

# TERMS OF REFERENCE FOR THE R&D PROJECT

## **CIVIL ENGINEERING DEPARTMENT**

Building Lime and Gypsum Products Sectional Committee, CED 04,

### **1. TITLE**

Study of the technological advancements in the manufacture and market trends in the utilization of lime-based blocks used as building material.

### **2. BACKGROUND**

- a) BIS has published IS 3115:1992, "Lime Based Blocks – Specification (*second revision*)", which prescribes the requirements regarding the dimension and strength requirement of lime-based blocks (both hollow and solid) used for construction of walls, internal partitions and filler walls.
- b) Lime-based blocks are used in construction for various purposes due to their durability, good thermal properties, breathability, and compatibility with older buildings in restoration work.
- c) IS 3115 mentions three types of lime blocks (as per the finishing of the faces) used by the construction industry. This project aims to upgrade the specification of lime based blocks.

### **3. OBJECTIVE**

To study the latest advancement in the field of Lime-based blocks, in view of the trade, technology and performance; for effecting changes in the standard as per the latest practices.

### **4. SCOPE**

The Scope of this R&D is as follows:

- a) Study and analyze the national/international literature through standards, research papers, and other peer-reviewed documents to identify the performance permeants, type, and manufacturing practices for further study.
- b) Collect and analyze the production and consumption data from manufacturers, construction companies, builders, and industry reports.
- c) To study the Central/State government's relevant rules associated with lime blocks, their raw materials, production process; and the characteristics of the product (lime based blocks).
- d) Collect and analyze the laboratories engaged in testing and research related to lime blocks, including their infrastructure, equipment, and areas of specialization.
- e) Collect and analyze the import/export statistics from relevant government agencies, trade associations, and other databases.
- f) On the basis of the above (a to e) field visit & testing of sample plan will be finalize with the approval of BIS.

- g) Carry out survey and interviews with lime block manufacturers, including assessment of production capacities, technological capabilities, storage and transportation conditions and testing as per the finalized plan.
- h) Generation of data after testing the product for performance parameters for different types of lime blocks,
- i) Critical analysis of test results, obtained by the testing of collected sample as per finalized plan.
- j) Preparation and submission of an analytical report covering the entire scope of the Project.

## **5. RESEARCH METHODOLOGY**

The project will involve the following research methodologies:

- a) Study the literature and analyse it in respect to the scope
- b) Survey the market through structured questionnaires for collecting information in respect to the scope
- c) Contact the relevant organizations and associations (Industry/ user associations) for gathering the data
- d) Visits to the manufacturing units to observe, manufacturing processes and in-process controls,
- e) Discussion with focused groups (Quality control personnel and person responsible for manufacturing) through structured questionnaires
- f) Collection of samples – samples to be collected during the visits to industries as per finalized plan
- g) Testing of samples – test the samples and submit the analyzed results (Samples shall be tested in BIS recognized laboratories/ laboratories of national repute).
- h) Comprehensive reporting on all aspects.

## **6. SAMPLING PLAN**

- a) Two manufacturers from large and MSME companies shall be visited (unless the manufacturing database indicates otherwise) to understand and collect data from the manufacturers and organizations involved in manufacturing.
- b) Two samples for each type shall be tested, preferably from different manufacturers/brands, for all the performance/properties.
- c) At least two users of the product need to be visited for their feedback.
- d) At least two laboratories must be visited, preferably one in the government sector and one in the private sector (NABL Certified).

## **7. DELIVERABLES**

The list of expected outputs or deliverables is as follows:

- a) Comprehensive report presenting import/export analysis, manufacturing capacity assessment, laboratory availability, and production and consumption data analysis.
- b) Summary of presentations highlighting the key findings, market trends, and strategic recommendations for stakeholders.

- c) Detailed database or repository of gathered information for future reference or expansion of research.

## **8. TIMELINE AND METHOD OF PROGRESS REVIEW**

The duration of the project shall be **Six months**.

An interim progress report indicating the review of the literature, desktop research and sampling & visit plan shall be submitted **within One month** from date of award of the project.

First progress report shall be submitted by the end of **Three months** from date of award of the project. This report may not wait for receipt of final test reports of samples.

Final Project Report (FPR) shall be submitted within **Six months**.

## **9. SUPPORT FROM BIS**

BIS will provide access to latest available editions of Indian standards and/ or international standards relevant to the project, on request.

## **10. NODAL POINT**

Dr Manoj Kumar Rajak, Sc-'D', & Member Secretary, CED 04 may be contacted for more clarification on the R&D project (email- [manoj@bis.gov.in](mailto:manoj@bis.gov.in)).

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