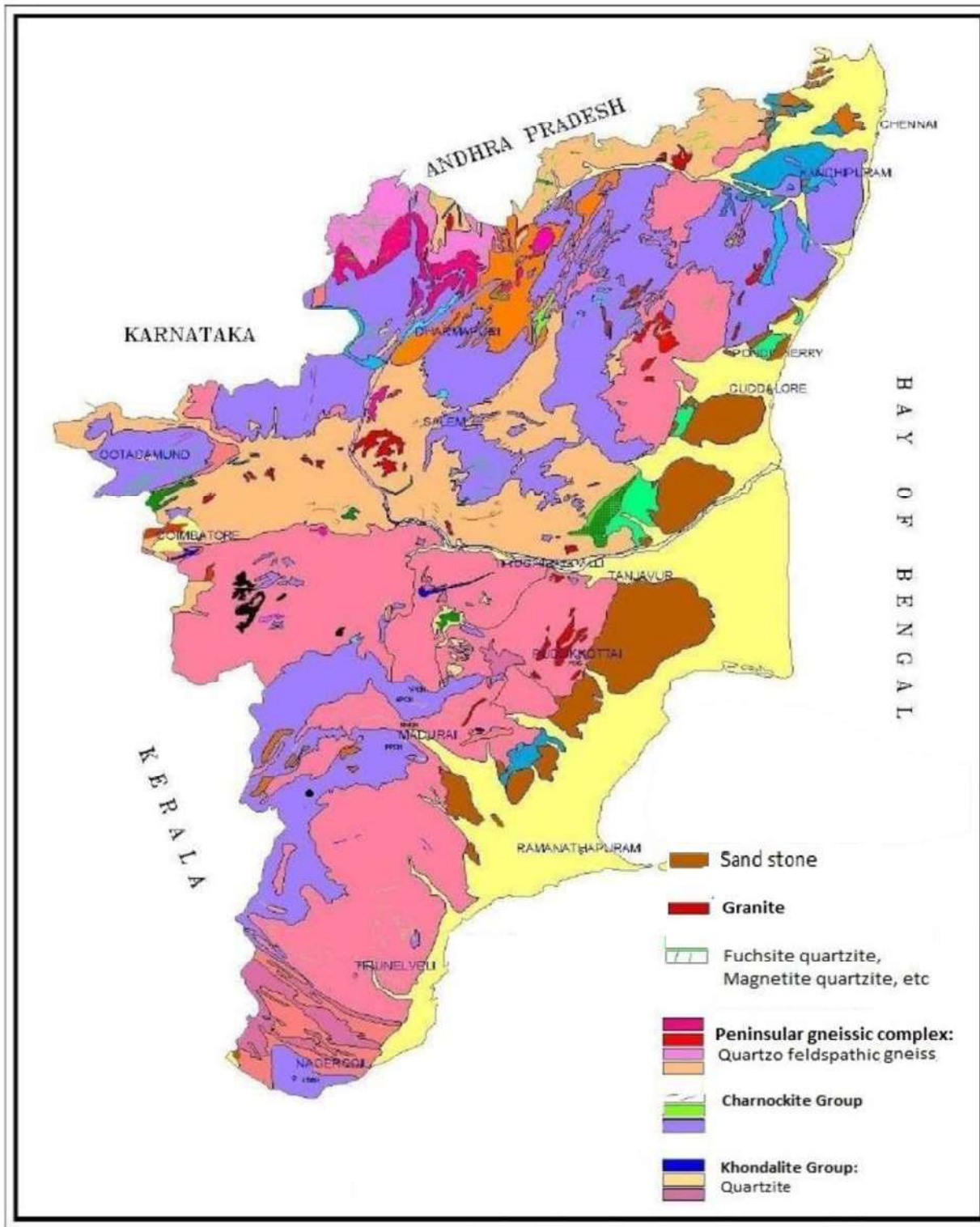
3.2 Over Burden (having more than 60% sand): The over Burden should not contain iron pyrites, alkaline minerals, salts, sulphates, coal, lignite, mica, shale or similar laminated/flaky materials, soft fragments, calcareous minerals, sea shells and organic impurities above the permitted level. Overburdens like Sandstone/Quartzite deposits and over burden of lignite/silica sand/gravel and pebble mines/quarries are best suitable for the manufacture of M -Sand/Crushed Sand.



