PRODUCT MANUAL FOR
LIVE WORKING GLOVES OF INSULATING MATERIAL
ACCORDING TO IS 13774:2014 / IEC 60903:2002

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 13774:2014 / IEC 60903:2002
	Title	:	Live Working Gloves of Insulating Material.
	No. of Amendments	:	Nil
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	-
b)	**Grouping Guidelines**	:	Please refer Annex A
c)	**Sample Size**	:	15 Pairs of Gloves min. Additional samples may be necessary depending on the type of glove.
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 :**		Please refer ANNEX D
6.	**Scope of the Licence :**		
	Licence is granted to use the Standard Mark as per IS 13774:2014/IEC 60903:2002, with the following scope:		
	Name of the product		Live Working Gloves of Insulating Material.
	Type		Insulating / Composite / Long Composite Gloves
	Class		Class 00 / 0 / 1 / 2 / 3 / 4
	Special Category (if any)		A / H / Z / R / C
	Size		8 / 9 / 10 / 11
	Standard Length		280 / 360 / 410 / 460 / 800 mm or any other Length

ANNEX A

Grouping Guidelines

1. The parameters as given below shall be considered for grouping of Live Working Gloves of Insulating Material as per IS 13774 / IEC 60903 for GoL/CSoL:

   i. Type of glove- Insulating/ Composite/ Long Composite
   ii. Class- 00 / 0 / 1 / 2 / 3 / 4
   iii. Special Category (if any)- A / H / Z / R / C
   iv. Size- 8 / 9 / 10 / 11
   v. Length- 280 / 360 / 410 / 460 / 800 mm or any other Length

2. The Firm shall declare the varieties of gloves they intend to cover in the Licence.

3. Gloves of different types (1.i) shall be considered as separate groups.

4. Within a group, the following relaxations may be given:

   i. If a higher class of gloves (1.ii) is tested, lower classes may also be covered without further testing.

   ii. If longer gloves are tested (1.v), shorter gloves may also be covered without further testing.

   iii. If gloves of a certain class with a combination of special properties (1.iii) are tested, gloves of each such category of the same or lower classes may be covered without further testing. If gloves of category R are tested, gloves of category A, H, Z and each combination thereof may be covered without further testing.

5. Gloves of any one size (1.iv) in a group shall be tested for covering all the sizes of gloves in that group.

6. The Scope of Licence may be restricted based on the Manufacturing (Size designation of the moulds for Size and their height for Length of the Gloves) and Testing capabilities of the Manufacturer.

7. 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

	Test Equipment	Test with Clause Ref. No. of IS 13774:2014/ IEC 60903:2002
1	-	Shape and Workmanship & Finish as per Cl. 8.2.1 and 8.2.4
2	Stainless Steel Scale, Micrometer or any other suitable alternative instrument as per Cl 8.2.3, Vernier Callipers	Length as per Cl. 8.2.2, Thickness as per Cl. 8.2.3 Size & Any Other Dimension (as applicable) as per Table F.1
3	Digital Tensile Testing Machine Dies, Vernier Callipers Puncture Test arrangement as per Fig. 7 Metallic Needle	Tensile Strength and Elongation at Break as per Cl. 5.2.1/8.3.1 Tension Set as per Cl. 5.2.2/8.3.3 Puncture Resistance as per Cl. 6.1.1/8.3.2
4	AC or DC source, High Voltage Testing Assembly with Milli-Ammeter, Voltmeter, Auto-transformer (for AC Dielectric tests only) Moisture Conditioning arrangement (except for routine tests) Test setup as per Fig. 16	Dielectric Tests as per Cl. 8.4.2 or 8.4.3 Leakage Current Test (for Long Composite Gloves only) as per Cl. 10
5	Humidity Chamber Equipment at Sl No. 3	Ageing Test as per Cl. 5.4/8.5
6	Deep Freezer/Freezing Chamber, PE Plates 100N (10kg) Load Stop Watch Equipment at Sl No. 4 Testing arrangement as per Cl. 8.6.2 & Fig. 11 (including PoP, Burner, Stop Watch & Suitable Gas viz. Methane or Natural Gas with appropriate regulator & meter for uniform supply in a draught free room)	Low Temperature Test as per Cl. 8.6.1 Flame Retardancy Test as per Cl. 8.6.2
7	32 deg B Sulphuric Acid Solution & Liquid 102 (as in Annex B) Hot Air Oven Humidity Chamber Lint free absorbent cloth Equipment at Sl No. 3 & 4	Category A – Acid Resistance as per Cl. 8.7.1 Category H – Oil Resistance as per Cl. 8.7.2

