# PRODUCT MANUAL FOR PUMPSET FOR DIRECT EVAPORATIVE AIR COOLER ACCORDING TO IS 11951:2024

***This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification license/certificate.***

| | | | |
|---|---|---|---|
| 1. | **Product** | : | IS 11951 : 2024 |
| | **Title** | : | Pump set for Direct Evaporative Air Cooler |
| | **No. of Amendments** | : | Nil |
| 2. | **Sampling Guidelines:** | | |
| a) | **Raw material** | : | For components- As per Clause 5 of IS11951:2024, Motor for Non - Submersible pumps as per Clause 9.2 of IS 11951: 2024 |
| b) | **Grouping guidelines** | : | Please refer ANNEX – A |
| c) | **Sample Size** | : | 2 Pcs |
| | | | |
| 3. | **List of Test Equipment** | : | Please refer ANNEX – B |
| | | | |
| 4. | **Scheme of Inspection and Testing** | : | Please refer ANNEX – C |
| | | | |
| 5. | **Possible tests in a day :** | **:** | All tests except reliability test (Cl. 9.4) and Type tests (Cl. 9.6) |
| 6. | **Scope of the License :** | | |
| | "License is granted to use Standard Mark as per IS 11951:2024 with the following scope: | | |
| | Name of the product | | Pump set for Direct Evaporative Air Cooler |
| | Type of Pump set | | • Submersible pumps<br>• Non – Submersible vertical pumps<br>➢ Type 1<br>➢ Type 2 |
| | Rated power consumption of Motor, Watt | | |

## ANNEX- A

## GROUPING GUIDELINES

1) Pump sets for Direct Evaporative Air Cooler as per IS 3315: 2024 shall be classified in to different varieties based on following parameters :

   a) Type of Pump set:
      - Submersible pumps
      - Non – Submersible vertical pumps
        - Type 1
        - Type 2
   b) Rated power consumption of Motor, Watt

2) Further, Pumps of different power consumption rating are grouped as below:

Grouping of Submersible Pumps

| **Group** | **Motor wattage** |
|---|---|
| Group 1 | Up to and including 5 W |
| Group 2 | > 5 W, to ≤ 10 W |
| Group 3 | > 10 W, to ≤ 15 W |
| Group 4 | > 15 W, to ≤ 20 W |
| Group 5 | > 20 W, to ≤ 25 W |

Grouping of Non-submersible vertical Pumps

| **Group** | **Motor wattage** |
|---|---|
| Group 1 | Up to and including 50 W |
| Group 2 | Above 50 W |

3) Following guidelines shall be followed for considering Grant of Licence or Change in Scope of Licence:

   a) One sample of the highest wattage from each group, as applicable for respective type of Pumps, intended to be covered in the license shall be drawn for testing to cover the entire range of wattages in that group.
   b) Sample for each type of Pumps from different groups shall be tested to cover both types of Pumps.

4) The Firm shall declare the varieties of pumps they intend to cover in the License. The Scope of License may be restricted based on the Manufacturing Capability and Testing facilities of the Manufacturer.

5) During the operation of the License, BO shall ensure that all the Varieties covered in the License are tested in rotation to the extent possible.

## ANNEX B

# List of Test Equipment

***Major test equipment required to test as per the Indian Standard***

| Sl No. | Test Equipment | Tests used in with Clause Reference |
|---|---|---|
| 1 | Testing panel consisting of Voltmeter, Ammeter, Wattmeter, Ammeter, Frequency Meter | Ratings as per Clause 6.1, Motor Output as per Cl. 7 |
| 2 | Voltmeter, Micro ammeter, High Voltage Tester | Leakage current and Electric strength tests as per Clause 9.5 |
| 3 | Measuring tape, Vernier calipers ,Stop Watch & Micro meter, | Performance tests as per Cl. 9 |
| 4 | Humidity Chamber with hygrometer, hour meter and temperature controller | Moisture resistance test as per Clause 15 IS:302:1 |
| 5 | Digital Temp Indicator with thermocouple wire, | Clause 19 IS:302:1 |
| 6 | Water tank with setup to measure discharge head and discharge rate, measurement Beaker | Performance tests as per Cl. 9 |
| 7 | Resistance meter, OHM meter | Insulation resistance as per IS 996 |
| 8 | Set up for Reliability test | Reliability test as per Cl. 9.4 |

***The above list is indicative only and may not be treated as exhaustive.***

## ANNEX C

## SCHEME OF INSPECTION AND TESTING

### 1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit i.e. Batch and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4 below.

1.3 **RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT**:

1.3.1 **Control Unit**: For the guidance of manufacturers, the recommended definition of Control Unit is quantity of Pump sets of same type and of same wattage produced in a day from same consignment of raw material under similar manufacturing conditions.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively,the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

**2. ENSURING COMPLIANCE THROUGH TESTING-** It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in-house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer, and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in-house as “R” or other tests which can be sub-contracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

**2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.**

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least withtest facilities for routine tests (indicated as “R” in Column 2 of Table 1)**, where different tests given in the specification shall be carried out in accordance with the method given in the

specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 **TEST RECORDS**- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

**3. LABELLING AND MARKING** – As per the requirement of IS 11951:2024. The Standard Mark, as given in the Schedule of the licence, shall be marked on each Pump set, provided always that the product thus marked conforms to all the requirement of the specification. In addition, the licence no. CM/L-_____ and details of BIS website shall be marked at an appropriate place on product or package as follows: "For details of BIS certification please visit www.bis.gov.in".

**4. REJECTION -** All the production which conforms to the Indian Standard and covered under scope of the licence shall be marked with Standard Mark. Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act,2016.

# TABLE 1
***(ONLY FOR GUIDANCE PURPOSE)***

| (1) | | | | (2) | (3) | | |
|---|---|---|---|---|---|---|---|
| **Test Details** | | | | **Test equipment requirement** R: required (or) S: Sub-contracting permitted | **Levels of Control** | | |
| Cl. | Requirement | Test Methods | | | No. of Sample | Frequency | Remarks |
| | | Clause | Reference | | | | |
| 5 | Material | 5.1 | IS 11951 | S | One | Each Consignment | Conformity to the relevant standard may be established |
| 6.1 | Ratings | 6.1 Table 1&2 | IS 11951 | R | Firm should exercise adequate control so that whole production should meet the requirements. Appropriate records shall be maintained | | |
| 7, 9.2, 9.4.3 | Prime mover | 7.1, 7.2, 7.3, 9.2,9.4.3 | IS 11951 IS 996 IS 302-1 | S | One | Each Consignment | No further testing is required in case received along with test certificate or is ISI Marked |
| 8 | General requirements | 8.1, 8.2 | IS 11951 IS 9000-8 | R | Firm should exercise adequate control so that whole production should meet the requirements. Appropriate records shall be maintained | | |
| 9.1 | Performance requirements | 9.1 | IS 11951 | S | One | Once in a month for each type and each wattage | |
| 9.4.1 | Reliability test | 9.4.1 | IS 11951 | S | One | Once in a month for each type and each wattage | |
| 9.4.6 | Dry run test | 9.4.6 | IS 11951 | S | One | Once in a month for each type and each wattage | |
| 9.5 | Routine tests | 9.5 | IS 11951 IS 302-1 | R | Each Pump set | | |
| 9.7 | Safety requirements | 9.7 | IS 11951 IS 302-1 | S | One | Once in a month for each type and each wattage | |