3.3 Coarse and fine aggregates from the Construction and Demolition (C&D) Waste (Recycled Aggregates): The C&D waste (debris) viz., stone aggregates, brickbats, tile pieces, mortar pieces, etc. should not contain excavated earth, wood pieces, plastic, metal bits and shall be processed, i.e., crushed and sieved to bring it to proper gradation for utilization as crushed sand.

3.4 Recycled Concrete Aggregates (RCA): Demolished or discarded cement concrete (source concrete) comprising of the stone aggregates (coarse aggregate) which were used for preparing demolished or discarded cement concrete (source concrete) shall not contain brickbats, tile pieces, glass, etc. and are to be crushed and size graded.

Geology of Tamil Nadu - Occurrences of rocks suitable for M-Sand



4. Setting up of manufacturing M-Sand/ Crushed Sand unit

4.1 As on 04.07.2022, 378 Crushed Stone Sand Manufacturing units are functioning in the State of Tamil Nadu after obtaining the Product Quality Approval Certificate from the Chairman, Assessment Committee & Engineer-In-Chief, Chief Engineer (General) & Chief Engineer, Chennai Region, Public Works Department (PWD), Chennai and with the Consent to Establish and Consent to Operate obtained from Tamil Nadu Pollution Control Board (TNPCB). The M-Sand/ Crushed Sand units currently operating in the State can be broadly classified into two groups:

- a. Integrated Units– Integrated units are owned and operated by persons who hold operational stone quarry leases.
- b. Stand Alone Units– Units are owned or operated by persons who do not hold valid stone quarry leases.



4.2 Setting up of a unit: All Crusher Units including M-Sand/ Crushed Sand units shall be registered with the Directorate of Industrial Safety and Health under the Factories Act, 1948. Integrated or Standalone



M-Sand Units that meets the existing criteria of TNPCB (available in TNPCB website - tnpcb.gov.in) will only be allowed to establish/ operate the unit. The units shall be established only after obtaining Consent to Establish (CTE) and operation shall be started only after obtaining Consent to Operate (CTO) from TNPCB. Thereafter, the unit holder shall obtain the Product Quality Approval Certificate for Crushed Sand /M-Sand products from the Public Works Department.

