

Use of Marble Sludge Waste in Building Materials

The State of Rajasthan has the potential to use 7 million tonnes of marble sludge waste each and every year for production of building materials alone. Use of marble sludge in optimized quantity in clay brick making improves the properties of the fired product.

Background

Growth of population, increasing urbanization and living standards have contributed to an increase in types and amounts of solid wastes generated by industrial, mining, domestic and agriculture activities. India produces around 960 million tons of solid wastes which pose a major environment and ecological problem.

In this regard one of the major industrial wastes is the marble sludge produced by marble processing industries. In India, marble processing industry generates around 7 million tons of wastes mainly in the form of powder during sawing and polishing processes. These are dumped in the open which pollute and damage the environment. The pollution issue is a serious cause of concern in the state of Rajasthan since there are around 4000 marble mines and about 1100 marble cutters in medium sector spread over 16 districts of Rajasthan. Out of the total waste generated in India, contribution from Rajasthan state itself is 95% of the total accounting to 6 million tons annually. The major marble sludge producing areas in Rajasthan are in the districts of Udaipur, Rajsamand, Banswara, Dungarpur, Jaipur Sirohi, Bhilwara, Ajmer, Bundi, Alwar and Pali.



Marble sludge waste

Generally the marble wastes are being dumped in any nearby pit or vacant space near the marble processing industries, although notified areas have been marked for dumping the same. This leads to increased environmental risks as dust pollution spreads alongside for a large area. In the dry season, the dust dries up, floats in the air, flies and deposits on crops and vegetation. In addition, the deposition of such generated huge amount of fine wastes certainly creates necrotic ecological conditions for flora and fauna changing landscapes and habitats. The accumulated waste also contaminates the surface and underground water reserves.

The Initiative

To explore the profitable use marble sludge in large scale, Technology and Action For Rural Advancement (TARA), New Delhi, has taken up an initiative to pilot research and demonstrate the same in selected areas of Rajasthan. The project is catalyzed and supported by SEED Division, Department of Science and Technology, Ministry of Science and Technology, Government of India.

The project focuses on exploring the use of marble sludge in building materials e.g. various types of roofing, walling and flooring materials. Primarily it will focus on the use of marble sludge in fired clay brick making and concrete products. Successful demonstration will be scaled



Major marble sludge producing areas in Rajasthan

up in commercial scale. Thus the use of the developed technology will encourage the use of marble sludge as a valuable material in brick making thereby turning a “waste” into “wealth”.

The project focuses on the use of marble sludge in the small to medium scale brick making sector since there are several inherent and relevant skills available with the local communities. The targeted populations for the project are both the entrepreneurs and workers. Interest for entrepreneurs will be created through successful demonstration and ensuring demonstrated profitability. Simultaneously workers will be trained in the skills of waste material utilization thereby enabling to earn a dignified living.

TARA has been actively involved in promoting environment friendly technologies in the building material sector in India. Rajasthan has been a priority intervention state from the socio economic status.



Soft mud moulding machine developed by DA Group for marble sludge and soil mixing

Priority

Various interactions with small to medium brick producers brought forward the following needs for promotion of marble sludge utilization in brick making. The needs may be prioritized as under:

- Demonstration of technical feasibility of “marble sludge utilization” in clay brick making.
- Demonstration of superior product quality at a reasonable production cost.
- Long term training and capacity building support “at site” to moulders.
- Low interest credit from formal financial institutions/subsidies from Government Schemes.
- Marketing incentives and support of “ECO BRICKS” from the State and Central government agencies in Rajasthan.