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उत्पाद मैन्युअल

बांह और हाथ की सुरक्षा के लिए

भाग 1 ख़तरनाक रसायन और सूक्ष्मजीव से सुरक्षा के लिए रक्षात्मक दस्ताने - शादावली और रासायनिक जोखिमों के लिए आवश्यक विशिष्ट गुण

IS 6994 (Part 1):2021 के अनुसार

PRODUCT MANUAL
FOR Protection of Arms and Hands
Part 1 Protective Gloves against Dangerous Chemicals and Micro-organisms — Terminology and Performance Requirements for Chemical Risks

ACCORDINGTO IS 6994 (Part 1):2021

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना- I के तहत प्रमाणन के संचालन में अभ्यास और पारदर्शिता के संचालन में पारदर्शिता सुनिश्चित करने के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन लाइसेंस/प्रमाणपत्र प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

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.	**उत्पाद** **Product**	:	IS 6994 (Part 1):2021
	शीर्षक **Title**	:	Protection of Arms and Hands Part 1 Protective Gloves against Dangerous Chemicals and Micro-organisms — Terminology and Performance Requirements for Chemical Risks
	संशोधनों की संख्या **No. of amendments**	:	1
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चामाल** **Raw material**	:	Materials used in the manufacture of gloves shall conform to the requirement of innocuousness as per Cl. 4.2 of ISO 21420:2020. Conformity to the requirements may be established through test reports issued by BIS

			recognized/empanelled lab or any other accredited lab or test certificate of supplier or in house test reports or combination thereof.
b)	**समूहीकरण दिशानिर्देश Grouping Guidelines**	:	Please refer Annex-A
c)	**नमूने का आकार Sample Size**	:	15 pairs
3.	**परीक्षण उपकरणों की सूची List of Test Equipment**	:	Please refer Annex-B
4.	**निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing**	:	Please refer Annex-C
5.	**Guidelines for sampling during surveillance**	:	During an operative year, only one factory sample shall be tested for all requirements of the standard whereas remaining samples shall be tested for all requirements except Innocuousness, Degradation and Permeation
6.	**एक दिन में संभावित परीक्षण Possible tests in a day**		
	Glove design and construction, Sizing and measurement of gloves, Dexterity, Penetration, pH.		
7.	**लाइसेंस का दायरा /Scope of the Licence:**		
	"Licence is granted to use Standard Mark as per IS 6994 (Part 1):2021 with the following scope:		
	Name of the product	Protective Gloves for protection of arms and hands against Dangerous Chemicals and Micro-organisms	
	Types based on permeation performance (and code letters of chemicals for which protection is claimed for each type)	e.g. Type A (G, H, I, J, K, L), Type B (J, K, L) etc.	
	Material	Leather/Textiles/Other (to be specified)	
	Hand Sizes	4, 5, 6, 7, 8, 9, 10, 11, 12, 13	
	Number of uses	Single Use/Reusable (no of uses recommended)	
	Additional Properties (Electrostatic properties)	With/without electrostatic properties	

ANNEX-A

GROUPING GUIDELINES

The Indian Standard classifies this product according to:

i) Type based on Permeation performance: Type A / Type B / Type C (and the chemicals against which protection is provided under each type)

ii) Hand Sizes: 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 (as per Annex B of ISO 21420:2020)

iv) The material of the glove, whether leather, textile or other also is to be considered

iii) Additional properties (Electrostatic properties)

For the purpose of Grant of Licence (GoL) and Change in Scope of Licence (CSoL), the following grouping guidelines shall apply:

i) The manufacturer shall declare the types of gloves based on permeation performance (A, B, C) as well as the chemicals to which protection is offered by each type of gloves. Samples of each type of gloves based on permeation performance which offers protection against given chemicals intended to be covered in the scope of licence shall be tested.

e.g. For covering Type A gloves with protection against following chemicals: Diethylamine (G), Tetrahydrofuran (H), Ethyl acetate (I), n-Heptane (J), Sodium hydroxide 40 % (K), Sulphuric acid 96 % (L), a sample of Type A gloves with protection for the above chemicals (code letters G,H,I,J,K,L) shall be tested.

