Terms of Reference

Research Project
on
Requirements of Bottom Bracket (BB) Cartridge

Technical Committee	Bicycles Sectional Committee (TED 16)
Division Council	Transport Engineering Division Council
Duration	3 months

1. Title of the Project: Requirements of Bottom Bracket (BB) Cartridge.

2. Background:

2.1 Bottom bracket cartridge is used in high-end bicycles in place of bottom bracket ball cups. It consists of main body, bracket axle, and bearings.

2.2 The relevant Indian Standards are as given below:

IS 1131:2006	Bicycle Bottom Bracket Axle – Specification
IS 1132:2009	Bicycle - Bottom Bracket Ball Cups - Specification
IS 1134:2004	Bicycles Bottom Bracket Lock Ring – Specification

2.3 The Indian standards can be downloaded freely from the link given below:

https://www.services.bis.gov.in:8071/php/BIS/PublishStandards/published

2.4 With increase in use of high-end bicycles, it is necessary to standardize the requirements of BB cartridge. However, at present there is no standard for requirements of BB Cartridge.

2.5 It is in this context that there is a need for in-depth, incisive study of requirements of Bottom Bracket (BB) Cartridge.

3. Objective

The objective of research and development project is to collect data, information, and evidence from primary and secondary sources in respect of BB Cartridges.

4. Scope:

4.1 A thorough literature review on BB cartridges, which are currently being used in bicycles, which will include existing international standards if any, research papers published on the subject, any study conducted by industry bodies/ associations or any other literature which

includes study of parameters covered in current Indian Standards, tests specified and their test methods.

4.2 Collection of export and import data and applicability of technical regulations on the BB Cartridges.

4.3 Collection of data on scale wise (Large, Medium, Small, and Micro) manufacturing base and laboratories through government sources (website, reports) or industry associations.

4.4 Based on findings of **4.3**, identification of manufacturing base of the BB Cartridges in the country and visits to different manufacturers facilities based on agreed sampling plan at **5.1**.

4.5 Based on findings of **4.3**, identification of testing laboratories, especially NABL accredited, and testing facilities in the country and visits to different laboratories based on agreed sampling plan at **5.1**.

4.6 Collection and gathering of the following data on requirements of BB Cartridges:

- Type of raw materials
- Varieties manufactured.
- Manufacturing processes
- In process quality controls
- Manufacturing facilities (Automation, Industry 4.0)
- Safety and quality parameters:
  a) Design and Construction
  b) Recommended dimensions of BB Cartridge
- In-house test facilities
- Parameters tested.
- Marking and labelling
- Packaging
- Finished materials quality parameters.
- Sampling plans

5. Sampling Plan

5.1 Based on the identification of manufacturing and testing base, a sampling plan is required to be agreed upon for visits to different stakeholders and for collection and testing of samples during the visit.

5.2 In case the manufacturing and testing infrastructure in the country is sufficiently available under large, medium and small scale, the proposer needs to submit a sampling plan to BIS for approval.

6. Research Methodology

6.1 Carry out thorough literature review as specified in **4.1** to **4.3**.

6.2 After the literature review, there will be discussion with BIS to approve the sampling plan so that visits can be undertaken.

6.3 Collect information from stakeholders through discussion, structured questionnaire as specified in **4.2** and **4.3** for the requirements of BB Cartridges.

6.4 Visits to manufacturers facilities to witness the manufacturing process and to collect the samples for testing. A focused discussion on raw materials being used, manufacturing process, in-process quality checks and testing facilities for different parameters and test methods should be done with quality personnel.

6.5 Visits to testing laboratories, especially NABL accredited, to get the samples tested. Discussion should also be done with quality personnel on testing of different parameters, their testing methods and equipment being used for testing.

6.6 Collect data and feedback from different users through circulation of questionnaire.

7. Deliverables

An analytical report, in soft and hard copy, covering all aspects mentioned in the scope shall be submitted. Details of visits to manufacturers, laboratories, discussions with quality control personnel, questionnaire with exporters/ importers, feedback from users, research findings, data collected, comparative analysis and bibliography of the literature covered shall be appended to the report.

8. Timeline and Method of Progress Review:

A stage wise indicative timeline plan is provided below:

a) Project timeline – 3 months from the date of award of project

b) Primary source interaction time frame covering the review of the literatures – By the end of 30 days.

c) Secondary source interaction covering the discussion with industry associations, and R&D Organizations, thereof – By the end of 45 days

d) Visits to manufacturers and laboratories and testing of collected samples – By end of 75 days.

e) Final report covering all the aspects of the ToR – By end of 90 days.

9. Support BIS will Provide:

9.1 BIS will provide access to latest editions of Indian and International Standards.

9.2 BIS will provide information regarding licencees and recognized laboratories available.