



**PRODUCT MANUAL FOR
TUNGSTEN FILAMENT LAMPS FOR DOMESTIC AND SIMILAR
GENERAL LIGHTING PURPOSE
ACCORDING TO IS 418:2004**

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 418:2004
	Title	:	Tungsten Filament Lamps for Domestic and Similar General Lighting Purposes
	No. of amendments	:	5
2.	Sampling Guidelines		
a)	Raw material	:	NA
b)	Grouping Guidelines	:	Please refer Annex - A
c)	Sample Size	:	<ul style="list-style-type: none"> • 650 lamps – for GoL/CSoL • Please refer Annex – B for FS/MS
3.	List of Test Equipment	:	Please refer Annex - C
4.	Scheme of Inspection and Testing	:	Please refer Annex - D
5.	Possible tests in a day	:	Please refer Annex - E
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 418:2004 with the following scope:		
	Name of the product	Tungsten Filament Lamps for Domestic and Similar General Lighting Purposes	
	Type	Rated voltage _____ V, Rated wattage _____ W, Rated frequency ____ Hz, Bulb Designation _____, Type of cap _____, Finish _____, Luminous Flux _____.	

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ANNEX A

Grouping Guidelines

1. For considering GoL/CSoL of Tungsten Filament Lamps for Domestic and Similar General Lighting Purposes as per IS 418:2004, the following grouping shall be considered:
 - Lamps of the same rated Wattage from the same lamp data sheet (normal or high luminous flux), whose rated voltage falls within the same voltage range (for eg. 230V-250V) shall constitute a group as per Cl. 3.2 of IS 418:2004.
2. Any one variety of Tungsten Filament Lamp listed in the individual lamp data sheet (as given in Annex-G of IS 418:2004) shall be tested to cover all the varieties of Tungsten Filament Lamps in that particular lamp data sheet considering the above grouping.
3. With respect to Rated Voltage, any one sample of Tungsten Filament Lamp from rated voltages of 230V, 240V or 250V shall be tested to cover all these voltages i.e. 230V, 240V and 250 V. However, for Tungsten Filament Lamp having rated voltage of 110V, separate sample shall be tested.
4. The Firm shall declare the varieties of Lamps they intend to cover 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**Sampling/ Acceptance Procedure for FS/MS**

Sl. No.	Test	Test Method	No. of Samples	Qualifying Limit
1.	Marking legibility Marking durability	4.2.1 & Table 6 of IS 15518 (Part 1):2004	60	3
2.	Accidental Contact	4.3 & Table 6 of IS 15518 (Part 1):2004	60	2
3.	Cap Temperature Rise	4.4 & Table 6 of IS 15518 (Part 1):2004	5	All should pass
4.	Resistance to torque (unused lamps) test by attributes	4.5 & Table 6 of IS 15518 (Part 1):2004	60	All should pass
5.	Resistance to torque (after heating) test by attributes	4.5 & Table 6 of IS 15518 (Part 1):2004	20	All should pass
6.	Insulation resistance	4.6 & Table 6 of IS 15518 (Part 1):2004	60	All should pass
7.	Accidentally live parts	4.7 & Table 6 of IS 15518 (Part 1):2004	60	All should pass
8.	Creepage Distances	4.8 & Table 6 of IS 15518 (Part 1):2004	60	All should pass
9.	Interchangeability	4.10 & Table 6 of IS 15518 (Part 1):2004	60	3
10.	Lamp Dimensions	7.1 of IS 418:2004	60	5
11.	Wattage	8.1 of IS 418:2004	60	8
12.	Luminous Flux Initial	8.2 of IS 418:2004	60	8
13.	Lumen maintenance & Life Test	9.1, 10.1 & 10.2 of IS 418:2004	20	3

Note 1: Total no. of samples to be drawn are 60 for each rating. 10 additional samples may be drawn to accommodate accidental breakages, if any.

Note 2: Col-4 indicates the no. of samples for the particular test as given in Col-2. Col-5 indicates the individual no. of failures allowed for the particular test, beyond which the sample shall be considered as failing.

Note 3: In case the total no. of failures are less than the no. stipulated in Col-5 but beyond 9, for all the tests combined, the sample shall be considered as failing.

Note 4: The above procedure is applicable only for FS & MS. For the purpose of Grant of Licence & Inclusion of new varieties the procedure for batch testing as given in IS 418:2004 & IS 15518 (Pt-1):2004 shall apply.

ANNEX C**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	Smooth cloth, water	Cl. 4.2.1 & A-1 of IS 15518 (Part 1)
2	Gauge	Cl. 4.3 of IS 15518 (Part 1)
3	Cap Temperature Rise Test Apparatus	Cl. 4.4 of IS 15518 (Part 1)
4	Oven, Torque test holder, Torque Tester	Cl. 4.5 of IS 15518 (Part 1)
5	Megger	Cl. 4.6 of IS 15518 (Part 1)
6	Vernier Caliper	Cl. 4.8 of IS 15518 (Part 1)
7	GO/ NO-GO gauge	Cl. 4.10 of IS 15518 (Part 1)
8	Vernier Calliper	Cl. 7 of IS 418
9	Spherical Photometric Integrator	Cl. 8.1 & Cl. 8.2 of IS 418

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

ANNEX D

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 requirements of IS 418:2004.

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.