ii) Samples of the gloves of largest and smallest hand sizes, from the range of sizes intended to be covered in the scope of licence shall be tested (in case hand sizes other than that given in Annex B of ISO 21420:2020 are to be covered, manufacturer shall declare the hand circumference and hand length for such sizes of gloves and these shall be indicated in the scope of licence in place of the size number given in Annex B)

iii) Samples of gloves made of each type of material i.e. leather/textiles/others intended to be covered in the scope of licence shall be tested

iv) If gloves with Additional properties (Electrostatic properties) are intended to be covered in the scope of licence, samples above shall be tested for Electrostatic properties

The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.

During the operation of the Licence, BO shall ensure that all the types and sizes covered in the Licence are tested in rotation, to the extent possible.

ANNEX – B

LIST OF TEST EQUIPMENTS

Major test equipment required to test as per the Indian Standard

Sl. No.	Tests Used In With Clause Reference	Test Equipment/Chemical
1	Sizing and measurement of gloves, 5.1	Arrangement for freely suspending the glove with the middle finger on a vertical graduated ruler having a rounded tip so as to fit the shape of the finger tip of the glove. Calipers, measuring tape, measurement scale
2	Dexterity, 5.1	Five solid, centreless ground stainless steel test pins are required, each 40 mm ± 1 mm long and of diameter respectively of 5 mm, 6,5 mm, 8 mm, 9,5 mm, 11 mm (diameter tolerance ±0,2 mm). flat surface, e.g. a table top
3	Water vapour behavior, 5.1	Apparatus for testing leather materials (as per ISO 14268) • Containers, in the form of jars or bottles, with a neck of internal diameter 30 mm ± 3 mm fitted with a screw top with a circular opening whose diameter is equal to the internal diameter of the neck. • Test machine • Vertically mounted turntable • Fan, mounted in front of the mouths of the containers, consisting of three flat blades in planes that are inclined 120° to one another • Self-indicating silica gel desiccant • Balance, weighing to 0.001 g • Stop clock, reading to 1 min • Vernier callipers, reading to 0.1 mm and capable of measuring the internal diameter of the necks of the containers • Press knife, as specified in ISO 2419, capable of cutting circular test pieces of a suitable size to allow a good seal at the open end of the container • Beeswax or other suitable inert sealant • Abrasive paper, grade P180 • Flex machine, as specified in ISO 5402-1, if test pieces are to be subjected to flexing prior to test • Standard laboratory apparatus Apparatus for textile materials (as per IS 17276:2020/ISO 11092:2014) • Measuring unit, with temperature and water supply control • Thermal guard with temperature control • Test enclosure

4	Water vapour absorption, 5.1	Apparatus of testing water vapour absorption of leather materials (as per IS 15298 (Part 1) : 2015/ ISO 20344 : 2011) • Circular metal container (volume 100 cm3) and an upper ring, between which the impermeable material and the test piece are clamped • Balance, capable of weighing to the nearest 0.001 g. • Stopwatch.
5	Penetration, 5.2	Air Leak test apparatus (as per EN 374-2) comprising of: • Circular fixing mandrel • Means if air inflation • Pressure gauge (0 to 10 kPa) • Means of regulating the desired pressure Water Leak test apparatus (as per EN 374-2) comprising of • A clear open ended plastic tube 380 mm in length fitted with hook at upper end and mark 40 mm from lower end • Elastic strapping with a “touch and close” fastener or other fastening material • Stand with horizontal rod for hanging the hook end of the tube • Device capable of delivering a minimum of 1000 ml water