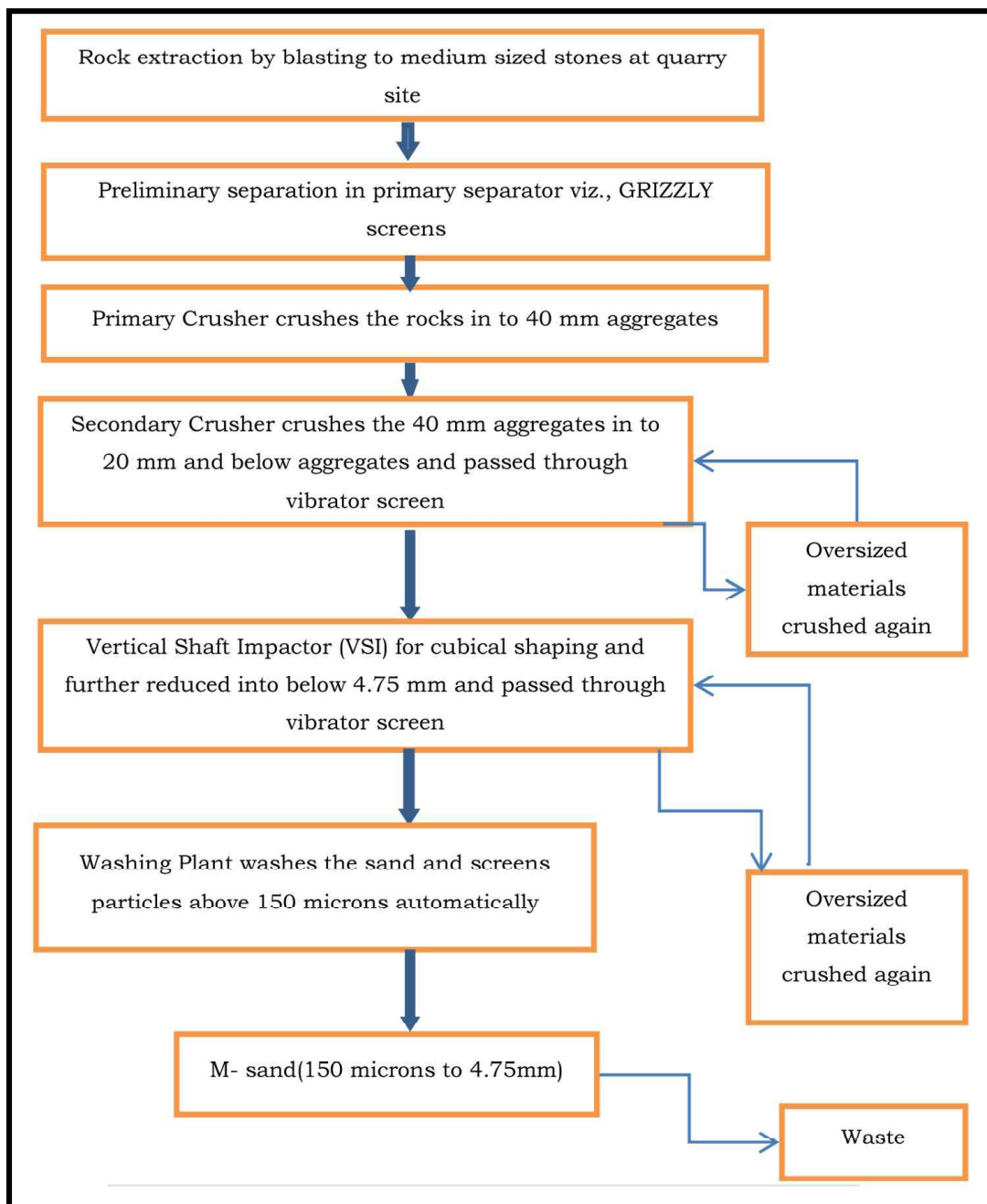
All existing M-Sand/Crushed Sand manufacturing units shall be provided with a one-time offer to convert to Vertical Shaft Impactor or such other equivalent advanced technologies enhancing the quality of M-Sand or Crushed Sand produced and get themselves registered under the Tamil Nadu Prevention of Illegal Mining, Transportation and Storage of Minerals and Mineral Dealers Rules, 2011 within such period as may be prescribed by the Department of Geology and Mining/Public Works Department.

For registration under the Tamil Nadu Prevention of Illegal Mining, Transportation and Storage of Minerals and Mineral Dealers Rules, 2011, production of valid extracts of the village accounts issued by the Tahsildar is sufficient. No other documents/records shall be insisted upon. In this connection, necessary provisions will be incorporated in the rules.

5. Process of M-Sand/Crushed Sand Manufacturing

Manufacturing process of M-Sand /Crushed Sand involves the crushing of hard rocks, Natural Gravel, Granite Waste and Over Burden into a stipulated size of 4.75mm to 150 microns. The process is similar to the generation of river sand by nature. The Vertical Shaft Impact (VSI) functions on the basis of rock on rock collision at a high velocity to produce sand sized particles. The sand obtained through this process is further refined through sieving and washing.

Manufacturing process:



Manufacturing process:



Jaw Crusher



Conveyor belt 8 inch



Cone



Secondary Jaw Crusher



VSI Feeding Conveyor

VSI Bunker with Feeder
(Less than 24mm)150 cone with vibrator
screen (optional)vibrator screen (Less than
40mm)

VSI (Less than 10mm)

Vibrator Screen (Less
Than 4.5mm)

VSI Powder tank

Washing & Sludge
Removal

Transportation



Processed M-sand



M-Sand Conveyor

Processed m-sand &
p-sand

6. Quality Standards and control measures

Ensuring the safety for the life and property is the primary duty of the State and hence the State Government is bound to take all possible measures to ensure the supply of quality, cost – effective building materials for construction activities. For this purpose,

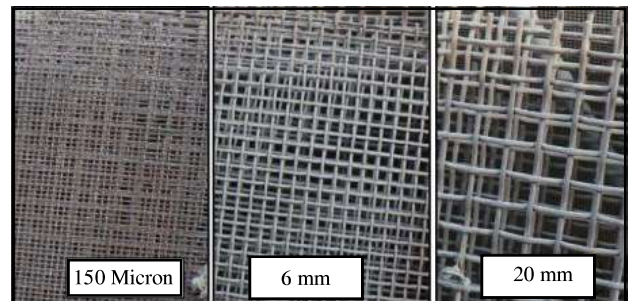
6.1 The best suitable deposits of rocks viz. charnockite group of rocks, quartzite, etc. and overburden for the manufacture of M-Sand/ Crushed Sand will be identified through sample studies by conducting petrographical, mineralogical, geophysical and geochemical investigations using suitable advanced techniques/instruments.

