



**PRODUCT MANUAL  
FOR IRRIGATION EQUIPMENT-MICRO SPRAYERS  
ACCORDING TO IS 14605 : 1998**

*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 licence/certificate.*

1.	<b>Product</b>	:	IS 14605 : 1998
	<b>Title</b>	:	Specifications for Irrigation Equipment - Micro Sprayers
	<b>No. of Amendments</b>	:	01
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	Material shall be as per Clause 5.1 of IS 14605.
b)	<b>Grouping guidelines</b>	:	Please refer ANNEX-A
c)	<b>Sample Size</b>	:	10 Nos.
3.	<b>List of Test Equipment</b>	:	Please refer ANNEX – B
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer ANNEX – C
5.	<b>Possible tests in a day :</b>		
	(i) Construction and workmanship (Clause 5.2) (ii) Threaded Connection (Clause 5.3) (iii) Resistance to Hydrostatic Pressure at ambient Temperature (Clause 7.2) (iv) Uniformity of flow rate (Clause 8.2)		
6.	<b>Scope of the Licence :</b>		
	“Licence is granted to use Standard Mark as per IS 14605 : 1998 with the following scope:		
	Name of the product	<b>Irrigation Equipment - Micro Sprayers</b>	
	Class	Regulated / Non-regulated Sprayers Uniform / Non-uniform spray coverage	
	Any other aspect required as per the Standard	With Nozzle size and a) Minimum Working Pressure (Pmin); b) Maximum Working Pressure (Pmax); c) Range of effective Working Pressure, kPa; d) Regulating Range for Regulated sprayers, kPa;	

		<ul style="list-style-type: none"><li>e) Nominal Flow rate for each Nozzle size, l/h;</li><li>f) Test pressure, kPa;</li><li>g) Diameter of coverage, m;</li><li>h) Details of spray coverage pattern;</li><li>i) Performance characteristics;</li></ul>
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**ANNEX- A**  
**TO PRODUCT MANUAL**  
**FOR IRRIGATION EQUIPMENT-MICRO SPRAYERS**  
**ACCORDING TO IS 14605 : 1998**

**GROUPING GUIDELINES**

- 1. Micro Sprayers are classified in two ways, as below:**
  - A) Performance Characteristics (Flow Rate in relation to pressure):**
    - i. Regulated Sprayers
    - ii. Non-regulated Sprayers
  - B) Spray Characteristics:**
    - i. Relatively uniform spray coverage pattern in all directions
    - ii. Non-uniform spray coverage pattern
2. Declaration on Minimum Working Pressure (Pmin), Maximum Working Pressure (Pmax), Range of effective Working Pressure, kPa, Regulating Range for Regulated sprayers, kPa, Nominal Flow rate for each Nozzle size, l/h, Test pressure, kPa, Diameter of coverage, m, Details of spray coverage pattern and Performance characteristics to be obtained from manufacturer for a every classification of micro sprayer.
3. While considering grant of licence/inclusion of additional varieties, it shall be ensured that complete manufacturing/testing facility is available with manufacturer. One sample from each classification shall be tested to cover all the different varieties of Micro sprayers as mentioned above.
4. During the operation of the Licence, BO shall ensure that all the classifications of micro sprayers covered in the scope of Licence are tested in rotation to the extent possible.

**ANNEX – B  
TO PRODUCT MANUAL  
FOR IRRIGATION EQUIPMENT-MICRO SPRAYERS  
ACCORDING TO IS 14605 : 1998**

**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.	UV Tester	Material Clause 5.1
2.	Torque gauge, slip gauge	Test of Resistance of threaded connections. Cl 7.1
3.	Pressure gauge (capable of reading pressure upto 1.2 times the maximum working pressure declared by manufacturer), Thermometer (capable of reading upto $27 \pm 2^{\circ}\text{C}$ , Stop watch, slip gauge	Resistance of Micro sprayer to Hydrostatic Pressure at Ambient Temperature. Clause 7.2
4.	Pressure gauge (capable of reading test pressure declared by manufacturer), Measuring jar, Stop watch, Rotameter.	Uniformity of flow rate Clause 8.2
5.	Pressure gauge, Rotameter.	Performance characteristics Cl 8.3
6.	Pressure gauge, Measuring Tape, Stop watch, Collectors/Water receptacles	Water distribution curves, Diameter of Coverage and spray coverage pattern Clause 8.4
7.	Pressure gauge, Measuring Tape, Stop watch, Hours Meter, Measuring Jar, Rotameter	Durability Test Clause 9.0

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

ANNEX - C

**SCHEME OF INSPECTION AND TESTING  
FOR IRRIGATION EQUIPMENT-MICRO SPRAYERS  
ACCORDING TO IS 14605 : 1998**

**1. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipments.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. PACKING AND MARKING** – The Standard Mark, as given in the Schedule of the licence, shall be marked on each Micro sprayer, provided always that the micro sprayers to which this mark is thus applied, conform to every requirement of the specification.