6	Degradation, 5.3	Apparatus for testing resistance to degradation by chemicals (as per EN 374-4) comprising of • 20±1 mm diameter cutting die • 12±1 mm diameter cutting die (for cutting a hole in the center of each septum) • 20 ml crimp top vials (opening 12.5±0.5mm of diameter) • 20 mm diameter septa • 20 mm open centre aluminium crimp seals • Hand crimper • Hand decapper • Punched out sample holder with 18 holes of 20 mm diameter • 150 ml beaker • Transfer pipette, 2 ml • Dynamometer with a puncture stylus according to ISO 23388:2018, 6.5 and a cell to measure compression forces with a precision of ±1% • Sample vial support
7	Permeation, 5.4	Arrangement for determination of material resistance to permeation by chemicals (as per EN 16523-1) comprising of: • Standard permeation cell (or alternative permeation cells) • Temperature controlled room, cabinet or water bath • Supply of gas for gaseous collecting medium with flow meter (dry air or nitrogen) • Liquid pump and stirrer in case of Liquid collecting medium (e.g. water) • Equipment for the quantitative determination of the challenge chemical or its components
8	Conditioning	Conditioning chamber equipped with temperature and relative humidity controller and indicator

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

ANNEX C

SCHEME OF INSPECTION AND TESTING

1. **LABORATORY-** A laboratory shall be maintained, which shall be suitably equipped (as given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the method given in the specification.

1.1 The manufacturer shall prepare and implement a calibration plan for the test equipment.

2. **TEST RECORD**- The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. **PACKING AND MARKING** - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on each glove and on the package containing a pair of gloves provided always that the material so marked conforms to each requirement of the specification.

3.2 Packing and Marking shall be done as per the requirements of the standard. Each package containing a pair of gloves shall also be marked with the following:

a) "For BIS certification details please visit www.bis.gov.in"

5. **CONTROL UNIT**- For the purpose of this scheme, entire quantity of gloves of same type (resistant to the same chemicals), same size and made from the same consignment of material under similar conditions of manufacture in one day shall be taken as one control unit.

6. **LEVELS OF CONTROL**: - The tests as indicate in Table 1 and at the levels of controls in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and records maintained in accordance with paragraph 2 above.

6.1 All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark.

7. **REJECTION -** 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

LEVELS OF CONTROL

(1)				(2)	(3)		
Test Details				**Test equipment requirement R: required (or)S: Sub-contracting permitted**	**Levels of Control**		
Cl.	**Requirement**	**Test Methods Clause Reference**			**No. of Sample**	**Frequency**	**Remarks**
5.1	General requirement						
i)	Glove design and construction — General	4.1	ISO 21420:2020	R	Firm to have adequate in-process controls to check compliance of this parameter as per the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
ii)	Innocuousness of protective gloves	4.2	ISO 21420:2020	S	One	Once in six months (and whenever there is a change in supplier)	No testing is required if the material is accompanied with test certificate of supplier indicating conformity
iii)	Electrostatic properties	4.4	ISO 21420:2020	S	One	Once in six months	
iv)	Sizing and measurement of gloves	5.1, 6.1	ISO 21420:2020	R	Firm to have adequate in-process controls to check compliance of this parameter as per the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
v)	Dexterity	6.2	ISO 21420:2020	R	Firm to have adequate in-process controls to check compliance of this parameter as per the Indian Standard. However, appropriate records shall be maintained		

					by the manufacturer for evidence of conformity		
vi)	Water vapour transmission	5.3.1	ISO 21420:2020	S	Two	Once in six months	
vii)	Water vapour absorption	5.3.2	ISO 21420:2020	S	Two	Once in six months	
5.2	Penetration	7.2 and 7.3	EN 374-2:2014	R	Two	Once in a Week	
5.3	Degradation		EN 374-4	S	Two	Once every six months	
5.4	Permeation		EN 16523-1:2015	S	Two	Once every six months	
6	Marking	6	IS 6994 (Part 1)	R	Firm to have adequate in-process controls to check compliance of this parameter as per the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		

Note-1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. 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: All tests required for protective gloves shall be performed on unused gloves. The relevant performance-related tests shall be performed on the gloves, before and after they have been subjected to the maximum recommended number of cleaning cycles using the claimed cleaning instructions. The levels of performance are given by the lowest results obtained before and after cleaning.