

TERMS OF REFERENCE FOR THE R&D PROJECTS

(Sports Goods Sectional Committee, PGD 41)

1. Title of the Project: Study of safety, performance and constructional requirement for cricket ball used in the game of cricket.

2. Background:

2.1 The quality of a cricket ball is of utmost importance in the game of cricket. The characteristics of the ball can significantly impact the performance of players and the overall dynamics of the game. A high-quality cricket ball, typically made of good-quality leather and well-stitched, is more likely to swing and seam effectively. It not only maintains its shape and integrity but also has consistent bounce over a more extended period, which allows both batsman and bowlers to predict and adapt to the behaviour of the ball, contributing to fair competition between bat and ball.

2.2 The need for different grades of cricket balls also arises from the diverse formats of the game, playing conditions, and the level of competition. Cricket balls are classified into different grades based on their quality, durability, and performance characteristics. The older version of Indian standard IS 10800 : 1983 specifies the performance parameter of three different grades of cricket ball used in the game of cricket. This project is aimed at upgrading this specification by inclusion of new grades which are currently being used in the sports industry. This standard can be accessed from <https://standardsbis.bsbedge.com/>

3. Objective:

To collect relevant data and information from both primary and secondary sources in regard to quality requirements (chemical, mechanical and physical properties) of different types and grades of abdominal guard used in sports industries.

4. Scope

1. Study the available literature like national and international standard such as ASTM, JIS, EN, ISO etc available on the subject, research papers, any study conducted by other organisations, companies' brochure. Identify the grades, their chemical, mechanical and physical properties and any other requirements which can be included in the standard.
2. Collect data of the manufacturing base of the product.
3. Visit the manufacturers of the product and get the information on the following:
 - i. Types of raw material used;
 - ii. Varieties/grades of the product manufactured;
 - iii. Quality parameters (chemical, physical and mechanical properties) of different grades;
 - iv. Manufacturing process and important aspects that need to be included in the standard;
 - v. Safety requirements, test facilities and test methods used;

- vi. In process quality checks;
 - vii. Marking and labelling being done;
 - viii. Packaging requirement;
 - ix. Addressing sustainability in processes such as using energy efficient process, using renewable energy sources, recycling and reuse; and
 - x. Waste recycling.
4. Check the quantity of the product imported and exported and countries with which the trade for this product is occurring. Also check if any technical regulations exist for this product in these countries. Take data of the foreign specification as per which the product is being imported or exported.
 5. Identify the organised users of the product and take data of the quantity being used by them, specification used, check for the test certificates received by them and study the physical and mechanical properties mentioned in the TC. Also understand from the user the main properties required by them in the product.
 6. Prepare a comprehensive project report incorporating the points mentioned above.

5. Methodology:

1. Study the literature and analyse the findings.
2. Visit the manufacturing unit and
 - a. Observe the manufacturing process,
 - b. Examine in-process control measures,
 - c. Conduct focussed group discussion with quality personnel
 - d. Collect the data as mentioned in the scope through a questionnaire.
3. Visit laboratories and make report on (If available)
 - a. Test equipment required
 - b. Test method being used
 - c. Testing charges
 - d. Testing time required.
4. Visit the identified importers and exporters and collect data as mentioned in the scope through a questionnaire.
5. Visit the users of the product and collect data as mentioned in the scope through a questionnaire.
6. Analyse the data and test reports from diverse sources and include the same in the project report.

6. Sampling plan:

1. Two manufacturers from large, small and micro scale each shall be visited.
2. Three samples for each grade shall be tested.
3. One user organization of the product shall be visited.

7. Deliverables:

1. Final project report, in hard copy format as well as in soft copy, covering all aspects mentioned in the scope.
2. Questionnaire, discussion, visit reports, test reports to be appended with the final project report

8. Timeline and Method of Progress Review:

The duration of the project is 3 months from the date of award of the project. The proposed indicative timeline stage-wise is given below:

| SI No. | Stage | Time from date of award of project (cumulative) |
|---------------|---|--|
| 1 | Literature review and identification of manufacturing base, testing laboratories, user/user industry, and discussion with BIS for the finalization of sampling plan | 1 month |
| 2 | Visit to manufacturers, testing laboratories, users and importers and exporters and data collection | 2 month |
| 3 | Preparation and submission of first draft report to BIS | 2.5 month |
| 4 | Submission of final project report | 3 month |

Note : The proposer may submit the draft report to BIS without waiting for test report from independent laboratories if the test is of long duration test .

9. Support BIS will Provide:

- National /international standard relevant to the project