**3.1 Marking** – Each micro sprayer shall be marked as per the provisions of the Indian Standard. In addition, each micro sprayer shall be marked clearly and permanently with the following information:

- a) Catalogue identification symbols or code no.;
- b) Nozzle size or nominal flow rate or colour marking of the nozzle indicating the nozzle size or nominal flow rate;
- c) Indication of the correct operation position, if necessary;
- d) BIS Licence No. CM/L\_\_\_\_\_ ., if possible on the product otherwise may be given on the package;
- e) BIS website details i.e –“For details of BIS certification please visit [www.bis.gov.in](http://www.bis.gov.in)”.

**3.1.1** Manufacturer shall make available to the user, together with the micro sprayers, appropriate information on irrigation micro sprayers in the form of catalogues, instructions or data sheets, all bearing marks of identification and date of issue as per clause 11 of IS 14605. Manufacturer shall also provide “General Information & Instruction” and “Operational Data” as per clause 11.1 and 11.2 of IS 14605.

**3.2 Packing** – The Micro sprayers shall be packed so as to avoid damage in transit.

**4. CONTROL UNIT** – For the purpose of this scheme, all Micro Sprayers of same classification, nozzle size or nominal flow rate or colour marking of the nozzle indicating the nozzle size or nominal flow rate, assembled in one shift shall constitute a control unit.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory

which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

**6. RAW MATERIAL** - Materials used in the assembly of Micro sprayer shall be according to clause 5.1 of IS 14605. Necessary controls shall be exercised to ensure conformity and proper records be maintained.

6.1 All components received for assembly of one type of Micro sprayer shall ensure conformity to clause 5.2 of IS 14605 and proper records maintained.

**7. REJECTIONS** – 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  
LEVELS OF CONTROL**

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method Cl. Ref.	Test Method IS		No. of Sample	Frequency	Remarks
5.1	Materials	5.1	IS 14605	-			See clause 6 and 6.1 of SIT.
5.2	Construction and workmanship	5.2.1, 5.2.2, 5.2.3 & 5.2.4	IS 14605	<b>R</b>	10	Each Control Unit	Adequate inspection shall be maintained to ensure conformity.
5.3	Threaded Connection	5.3	IS 14605 & IS 554	<b>R</b>	10	-do-	-do-
7.1	Test of Resistance of Threaded connections	7.1	IS 14605	<b>R</b>	10	-do-	In case of damage or leakage observed from body of the sprayers, the sprayer body shall be discarded. Any leak observed from assembly, the same shall be reassembled and tested again.
7.2	Resistance of Hydrostatic Pressure at Ambient Temperature	7.2. 7.2.1 & 7.2.2	IS 14605	<b>R</b>	5	-do-	
8.0	Functional and operational tests						

	General test conditions	8.1, 8.1.1 & 8.1.2	IS 14605	<b>R</b>	10	-do-	Adequate inspection shall be maintained to ensure conformity.
8.2	Uniformity of flow rate	8.2, 8.2.1 & 8.2.2	IS 14605	<b>R</b>	10	-do-	
8.3	Performance Characteristics	8.3, 8.3.1, 8.3.2, 8.3.2.1, 8.3.2.2, 8.3.3, 8.3.3.1 & 8.3.3.2	IS 14605	<b>R</b>	5	Once in a Week	In case of failure, samples from three consecutive control unit shall be tested. The original frequency to be restored only if these three samples pass.
8.4	Water Distribution Curves, diameter of coverage and spray coverage pattern	8.4, 8.4.1, 8.4.1.1 & 8.4.1.2	IS 14605	<b>R</b>	5	-do-	-do-
8.4.2	Water Distribution curves	8.4.2, 8.4.2.1 & 8.4.2.2	IS 14605	<b>S</b>	3	Once in a month **	
8.4.3	Diameter of Coverage	8.4.3, 8.4.3.1 & 8.4.3.2	IS 14605	<b>S</b>	3	-do-	-do-
8.4.4	Spray Coverage Pattern	8.4.4, 8.4.4.1 & 8.4.4.2	IS 14605	<b>S</b>	3	Once in a Month	-do-
9	Durability Test	9.0, 9.1 & 9.2	IS 14605	<b>S</b>	5	Once in Six Months	-do-



Note-1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

Note-3: \*\* All Nozzle sizes for each type of sprayer shall be covered in an operative period of one year.