6.2 All M-Sand/ Crushed Sand manufacturers will be required to adhere to the standards/specifications in the BIS code viz., “IS 383:2016” for concrete, “IS 1542:1992” for



Plastering and “IS 2116:1980” for masonry and “IS 456:2000” for wash water and such other standards fixed by the BIS from time to time.

6.3 The M-Sand/ Crushed Sand for concrete/masonry and plastering



as well as the wash water shall satisfy the relevant standards stipulated by the BIS for checking the quality of aggregates and wash water. In this connection,

- a) All the M-Sand/ Crushed Sand manufacturers shall mandatorily obtain BIS certification for their products.
- b) All the M-Sand/Crushed Sand manufacturers shall obtain Product Approval Certificate issued from the Public Works Department for the compliance of BIS Code provisions.

- c) All the M-Sand/Crushed Sand manufacturers shall mandatorily establish a quality testing laboratory at their crusher premises and randomly check the quality of the M-Sand/Crushed Sand produced by them every day and maintain registers for the quality checks with details of all the parameters as per the BIS standards in respect of the samples tested. Such registers will be verified by the officers of Department of Geology & Mining and Public Works Department.
- d) Once in six months, all the M-Sand/Crushed Sand manufacturers shall mandatorily conduct Quality test for the product as well as for wash water at the NABL certified/ Public Works Department / Department of Geology and Mining/University laboratories and submit the report to the Public Works Department / Department of Geology and Mining/ Pollution Control Board.
- e) All the M-Sand/Crushed Sand manufacturers shall adhere to the standard manufacturing procedure and use only the Vertical Shaft Impactor (VSI) or such other equivalent advanced technologies to produce M-Sand/Crushed Sand.



Vertical Shaft Impactor (VSI)

6.4 Officers of Public Works Department / Department of Geology and Mining will be entrusted to conduct periodical checks to verify the quality of the product and the Officers of Tamil Nadu Pollution Control Board will be monitoring the wash water quality and pollution control measures periodically.

7. Usage of water in M-Sand/ Crushed Sand Manufacturing Units

- 7.1 M-Sand/Crushed Sand Manufacturing Units shall ensure that the water used for washing sand shall not contain any harmful materials which affects the properties, the strength and the durability of the concrete, plastering or masonry works or may cause corrosion of metal lathing or other metal in contact with the concrete/plaster such as alkalies, sulphates, salts, organic impurities etc., above the permitted level.



- 7.2 Considering the need for conservation of water resources, judicious use of water will be insisted without compromising the quality of washing the M-Sand /Crushed Sand. M-Sand/Crushed Sand Manufacturing Units will be required to re-use the water used for washing after necessary treatment.
- 7.3 The State will progressively ensure that these units will operate on Zero Liquid Discharge basis.

8. Disposal of waste and controlling of air and water pollution

8.1 Crushing units should not be allowed to endanger the environment and ecology of the surrounding area by chaotic disposal of the wastes generated during the stone crushing for the production of size reduced materials such as M-Sand/Crushed Sand.

8.2 The waste generated from the crushing units viz., unsized rock particles, defective crushed stone products, muddy slurry, etc., shall be disposed of in a scientific and systematic manner.



The waste can be utilised for other value added products like bricks and other purposes. The wash water shall be scientifically treated and reused. Minimal waste water discharge shall be maintained, conforming to the prescribed standards before disposing into environment or for re-use.

8.3 The State will be vigilant to prevent the use of defective crushed stone products, dried mud slurry etc., in place of sand for the fine or coarse aggregates or mixing them with the standard products for civil



construction in concrete, masonry or plastering works. If any such adulteration/malpractices are noticed, those who are responsible for the same will be penalised by cancelling the license. Provisions for the same will be incorporated in the appropriate rules.

8.4 It will be ensured that all M-Sand units have necessary air pollution control measures as prescribed in the consent order issued by TNPCB under Air Act and operate and maintain the same to meet the standards prescribed by TNPCB.

