



**PRODUCT MANUAL FOR
RESISTANCE WIRES, TAPES AND STRIPS
FOR HEATING ELEMENTS
ACCORDING TO IS 3725:1966**

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.	Product	:	IS 3725:1966
	Title	:	Resistance Wires, Tapes and Strips for Heating Elements
	No. of Amendments	:	3
2.	Sampling Guidelines:		
a)	Raw material	:	As per Cl 3.1 of IS 3725
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	5m for endurance test + 5m for all other tests
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 :		
	(i) Physical dimensions – Clause 4.2 (ii) Tensile test – Clause 7.4 (iii) Resistance – Clause 5.1 (iv) Uniformity of Resistance – Clause 5.2		
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 3725:1966 with the following scope:		
	Name of the product	Resistance Wires, Tapes and Strips for Heating Elements	
	Type	Wire/ Tape (Hot / Cold rolled)/ Strips (Hot / Cold rolled)	
	Alloy composition		
	Sizes		

ANNEX A

Grouping Guidelines

1. Resistance Wires, Tapes and Strips for Heating Elements shall be classified as follows for GoL/ CSoL:
 - a. Wires
 - b. Strips – cold rolled/ hot rolled
 - c. Tapes - cold rolled/ hot rolled
 - d. Composition of alloy
2. For a given composition, to cover a range of sizes of wires, wires of minimum and maximum diameter shall be drawn for testing. Similarly, to cover a range of sizes of strips and tapes, strips and tapes of minimum and maximum thickness and width shall be tested.
3. At least one sample each of hot rolled and cold rolled strip/ tape shall be tested to cover both in the scope.
4. The Firm shall declare the varieties intended to be covered in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
5. During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence 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.	Tests used in with Clause Reference	Test Equipment
01	Physical Dimension (Cl 4.2)	Micrometer (Screw gauge)
02	Tensile test (Cl 7.4)	Tensile testing machine
03	Resistance and uniformity of resistance (Cl 7.5)	Ohm meter
04	Wrapping test 7.3)	Wrapping test machine
05	Endurance test (Cl 7.6)	Endurance testing machine

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

ANNEX C

Scheme of Inspection And Testing

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 equipment.

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

3. LABELLING AND MARKING – As per the requirement of IS 3725:1966

4. CONTROL UNIT – Resistance Wires, Tapes and Strips for Heating Elements of same composition, size and type produced in a day 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. 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

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
3	Material	3.1	IS 3725	S	One	Each consignment	No further testing is required if accompanied with TC or ISI marked
4.2	Physical Dimension	4.2	IS 3725	R	Each spool		Shall be carried out both before and after drawing
4	Physical and mechanical properties	4.1, 4.3, 4.4	IS 3725	R	Each spool		
5.1, 5.2	Resistance & Uniformity of resistance	5.1, 5.2, 7.5	IS 3725	R	One	Every hour for each type and size	
7.3	Wrapping Test	7.3	IS 3725	R	One	Every week for each type and size	
7.4	Tensile test	7.4, 4.5	IS 3725	R	One	Every week for each type and size	
7.6	Endurance test	7.6	IS 3725	S	One	Once in three months for each type of alloy	

Note-1: 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.