Terms of Reference for Research Project

(for Leather , Tanning Materials And Allied Products Sectional Committee CHD 17 under Chemical Department of BIS)

1. Title:

Study on the design and performance requirements of Protective Leather Clothing.

2. Background:

2.1 BIS has formulated standard IS 6153:1971 Specification for Protective Leather Clothing.This standard prescribes the requirements and the methods of sampling and tests for protective clothing's made from leather. It covers jackets, capes, sleeves, aprons, spats and leggings.

2.2 Protective leather clothing enhance occupational safety in diverse industries. Current occupational environments expose workers to an array of hazards, including fire, chemicals, and abrasive materials, necessitating the development of protective clothing that goes beyond conventional standards. Safety regulations require constant adaptation to keep pace with evolving work conditions and technological advancements, and therefore a need was felt to commission a research project to create a comprehensive and dynamic set of requirements that not only meet current safety standards but also anticipate and mitigate future occupational risks.

3. Objective:

To collect the relevant data and information from both primary and secondary sources regarding the design and performance requirements for Protective Leather Clothing which will address the challenges being faced in current standard.

4. Scope:

4.1 Undertake comprehensive study and comparative analysis of the available literature on the design and performance requirements for Protective Leather Clothing which will inter alia include any international standards, research papers published, any SoPs/ guidance/ instructions issued by the Ministries/ regulators concerned or any other study conducted by any industry or any other organization on the subject. The study shall also include information on any new and additional test methods being used for testing performance requirements for Protective Leather Clothing.

4.2 Conduct a comprehensive study and collate data regarding the various types of leather and alternative materials, assessing their durability, resistance, and performance against different hazards that can be used for protective leather clothing.

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

4.4 Collection of import and export data and comparative study of technical regulations/standards on the subject which are applicable in these countries.

4.5 Collection of data regarding the various methods of test and testing facilities for protective clothing made from leather available in the country.

4.6 Visit to two manufacturing units each from Large, Medium, Small and micro scale (unless the manufacturing database indicates otherwise), and 2 laboratories (preferably one government and one in private sector) to study the manufacturing and testing facilities to collect data on the following:

(i) Type of raw materials used:
(ii) Varieties manufactured;
(iii) Manufacturing processes:
(iv) The Tanning Processes followed;
(v) In process quality controls
(vi) Manufacturing facilities (Automation, Industry 4.0)
(vii) Safety and quality parameters: a) Design and Construction b) Recommended minimum dimension of Protective Clothing
(viii) In-house test facilities
(ix) Parameters tested
(x) Marking and labelling
(xi) Packaging
(xii) Finished materials quality parameters
(xiii) Sampling plans
(xiv) Sustainability practices followed, if any [energy consumption, renewable energy sources, sustainable practices, 3Rs (Reuse, Reduce and Recycle), waste management and disposal mechanisms, carbon footprints], future plans

4.7 Collection of samples and generation of test data for important requirements of the material for the characteristics protective leather Clothing and against the parameters being reported.

4.8 Preparation and submission of report on the all the parameters covered in the scope.

5. Research Methodology:

The following research methodologies shall be followed:

i. Study the literature in respect to the Scope and analyze it.
ii. Collection of information through structured questionnaire and contacting the relevant organizations (e.g. Council for Leather Exports) and associations (Industry/ user associations) in respect to the scope
iii. Collection of data regarding the manufacturing database in the country
iv. Visits to industry and laboratories for observing manufacturing facilities, processes and testing facilities.
v. Focussed discussion with the Quality Control team through a structured questionnaire/ format.
vi. Collection of sampling during the visits to industries as per sampling plan.
vii. Testing of samples collected during the visits and submission of the analyzed results. (Samples shall be tested in BIS recognized laboratories/ laboratories of national repute).
viii. Comprehensive and concise reporting.

6. Sampling Plan:

6.1 Preferably visit to 2 industries each of large, medium, small and micro scale (unless the manufacturing database indicates otherwise) to understand and collect data from the manufacturers and organizations involved in manufacturing of Protective Leather Clothing.

6.2 Preferably visit to 1 government and 1 private lab (preferably NABL accredited or BIS recognized lab) to have information on characteristics tested and methods of tests used.

7. Deliverables:

7.1 Study report consisting of outcomes of the study covering all the aspects of the scope shall be submitted in both digital and paper form.

7.2 Along with the final report, the survey formats and responses, questionnaires, results of testing, report of visits, other relevant documents/ information shall be appended.

8. Delivery Milestones and Review Process

8.1 The duration of the project shall be four months.

8.2 An interim report indicating the review of the literature, desktop research and sampling plan shall be submitted in 30 days from award of the project.

8.3 Draft report shall be submitted by the end of three months from award of the project.

8.4 Final report shall be submitted within 4 months from the date of award of project.

9. Support from BIS:

BIS will provide access to available international standards required for the project as per the requirement identified by the proposer and on request.

10. Nodal Point

Ms. Preeti Prabha, Scientist C & Member Secretary, CHD 17 may be contacted for more clarification on the R&D project (chd17@bis.org.in)