TERMS OF REFERENCE FOR THE R&D PROJECT

Civil Engineering Department
Flooring, Wall Finishing and Roofing Sectional Committee, CED 05

1. TITLE OF THE PROJECT

Study of the different types and grades and performance parameters of rubber floor tiles and sheets manufactured and/or available in Indian market.

2. BACKGROUND

Rubber flooring is widely used in various sectors such as in commercial spaces, educational institutions, healthcare facilities, and sports complexes. It is valued for its durability, slip resistance, comfort underfoot, and ease of maintenance. As a result of this increasing popularity, there is a growing need for a comprehensive survey to understand the diverse landscape of rubber flooring, focusing on key aspects such as types (homogeneous and heterogeneous), grades (based on hardness, etc), sizes, and to evaluate the quality assurance parameters through various tests.

BIS revised about 3 decades back, the IS 809:1992 'Rubber flooring materials for general purposes — Specification (*first revision*)' which prescribes the requirements, workmanship and test methods for rubber flooring materials. Of late, BIS has also received inputs from various stakeholders about availability of new types, sizes and grades, and their performance parameters in the Indian Market.

In the above context, it is important that a thorough analysis of new types, grades and sizes of rubber flooring being manufactured and imported in India is carried out. Data gathered from such analysis will support in the revision of Indian Standard on rubber flooring (IS 809) to cover new types and varieties and performance parameters in the revised version.

3. OBJECTIVE

To collect the technical data and scientific evidence with respect to the availability of different types and varieties of rubber floor tiles and sheets available in the market, and then investigate and compile information on various performance parameter conducted on these rubber floorings.

4. SCOPE

4.1 Extensive and thorough examination of the available relevant literature but not restricted to the following and provide comparative analysis:

a) International/other national standards;
b) Research papers;
c) Any studies being conducted by any organization; and
d) Any other sources.

4.2 Identification of manufacturing base of rubber flooring in India along with categorization of large and MSME units. Collection of information on composition, manufacturing process, and product quality and analysis of information.

4.3 Visit to manufacturing units, two units from different groups - each of large and MSME units. The visits to cover discussion and report preparation on manufacturing process, varieties manufactured by the units, quality parameters tested/ got tested from outside labs, and the testing facilities available with them. Also, one standard questionnaire should be prepared to obtain the feedback.

4.4 Identification of exporters and importers of rubber flooring in India. Collection of information on product quality and technical regulations/standards followed for export.

4.5 Determination of testing infrastructure available in India for rubber floorings, characteristics being tested and test methods being followed.

4.6 Drawl of samples of rubber flooring of each variety with respect to types and grades identified during the survey.

4.7 Testing of samples for performance tests for new identified types and grades in any identified NABL accredited laboratory to check the level of performance achieved by the samples. If NABL accredited laboratory is not available, then testing can be done in any other laboratory having sufficient infrastructure for testing of rubber flooring. Tests methodologies should be identified by the agency in the literature review and get approved from BIS before testing of the samples.

4.8 Comparative analysis of test results with respect to each variety and type.

4.9 Preparation and submission of comprehensive analytical report along-with all the evidence and data collected during the R&D project and analysis of the data.

5. RESEARCH METHODLOGY

5.1 Extensive study of the relevant existing literature.

5.2 Identify and create the database which includes the manufacturing industry and testing facilities.

5.3 Visit to manufacturing units, two units from different groups - each of large and MSME; and carrying out the following activities and reporting thereof:

a) manufacturing process being followed,
b) grades or varieties of the product being manufactured,
c) in-process quality controls,

d) characteristics being tested for final product and what test methods are being used,
e) discussion with relevant person(s) in the industry regarding sustainability practices being implemented in the manufacture; and with buyers/users of the product.

5.4 One standard questionnaire should be prepared for taking feedback.

5.5 Study of the varieties of rubber floorings exported and imported and their quality compliance followed by these products.

6. SAMPLING PLAN

Sampling plan should be prepared with respect to types and grades identified during the survey for the approval of BIS. The samples can be drawn from market or manufacturing units visited. The sampling should be thorough representation of the industry (large scale as well as MSME) through-out the country.

7. DELIVERABLES

a) A detailed report summarizing the findings of the survey along-with all the evidence, covering all aspects mentioned in the scope.
b) Visual aids such as charts and graphs to present the information in a clear and concise manner.
c) Recommendations based on the survey results.

8. TIMELINE AND METHOD OF PROGRESS REVIEW

8.1 The R&D project should be completed in a total time of maximum 4 months from date of award of the R&D project.

8.2 Stages for Review

Stage I – At the end of 1st month, allottee should prepare a comprehensive plan identifying the following:

a) Details of literature review carried out and summarized report;
b) Identified manufacturers, exporters, importers, laboratories, and users;
c) Information gathered from contacting the above identified stakeholders and visits to be carried out;
d) Laboratory where testing is to be carried out; and
e) Test method proposed to be used for quality parameters

Member Secretary will evaluate the plan and provide feedback, if required.

Stage II – At the end of 3rd month, project allottee to submit draft report with the following information:

a) Reports of visits carried out to manufacturing units and laboratories;
b) Details of manufacturing processes being observed;

c) Number of samples collected; and
d) Test reports.

NOTE - If test reports are awaited, then interim report may be submitted with reports that are available.

The BIS' Technical Committee will evaluate the draft report and provide feedback/recommend changes, if required.

Stage III – In the 2 weeks, project allottee to submit final report incorporating recommendations/feedback of Committee.

Sectional committee will evaluate the final report and take decision for acceptance by end of 4th month.

9. SUPPORT FROM BIS

9.1 BIS will provide access to latest editions of Indian and International (ISO) Standards required for the project.

9.2 BIS will facilitate to introduce to research organizations, government departments, and industries/service providers.

10 NODAL PERSON

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