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	Levels of Control		
Cl.	Requirement	Test Methods		R: required (or) S: Sub-contracting permitted	No. of Sample	Frequency	Remarks
		Clause	Reference				
<i>Glass shell</i>							
	Length and diameter	4.1.1	IS 1112 (Part 1)	S	As per sampling plan given in IS 1112 (Part 1)	Each lot of same size of glass shell	No further testing is required if accompanied with Test certificate or ISI Marked
	Wall Thickness	4.1.2		S			
	Ovality	4.1.3		S			
	Seaminess	4.1.4		S			
	Bubbles	4.2.1		S			
	Cords & Striae	4.2.2		S			
	Stones	4.2.3		S			
	Adhered glass	4.2.4		S			
	Defects in blowing	4.2.5		S			
	Finishing	4.2.6		S			
	Annealing	4.3	S				
<i>Filament</i>							
	Visual Examination	7.4	IS 12897	S	As per sampling plan given in IS 12897	Each lot of same rating	No further testing is required if accompanied with Test certificate or ISI Marked
	Overall Length	7.5		S			
	Leg Length	7.6		S			
	Brittleness Test	7.7		S			
	Uniformity of Coiling	7.8		S			
	Pitch Touching	7.9		S			
	Flash off tendency	7.11		S			
	Cold resistance	7.13		S			
	Weight of filament	7.14		S			

<i>Finished Lamps on whole production (Safety Requirements)</i>							
5	Marking	4.2.1 & Table 6	IS 15518 (Part 1)	R	200*	All classes with same method of marking	*Minimum annual sample per grouping for lamps made most of the year
5	Protection against accidental contact in screw lamp holders	4.3 & Table 6		S	20*	All lamps tested with their appropriate gauge	*Minimum annual sample per grouping for lamps made most of the year. For lamps not made frequently the sample size shall be 32.
5	Lamp cap temperature rise	4.4 & Table 6		S	200*	Lamps of each class quarterly or in case of change in design	*Minimum annual sample per grouping. For any design changes, the no. of samples shall be 5.
5	Resistance to Torque (Unused lamps) a) Test by attributes	4.5 & Table 6		S	125*	All lamps with the same cement and the same cap	*Minimum annual sample per grouping for lamps made most of the year. For lamps not made frequently, the sample size shall be 80.
5	Resistance to Torque (after heating) a) Test by attributes	4.5 & Table 6		R	315*	Once in a year for lamps with the same cement and the same cap.	*Minimum annual sample per grouping
5	Insulation resistance	4.6 & Table 6		R	100% by inspection	All classes with B 22d & E 27 lamps	—
5	Accidentally live parts	4.7 & Table 6		R	5*		
5	Creepage distances	4.8 & Table 6		R		All lamps with B 22d caps whenever there is a change in design	*Minimum annual sample per grouping. If one sample fails further 5 samples shall be tested.

5	Safety at end of life (Induced failure test)	4.9 & Table 6	IS 15518 (Part 1)	S	125* or 1000*	Lamps of all classes whenever there is a change in design.	*Minimum annual sample per grouping. Sample size shall be 125 if one class is to be assessed. For several classes or grouped classes, minimum 50 samples per class shall be taken, provided that total samples of all classes are at least 1000. Please see G-1 & G-2.
5	Safety at end of life (Operation to failure)	4.9 & Table 6		S	315*	Once in a year for all classes of lamps.	*Minimum annual sample per grouping
5	Interchangeability	4.10 & Table 6		S	32*	Quarterly for all classes of lamp with the same cap.	*Minimum annual sample per grouping
Finished lamps on whole production (Performance Requirements)							
7	Lamp Dimensions	7	IS 418:2004	R	200*	Daily	*Refer Note 1
8	Wattage	8.1		R	300*	Daily	*Refer Note 2
8	Luminous Flux Initial	8.2		R	300*	Daily	*Refer Note 2
9	Lumen Maintenance	9.1		S	200*	Once in every 4 months	*Refer Note 3
10	Life Test	10.1 & 10.2		S			

Note 1:

- Minimum 200 lamps for four largest groups (or all groups if there are less than four) with a minimum of 40 lamps per group.
- For each of the other groups, which together with the four largest groups make up at least 75% of the production, a minimum of 20 lamps shall be taken.

- Where a number of types make up a group, test quantities shall be selected from each of those types which make up at least 50% of the production for that group.
- For each type a minimum of 20 samples shall be taken.

Note 2:

- Minimum 300 lamps for four largest groups (or all groups if there are less than four) with a minimum of 60 lamps per group.
- For each of the other groups, which together with the four largest groups make up at least 75 percent of the production, a minimum of 30 lamps shall be taken.
- Where a number of types make up a group, test quantities shall be selected from each of those types which make up at least 50 percent of the production for that group.
- For each type a minimum of 30 samples shall be taken

Note 3:

- Minimum 200 lamps for four largest groups (or all groups if there are less than four) with a minimum of 40 lamps per group.
- If the LTQ of 200 lamps represents more than 0.01 percent of the production, then only 0.01 percent or 40 lamps, whichever is greater, need be tested.
- For each of the other groups, which together with the four largest groups make up at least 75 percent of the production, a minimum of 20 lamps shall be taken.
- Where a number of types make up a group, test quantities shall be selected from each of those types which make up at least 50 percent of the production for that group.
- For each type a minimum of 20 samples shall be taken

Note-4: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-5: Levels of control given in column 3 are obligatory in nature.

ANNEX E

Possible Tests in a day

- (a) Marking
- (b) Lamp Dimensions
- (c) Wattage
- (d) Luminous Flux Initial
- (e) Accidentally live parts
- (f) Protection against accidental contact in screw lamp holders
- (g) Insulation resistance
- (h) Interchangeability