

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/varieties and performance parameters of flexible polyvinyl chloride (PVC) floorings manufactured and/or available in Indian market.

2. BACKGROUND

The flooring industry, particularly the Polyvinyl Chloride (PVC) flooring sector, has experienced significant growth and innovation in recent years. PVC flooring (commonly known as vinyl flooring) has become a widely adopted solution in both residential and commercial spaces due to its inherent advantages, such as durability, cost-effectiveness, and importantly design versatility.

As a result of this increasing popularity, there is a strong urge for a comprehensive survey to understand the diverse landscape of flexible PVC floorings, focusing on key aspects such as types (homogeneous and heterogeneous), sizes, thicknesses, backed-unbacked and printed/non-printed variations, and quality assurance measures through various tests.

BIS revised about 3 decades back, the IS 3462:1986 'Specification for unbacked flexible PVC flooring (*second revision*)' which prescribes the requirements of unbacked homogenous flexible PVC flooring including the laminated PVC flooring. Of late, BIS has also received inputs from various stakeholders about availability of new types, sizes and varieties, and performance parameters.

In the above context, it is important that a thorough analysis of new types, grades and sizes of PVC flooring being manufactured and imported in India is carried out. Data gathered from such analysis will support in the revision of Indian Standard on flexible PVC flooring (IS 3462) 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 flexible PVC flooring available in the market, range of sizes and thicknesses offered for flexible PVC flooring products and then investigate and compile information on various performance parameters conducted on these PVC 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 conducted by any organization; and
- d) Any other sources.

4.2 Identification of manufacturing base of flexible PVC flooring in India along with categorization of large and MSME units. Collection of information on composition, manufacturing process, 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 flexible PVC 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 flexible PVC floorings, characteristics being tested and test methods being followed.

4.6 Drawl of samples of PVC 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 PVC flooring. Tests methodologies should be identified by the agency in the literature review and got 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 METHODOLOGY

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 flexible PVC 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 the first draft report with the following information:

- a) Reports of visits carried out to manufacturing units and laboratories;
- b) Details of manufacturing processes observed;
- c) Number of samples collected; and
- d) Test reports.

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

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

Stage III – In the next 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

Shri Abhishek Pal, Sc-D & Member Secretary, CED 05

Civil Engineering Department, Email: ced@bis.gov.in , Abhishek.pal@bis.gov.in
