PRODUCT MANUAL FOR MINERS' CAP LAMP ASSEMBLIES (INCORPORATING LEAD – ACID TYPE BATTERIES) ACCORDING TO IS 5679:1986

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 5679:1986
	Title	:	Miners' Cap Lamp Assemblies (Incorporating Lead – Acid type Batteries)
	No. of Amendments	:	1
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	1. Bulb (Lamp) - IS 2596 2. Battery - IS 2512 3. Flexible Cable - IS 2593
b)	**Grouping guidelines**	:	Not applicable
c)	**Sample Size**	:	6 nos. of Cap lamp assembly + 25 nos. of glass disc or lens + 30 nos. of cartridge fuse
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 :**		Please refer ANNEX –C
6.	**Scope of the Licence :**		
	"Licence is granted to use Standard Mark as per IS 5679:1986 with the following scope:		
	Name of the product		Miner's Cap Lamp Assemblies (Incorporating Lead – Acid Batteries)

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	Photometric Test, Cl 8	- Standard Bulb of 35 Lumen output at 4 V - Integrating Photometer - Photometer Slide Bench with carriage - Timer / Clock
2	Test for Cable Anchorage, Cl9	- Suitable arrangement for application of tensile force of 100 N & 200 N as per Cl 9.2 & 9.3 of ISS - Stop Watch
3	Test for Mechanical Strength of Headpiece, Cl 10	- Impact Test Apparatus capable of producing reproducible blows with impact energy of 2 Nm as per Cl 10.2 of ISS
4	Test for Mechanical Strength of Glass disc or lens, Cl 11	- Steel Ball of 32 mm diameter weighing 130 g - Support / holder of the glass disc / lens as per Cl 11.2 of ISS - Guide ring - Tissue paper
5	Endurance test on Switch, Cl 12	- Suitable arrangement for switching 'ON' and 'OFF' of the switch (or operating means of the switch) with counter.
6	Test for Safety in Explosion Chamber, Cl 13	- Explosion Chamber containing a mixture of 8.4 ± 0.1 percent of methane and air with suitable means for short-circuiting the cable ends outside the explosion chamber.
7	Test of Fuse – Dimension, Cl 14.2	- Vernier Caliper - Micrometre
8	Electrical continuity of Fuse Wire, Cl 14.3	- Suitable electrical circuit for testing electrical continuity between two end caps of the fuse
9	Minimum Fusing Time, Cl 14.4	- A Direct Current Circuit of 10 ± 0.5 A fitted with a stop watch with LC 10 millisecond
10	Non – fusing current, Cl 14.5	- An electric resistive circuit of constant current 2.1 Amp - Clock / Timer
11	Voltage Drop Test, Cl 14.6	- An electric circuit of constant current of 0.8 A connected with a voltmeter of LC 10 mV - Thermometer

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 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 Clause no. 5.1 of IS 5679:1986

4. CONTROL UNIT – Miner's Cap Lamp Assembly manufactured 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	General Requirements	3.1	IS 5679	R	Each Assembly		--
4	Materials and Construction	4.1 to 4.4, 4.6 to 4.9, 4.11 to 4.13	IS 5679	R	Each Assembly		Adequate inspection shall be carried out to ensure compliance to the Standard. (for Cl 4.2 and 4.3 except mechanical strength)
	Bulb, Battery and Flexible cable	4.5, 4.10, 4.13	IS 5679	S	Each consignment		No further testing is required if accompanied with test certificate or ISI marked
7	Visual Examination	7	IS 5679	R	Each Assembly		--
8	**Lighting Performance Test**						
8.2	Photometric Test	8.2.1, 8.2.2	IS 5679	R	Three	Each control unit	--
		8.2.3, 8.2.4	IS 5679	R	Three from any one control unit	Once in a fortnight	--
9	Cable Anchorage	9.1, 9.2, 9.3	IS 5679	R	Six from any one control unit	Once in a fortnight	--
10	Mechanical Strength of Head piece	4.2, 10.1, 10.2, 10.3	IS 5679	R	Six from any one control unit	Once in a fortnight	
12	Endurance Test on Switch	12	IS 5679	R	Six from any one control unit	Once in a fortnight	
11	Mechanical Strength of Glass disc or lens	4.3, 11	IS 5679	R	Ten	Each Consignment	--

14	**Fuse**						
14	Workmanship	14.1	IS 5679	R	As per Appendix B of IS 5679	Each Consignment	If the consignment is accompanied with test certificate, the number of samples to be tested for these requirements may be restricted to ten from each consignment
	Dimensions	14.2	IS 5679	R			
	Electrical Continuity of fuse wire	14.3	IS 5679	R	Each Fuse	--	--
	Minimum Fusing Time	14.4	IS 5679	R	As per Appendix B of IS 5679	Each Consignment	If the consignment is accompanied with test certificate, the number of samples to be tested for these requirements may be restricted to ten from each consignment
	Non-fusing current	14.5	IS 5679	R			
	Voltage drop test	14.6	IS 5679	R			
13	Safety in Explosion Chamber	13	IS 5679	S	One	Once in Six Months	--

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: The control unit and levels of control as decided by the Bureau are obligatory, to which the licensee shall comply with.

ANNEX- C

Possible tests in a day

(i) Visual Examination (Cl 7)
(ii) Test for Cable Anchorage (Cl 9)
(iii) Test for Mechanical Strength of Headpiece (Cl 10)
(iv) Test for Mechanical Strength of Glass disc or lens (Cl 11)
(v) Test on Cartridge Fuse - (Cl 14.1 to 14.4, 14.6)