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उत्पाद मैनुअल

**Textile Floor Covering — Artificial Grass Carpet made of
Synthetic Yarn for Landscape — Specification**

IS 18158: 2023 के अनुसार

PRODUCT MANUAL

**FOR Textile Floor Covering — Artificial Grass Carpet
made of Synthetic Yarn for Landscape — Specification
ACCORDING TO IS 18158: 2023**

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना - I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता 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 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 uniformity 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.

1.	मानक संख्या IS No.	:	IS 18158: 2023
	शीर्षक Title	:	Textile Floor Covering — Artificial Grass Carpet made of Synthetic Yarn for Landscape — Specification
	संशोधनों की संख्या No. of amendments	:	01
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Raw material shall be conforming to the requirements specified in clause 4.1, 4.2 & 4.3 of IS 18158: 2023. Note: This section indicates the requirements for raw material(if specified in the IS)for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance.
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Each variety to be drawn and tested to be included in the scope of licence.

c)	नमूने का परिमाण Sample Quantity	:	5 Pieces (Length- 5M x Width- 1M) Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	:	i) Type of Pile yarn ii) Type of Primary Backing iii) Type of backcoating Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer to Annex-B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer to Annex-C
5.	एक दिन में संभावित परीक्षण Possible tests in a day		
	Following tests are possible to be carried out in a day: i) Length & Width ii) Pile Weight iii) Total Mass per Unit Area iv) Water infiltration rate v) Colour fastness to shampooing, change in colour vi) Flammability Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies(OSAs) during factory inspection to provide ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.		
6.	लाइसेंस का दायरा/Scope of the Licence:		
	"Licence is granted to use Standard Mark as per IS 18158: 2023 with the following scope:		
	Name of the product	Textile Floor Covering — Artificial Grass Carpet made of Synthetic Yarn for Landscape — Specification	
	Type of Pile yarn	Polypropylene fibrillated yarn/ Polyethylene monofilament yarn/ Combination of Polypropylene fibrillated & Polyethylene monofilament yarn	
	Type of Primary Backing	Synthetic woven/ Synthetic Non-woven/ Backing woven with fleece/ any other suitable backing cloth*	
	Type of backcoating	Styrene butadiene latex/ Polyurethane latex	

*to be declared

ANNEX-A

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests Used In With Clause Reference	Test Equipment/Chemical
1	Length and width, Clause 5, Table 1 (i)	- Ruler or semi-rigid tape (accuracy- 0.05%) - Table or flat surface - Measuring device (accuracy- 0.1%) - String line of length 10 m
2	Pile thickness, Clause 5, Table 1 (ii)	- Conditioning Chamber - Carpet Shearing Machine - Carpet Thickness Tester (having a circular plane pressure-foot of area between 300 and 1 000 mm², capable of exerting a pressure of 20 gf/cm² normal to the plane of the specimen & capable of measuring thickness to an accuracy of 0.1 mm over a range 25 mm) - Sharp Point Knife. - Measuring Scale — graduated in millimeter. - Weighting Balance, (accuracy of 10 mg.) - Press and Cutter (at least 10,000 mm²)
3	Pile Weight & Total mass per unit area, Clause 5, Table 1 (iii & iv)	- Sharp pointed knife or punching machine. - Ruler, graduated in milli metres. - Balance, with a reading resolution to 0.01 g and a precision to 0.1 g. - Dissecting needles and forceps
4	Water infiltration rate, Clause 5, Table 1 (v)	- Single Ring Infiltrometer — having internal diameter 300 mm ± 2 mm and a method of sealing the ring to the product to be tested (either mechanically with a clamp or by use of a sealant) - Support Grid as per B 2.2 of IS 18158 3 - Stopwatch (L.C-0.1s) - Spirit Level 5 Graduated Scale (L.C- 1 mm) - Thermometer — capable of measuring to ± 1 °C - Geotextile or Mesh Grid — with maximum aperture size 300 µm
5	Tuft withdrawal force, Clause 5, Table 1 (vi)	Tensile testing apparatus (ranges ±5%)
6	Colour fastness to light, change in Colour, Clause 5, Table 1 (vii)	- Blue wool references - Humidity test control fabric - Light source - Temperature Sensor - Humidity chamber

