



**PRODUCT MANUAL FOR
STUDENT-TYPE MICROSCOPE
ACCORDING TO IS 3686:1966**

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 3686:1966
	Title	:	Student-Type Microscope
	No. of Amendments	:	2
2.	Sampling Guidelines:		
a)	Raw material	:	As per clause 4 of IS 3686: 1966
b)	Grouping guidelines	:	Not Applicable
c)	Sample Size	:	One no.
3.	List of Test Equipment	:	Please refer ANNEX – A
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – B
5.	Possible tests in a day :		
	All Tests		
6.	Scope of the Licence:		
	“Licence is granted to use Standard Mark as per IS 3686: 1966 with the following scope:		
	Name of the product	Student-Type Microscope	

ANNEX A**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
1	Dimensions (Clause 3.1)	Gauges (GO/ NOGO) Inside Micrometer Micrometer (Least Count 0.001 mm) Travelling Microscope Vernier caliper (Digital)
2	Mechanical Tests (Clause 6.1)	GO/NO GO Gauges Steel Scale Try Square
3	Magnification (Clause 6.2.1)	Micrometer eyepiece or travelling microscope Stage micrometer or graticule plate having two parallel lines of known separation
4	Numerical Aperture (Clause 6.2.2)	Apertometer
5	Resolving power Definition (Clause 6.2.3)	Test apparatus as per fig. 3 and Appendix K of IS 2754
6	Star Test (Clause 6.2.4)	Auxiliary microscope Star object
7	Colour (Clause 6.2.5)	Black and white test object White light
8	Curvature of field (Clause 6.2.6)	Microslide with 2mm divided into 200 parts or 1 mm divided into 100 parts
9	Distortion (Clause 6.2.7)	A counting chamber slide or a cross line grating
10	Conditions of optics (Clause 6.2.9)	Lenses focal length: Standard focometer or alternate methods given in Appendix C of IS 988 Aperture: Apertometer Lens thickness: Eye piece micrometer Mirrors: Adherence: cellulose adhesive tape Radius of curvature: caliper Definition chart Temp. Test: Humidity cabinet Corrosion test: Thermostatically controlled cabinet with chemicals as per clause 7.6 of IS 988

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

ANNEX B

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 equipments.

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 3686: 1966.

4. 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.

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

5. 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				
4	General Requirements (except Materials and Optical Components)	4	IS 3686	R	Each Microscope		--
	Materials and Optical Components	4	IS 3686	S	One	Each Consignment	No further testing is required if received with test certificate or ISI marked
3.1	Dimensions	2	IS 3081	R	Each Microscope		In case of failure of microscope in any of the requirements, it shall be rectified till it meets the requirement otherwise the microscope shall be rejected.
5	Functional Requirements	5	IS 3686	R	Each Microscope		
6.1	Mechanical Tests	6.1.1 to 6.1.6	IS 3686	R			
6.2	Optical Tests						
6.2.1	Magnification of Microscope	Appendix J	IS 2754	R	Each Microscope		In case of failure of microscope in any of the requirements, it shall be rectified till it meets the requirement otherwise the microscope shall be rejected.
6.2.2	Numerical Aperture	4.2.3	IS 2754	R			
6.2.3	Resolving Power	Appendix K, 4.2.4, 4.2.6	IS 2754	R			
6.2.4	Star Test	6.2.4	IS 3686	R			
6.2.5	Colour	6.2.5	IS 3686	R			

6.2.6	Curvature of Field	6.2.6	IS 3686	R	Each Microscope	In case of failure of microscope in any of the requirements, it shall be rectified till it meets the requirement otherwise the microscope shall be rejected.
6.2.7	Distortion	6.2.7	IS 3686	R		
6.2.8	Clarity of Field View	6.2.8	IS 3686	R		
6.2.9	Conditions of Optics	-	IS 988	R		
8	Packing and Packaging	8	IS 3686	-	Each Microscope	--

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