	Ozone Chamber with Temperature Controller Humidity Chamber Equipment at Sl No. 4	Category Z – Ozone Resistance as per Cl. 8.7.3
	Cryogenic Freezer, PE Plates (200mm x 200mm x 5mm) 100N (10kg) Load Equipment at Sl No. 4	Category C – Extremely Low Temperature Resistance as per Cl. 8.7.4
	Lint free cloth, Isopropanol	Marking as per Cl 8.8
	Testing Assembly as per Cl. 9.1 and Fig. 12 Weighing Balance	Abrasion Resistance as per Cl. 9.1
	Testing Assembly as per Cl. 9.2 and Fig. 13 Mass of 0.5 kg or Force of 5 N Conductive Rubber Support (80 +/- 3 IRHD) Cycle Counter Cotton Canvas reference piece (as per Annex G)	Cutting Resistance as per Cl. 9.2
	Tensile Testing systems equipped with low inertia force measurement Testing Assembly as per Cl. 9.3 and Fig. 15	Tear Resistance as per Cl. 9.3

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 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 Cl. 5.7 of IS 13774:2014/IEC 60903:2002.

4. CONTROL UNIT – All gloves of the same type, class and category made out of the same batch of raw materials under similar conditions, 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				
8.2.1 & 8.2.4	Shape Workmanship & Finish	**8.2.1 & 8.2.4**	**IS 13774**	**R**	One	Each Glove	
8.2.2 & 8.2.3	Thickness Length Any Other Dimensions (as applicable)	**8.2.2 & 8.2.3**	**IS 13774**	**R**	One	Each Glove	
8.8	Marking	**8.8**	**IS 13774**	**R**	One	Each Glove	
8.9	Packaging	**8.9**	**IS 13774**	**R**	One	Each Pair	
5.2.1	Tensile Strength & Elongation at Break	**8.3.1**	**IS 13774**	**R**	Three	Each Control Unit	
6.1.1 & 6.2.1	Puncture Resistance	**8.3.2**	**IS 13774**	**R**	Three	Each Control Unit	Applicable for both Insulating Gloves as well as Composite Gloves.
5.2.2	Tension Set	**8.3.3**	**IS 13774**	**R**	Three	Each Control Unit	
5.3	Dielectric Routine Test i. AC or ii. DC	**8.4.2** **8.4.3**	**IS 13774**	**R**	One	Each Glove	
5.3	Dielectric Type Test i. AC or ii. DC	**8.4.2** **8.4.3**	**IS 13774**	**R**	Three	Each Control Unit	

5.3	Leakage Current Test	**10.3**	**IS 13774**	**R**	Three	Each Control Unit	Applicable for Long Composite Gloves only.
5.4	Ageing Test	**8.5**	**IS 13774**	**R**	Three	Once a fortnight	The manufacturer shall ensure rotation of sizes, types and classes to ensure that all varieties (included in their scope) are tested in the span of one year.
5.5.1	Low Temperature Thermal Test	**8.6.1**	**IS 13774**	**R**	Three	Once a month	
5.5.2	Thermal Test – Flame Retardancy Test	**8.6.2**	**IS 13774**	**S**	Three	Once a month	
5.6.1	Special Properties – Category A – Acid Resistance	**8.7.1**	**IS 13774**	**S**	Three	Once a month	
5.6.2	Special Properties – Category H – Oil Resistance	**8.7.2**	**IS 13774**	**S**	Three	Once a month	
5.6.3	Special Properties – Category Z – Ozone Resistance	**8.7.3**	**IS 13774**	**S**	One	Once a month	
5.6.4	Special Properties – Category R – Acid, Oil & Ozone Resistance	**--**	**IS 13774**	**S**	One	Once a month	
5.6.5	Special Properties – Category C – Extremely Low Temperature Resistance	**8.7.4**	**IS 13774**	**R**	Three	Once a month	
6.2.2	Abrasion Resistance	**9.1**	**IS 13774**	**R**	Three	Each Control Unit	Applicable for Composite Gloves only.
6.2.3	Cutting Resistance	**9.2**	**IS 13774**	**R**	Three	Each Control Unit	Applicable for Composite Gloves only.
6.2.4	Tear Resistance	**9.3**	**IS 13774**	**R**	Three	Each Control Unit	Applicable for Composite Gloves only.

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.

Note-3: If there is a failure, appropriate steps shall be taken for rectifying the cause of the defect in subsequent control units/samples and record of the same shall be maintained.

ANNEX D

Possible tests in a day

i. Visual Inspection, Shape and Finish
ii. Determination of Thickness & Length
iii. Tensile Strength & Elongation at Break
iv. Puncture Resistance
v. Tension Set
vi. Routine Dielectric Tests (without Moisture Conditioning)
vii. Low Temperature Thermal Test
viii. Abrasion Resistance, Cutting Resistance and Tear Resistance of Composite Gloves only (as applicable)
ix. Leakage Current Test of Long Composite Gloves only (as applicable)