8.5 Also, it will be ensured that all M-Sand units have necessary effluent treatment plant as prescribed in the consent order issued by TNPCB under Water Act and shall operate and maintain the same to meet the standards prescribed by TNPCB.

9. Usage of Recycled Aggregates (C&D waste) and Recycled Concrete Aggregates (RCA)

The studies to evolve best suitable technologies for the utilisation of Recycled Aggregates (C&D waste) and Recycled Concrete Aggregates (RCA) in various construction activities related to buildings, roads and other infrastructure will be encouraged for safe and scientific disposal of such waste as well as to reuse the material enabling to minimize the damages caused to the environment.

10. Quarry Leases

No quarry leases will be granted exclusively for manufacturing M-Sand / Crushed sand.

11. Health and Safety of the workers

- 11.1 Preventive measures shall be taken against occupational Health Hazards, especially lung diseases such as Silicosis in the vicinity of quarries and crushing units.
- 11.2 All the quarry workers shall be registered under Construction Workers' Welfare Board so as to get the benefits extended by the Board.

12. Star rating of Quarries/ Crusher Units

The environment and socio-economic-issues in the mining sector are the paramount concern of the State which need to be addressed by institutionalising a statutory mechanism for sustainable mining/quarrying. In this connection,

12.1 An appropriate Sustainable Development framework for the minor mineral quarries and mineral based industries such as Crusher Units will be evolved and implemented in the State for addressing the issues.



12.2 In order to encourage the minor mineral lessees / crusher owners to adopt the Sustainable Development Framework (SDF) envisaged by the State Government, a 'Star Rating' system will be instituted in which star rating will be awarded to the mining lessees for their efforts and initiatives taken for the implementation of SDF.

12.3 One to five stars will be given to the quarries /crusher units with five star being allotted to the best performing quarries/crusher units which have been operated for at least 180 days and their average daily employment is 15 employees or more.

12.4 The Star rating system will be designed to evaluate the compliance mechanism for environment and forest safeguards, conservation of water, measures taken for health, safety and welfare of workers, protection of boundary pillars of the lease/adherence of production limits, compliance of terms and conditions of the lease/ registration of crushers, filing of returns, obtaining of necessary clearances from Government Departments/ Agencies, rectification of the violations, if any,

pointed out by the Government agencies, compliance of Act and Rules, court directions etc. with a specified marking criterion for each parameter.



- 12.5 Only those who obtain 60% of the total marks will be eligible for Star Rating. The owners of the quarries /crusher units have to make a self-assessment in the prescribed templates created for the purpose which will be verified by a committee constituted for the purpose under the Chairmanship of the District Collector and Convenorship of District Environmental Engineer, TNPCB with Sub Collector/ the Revenue Divisional Officer of the Revenue Division concerned, Deputy Director/Assistant Director of Geology and Mining, Executive Engineer, PWD and Mine Safety Officer as the other members. Third-party verification will be done.



13. Strengthening the legal framework

The ecosystem of the M-Sand/ Crushed Sand manufacturing units and the quarrying of minerals will be facilitated through strengthening the existing legal framework for the purpose. Necessary amendments will be made in the relevant rules. The process of establishment of M-Sand/Crushed Sand manufacturing units will be enabled through the State Single Window Portal. A separate portal will be created for Directorate of Geology and Mining to enable online filing of all returns and reports.

14. Zero tolerance

Any contravention of the rules framed based on this policy will warrant action under the prevailing laws and cancellation of license.

15. Single Window Portal

A Single window portal will be developed and maintained by the Department of Geology and Mining for the registration, etc., of M-Sand / Crushed Sand Units

16. Monitoring and Evaluation of Policy Implementation

Implementation of this Policy will be reviewed by the Industries, Investment Promotion and Commerce and Department of Geology and Mining in Government.

A centralized controlling system will be developed to monitor the activities of the M-Sand/Crushed Sand units.

A complaint registering mechanism will be implemented to facilitate the stake holders, especially benefiting the consumers to register their complaints or grievances directly to the Departments concerned.

17. Validity of the Policy

The Policy will be valid from its date of notification by the Government.

Department of Geology and Mining

Head Office: Alandur Road,
Guindy Industrial Estate, Guindy,
Chennai-600032,
Tamil Nadu.

Phone: +044 22501158

E-mail: geomine@nic.in

Website: www.tnmines.tn.gov.in



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WWW.TNMINES.TN.GOV.IN