		• Covers • Colour matching lamps • Assessment cabinet • Sample mounting card • Assessment mask • Grey scale for assessing change in colour
7	Colour fastness to shampooing, change in colour, Clause 5, Table 1 (viii)	• Testing frame • Flat-bottomed dish, approximately 150 mm × 150 mm × 50 mm. • Mass, 5 kg with a base of 60 mm × 115 mm. • pH meter, with an accuracy of 0,02 units. • Oven, maintained at (40 ± 2) °C • Shampoo Solution as per clause 5.3 of IS 11969 • Smooth glass or clear acrylic resin plate • 5 kg mass • Adjacent Fabrics (50 mm × 40 mm) • Grey scale for assessing change in colour
8	Colour fastness to water: a) Change in colour b) Staining Clause 5, Table 1 (ix)	• Test device (consisting of weight-piece of mass approximately 5 kg and base of 60 mm × 115 mm is closely fitted) • A set of 11 Glass or acrylic-resin plates measuring approximately 60 mm × 115 mm × 1,5 mm • Oven, maintained at (37 ± 2) °C. • Adjacent fabrics (see ISO 105-A01). • A non-dyeable fabric (for example, polypropylene), if required • Grey scale for assessing change in colour, complying with ISO 105-A02 • Grey scale for assessing staining, complying with ISO 105-A03 • Spectrophotometer or colorimeter for assessing change in colour and staining, complying with ISO 105-A04 and ISO 105-A05 • Flat-bottomed dish made of inert materials. • Grade 3 water, complying with ISO 3696
9	Changes in appearance (Hexapod method), Clause 5, Table 1 (x)	• Hexapod tumbler tester • Polyethylene specimen backing sheet, of nominal size 950 mm long, 215 mm wide, and thickness of 2 mm • Hexapod, comprising a 50 mm mild steel cube with 25 mm thick plates welded to each face • Double-sided adhesive tape, 50 mm wide • Vacuum cleaner • Rectangular cleaning frame as per clause 6.1.6 of IS 17260

10	Dimensional change due to effect of varied water and heat, percent, Clause 5, Table 1 (xi)	• Instrument capable of measuring a dimension to an accuracy of 0.05 mm • Loading plate • Instrument capable • Support plate • Loading plate • Steel pins • Drying oven, with forced ventilation able to maintain a temperature of $60\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ containing removable shelves of smooth inert material with perforations to permit free circulation of air • Container, to hold water at $20\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$
11	Flammability, Clause 5, Table 1 (xii)	• Test Box as per clause 4.1 of IS 12722 • Square Metal Plate of size 230 x 230 mm, 6.5 & 0.5 mm thick, with a 206 mm diameter hole cut in the centre of the plate • Desiccator(s) • Circulating Air Oven, thermostatically controlled at $105 \pm 2^{\circ}\text{C}$ • Glove, disposable of polyethylene, polypropylene or rubber. • Rule, graduated in mm • Vacuum Cleaner • Laboratory fume hood • Timing Device • Methenamine Tablet
12	Exposure to fluorescent UV lamp (3 000 h), Clause 5, Table 1 (xiii)	• Laboratory light source (UVA-340 (type 1A) fluorescent UV lamp) • Test chamber as per clause 4.2 of IS 17863 (Part 3) • Radiometer as per clause 4.3 of IS 17863 (Part 3) • Black-panel/black-standard thermometer as per ISO 4892-1. • Wetting (Spray and condensation system)

ANNEX – C

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: Each variety of Textile Floor Covering manufactured using same raw material in a day.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan.

2. ENSURING COMPLIANCE THROUGH TESTING- manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred:

- i) Shared testing resources like common facility,
- ii) Cluster based testing facility,
- iii) Sub-contracting to outside laboratories which may either be:
 - a) BIS recognised/empanelled laboratories, or
 - b) Any accredited laboratory as per ISO/IEC 17025

2.1 TEST RECORDS- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on a white paper sticker securely attached or fixed on to sides of each carpet roll, provided always that the material so marked conforms to each requirement of

the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 **Additional Marking requirements:** Additionally, the following shall also be marked on a white paper sticker securely attached or fixed on to sides of each carpet roll:

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

REJECTION - The production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. 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
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)		
Test Details				Levels of Control		
Cl.	Requirement	Test Methods		No. of Sample	Frequency	Remarks
		Clause	Reference			
4	Manufacture	4	IS 18158	Firm to have adequate in-process controls to check compliance of this parameter as per the requirements specified in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
Clause 5 & Table 1	Requirements for Artificial Grass Carpet					
-do-	Length and width	-	IS 17475	One	Each Control Unit	
-do-	Pile Thickness	-	IS 5884	One	Each Control Unit	
-do-	Pile weight	-	IS 17657	One	Each Control Unit	
-do-	Total mass per unit area	-	IS 17657	One	Each Control Unit	
-do-	Water infiltration rate	Annex B	IS 18158	One	Each Control Unit	
-do-	Tuft withdrawal force	-	IS 16201	One	Each Control Unit	
-do-	Colour fastness to light, change in colour	-	IS/ISO 105-B02	One	Once in 6 months	
-do-	Colour fastness to shampooing, change in colour	-	IS 11969	One	Each Control Unit	
-do-	Colour fastness to water	-	IS/ISO 105-E01	One	Once in a month	
-do-	Changes in appearance (Hexapod method)	-	IS 17260	One	Once in a month	

-do-	Dimensional change due to effect of varied water and heat	-	IS 11471	One	Once in a month or Whenever there is change in raw material	
-do-	Flammability	-	IS 12722	One	Each Control Unit	
-do-	Exposure to fluorescent UV lamp (3000h)	-	IS 17863 (Part-3)	One	Once in 5 years or whenever there is change in raw material. Manufacturer shall submit the same to the Bureau.	