

केन्द्रीय मुहर विभाग-2

संदर्भ -: केमूवी-2/16:16391

08 02 2024

विषय: IS 16391:2015 के amendment no. 1 के अनुपालन के दिशा निर्देश

यह उपरोक्त विषय के संदर्भ में है।

सक्षम अधिकारी द्वारा अनुमोदित दिशानिर्देश अनुपालन हेतु संलग्न है।

सभी क्षेत्रीय/शाखा कार्यालयों से अनुरोध है की दिशानिर्देशों का तत्काल प्रभाव से अनुपालन सुनिश्चित करें।

**आदित्य दास
वैज्ञानिक D**

प्रमुख (केमूवी 2)

सभी क्षेत्रीय/शाखाकार्यालय/प्रयोगशालाएँ/TXD/LRMD

CENTRAL MARKS DEPARTMENT-2

Our Ref: CMD-2/16:16391

08 02 2024

Subject: Guidelines for implementation of amendment no. 1 to IS 16391:2015

This has reference to the subject mentioned above.

The Competent Authority has approved the enclosed Guidelines for implementation.

All ROs/BOs are requested to ensure the implementation of the above Guidelines with immediate effect.

**(Aditya Das)
Scientist D**

Head (CMD-2)

All ROs/BOs/Labs/TXD/LRMD

CENTRAL MARKS DEPARTMENT-2

Our Ref: CMD-2/16: 16391

08 02 2024

**Subject: Guidelines for implementation of amendment no. 1 to IS 16391:2015
(Geosynthetics - Geotextiles used in sub-grade separation in pavement structures -
Specification)**

1. Amendment no. 1 to IS 16391:2015 has been published. The last date of implementation of the amendment is **12 June 2024**.

2. The significant changes in the standard through this amendment as listed in the Table are given for the purpose of general guidance.

Clause No.	Change
4.2	The line "Polyolefin material shall be made resistant to ultraviolet light by adding 2 to 3 percent carbon black" has been changed to "Polyolefin material shall be UV stabilized by adding suitable UV stabilizer and/or carbon black. Polyolefin material, if manufactured by using carbon black shall contain 2 percent to 3 percent of carbon black by mass with satisfactory dispersion."
Table 1	<ul style="list-style-type: none">• A note has been added to specify that the sewn seam strength parameter shall be tested, when product is supplied with seam and to refer to IS 16345 for stitch and overlap seam requirements. • Requirements under Durability properties for Pullout interaction coefficient, @ 6 mm displacement, Normal load = 5 kPa and Coefficient of direct shear @ Peak geotextile shear strength, Normal load = 5 kPa have been removed • Method of test for Resistance to installation damage, Percent retained strength, SC/SW/GP has been changed from ISO 10722 to IS 17420

3. Consequent upon the issuance of the amendment, the existing product manual has been revised which is being circulated separately through BIS website.

4. The guidelines for implementation of the amendment are given below:

A. LICENSEES:

- i) All Licensees shall implement the amendment by **12 June 2024**. Any difficulty in implementation shall be brought to the notice of CMD 2 at the earliest but in any case at least 30 days before the last date of implementation. BOs shall ensure that no Licences are under operation as per IS 16391:2015 without the amendment after **12 June 2024**. The status of implementation of the amendment shall be confirmed by Head (BO) to CMD-2 within two weeks of the last date of concurrent running.

- ii) Licensees shall submit evidence of conformity to the additional/modified requirements through In-house/Independent Test Reports as well as revised declaration of test

equipment as per Form 2 (if applicable). Verification of implementation of the amendment, wherever required, shall be verified through a surveillance visit within 30 days of confirmation of implementation of the amendment to standard by licensee.

- iii) Scope of licenses as per amended standard shall be modified to align with the scope in revised product manual (i.e. product name shall be modified and reference to Type 1 and Type 2 shall be removed).
- iv) If the Licensee fails to complete all actions by **12 June 2024** it shall be dealt with as per the prevailing guidelines.

B. APPLICATIONS FOR GRANT OF LICENCE:

- i. Existing Applications where Sample has been submitted in the Laboratory/Test Report has been issued by the Laboratory may be processed as per the old Standard. However, if the Applicant is desirous of considering the Application as per the amended Standard, a declaration may be obtained from the Applicant to that effect and the Application may be processed accordingly. An undertaking shall from such Applicants also be obtained that if the sample fails while considering the provisions of the amended Standard, Licence will not be granted by BIS as per the old version.
- ii. Applications which are recorded henceforth may be processed as per the old Standard or the amended Standard. Processing of Applications as per the old Standard shall be permitted only up to **11 June 2024** and for such cases Applicant shall give a declaration that they will implement the amended Standard by **12 June 2024**.
- iii. Beyond **12 June 2024** no Licence shall be granted as per the old Standard.

C. CHANGE IN SCOPE OF LICENCE:

- i. For change in scope of licence, the relevant provisions as given above for Applicants shall apply.
- ii. However, processing of such applications for change in scope of licence as per the old Standard shall be permitted only up to the date of implementation of the amendment or up to **12 June 2024** whichever is earlier.

6. The above guidelines come into force with immediate effect.

Aditya Das
Sc. D

Head (CMD-2)
DDG (Certification)

AMENDMENT NO. 1 DECEMBER 2023

TO

IS 16391 : 2015 GEOSYNTHETICS — GEOTEXTILES USED IN SUB-GRADE SEPARATION IN PAVEMENT STRUCTURES — SPECIFICATION

(Page 2, clause 4.2, third sentence) — Substitute the following for existing:

'Polyolefin material shall be UV stabilized by adding suitable UV stabilizer and/or carbon black. Polyolefin material, if manufactured by using carbon black shall contain 2 percent to 3 percent of carbon black by mass with satisfactory dispersion.'

(Page 3, Table 1) — Substitute the following for existing table:

Table 1 Requirements of Geotextiles for Separation Applications

(Clauses 1.2, 4.3 and 5.4)

Sl No.	Characteristic(s)	Requirements				Method of Test, Ref to
		Class 1		Class 2		
		Elongation < 50 percent (3)	Elongation ≥ 50 percent (4)	Elongation < 50 percent (5)	Elongation ≥ 50 percent (6)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Index properties:					
	a) Type of geotextile	← Woven/non-woven →		← Woven/non-woven →		—
	b) Roll length, m, <i>Min</i>	←50 or 100 or as agreed →		←50 or 100 or as agreed →		IS 1954
	c) Roll width, m, <i>Min</i>	←2.0 or 5.0 or as agreed →		←2.0 or 5.0 or as agreed →		IS 1954
	d) Grab strength, N, <i>Min</i>	1 100	700	800	500	IS 16342
	e) Sewn seam strength, N, <i>Min</i> (see Note 1)	990	630	720	450	IS 15060
	f) Trapezoidal tear strength, N, <i>Min</i>	400	250	300	180	IS 14293
	g) CBR puncture strength, N, <i>Min</i>	2 250	1 400	1700	1 000	IS 16078
	h) Burst strength, kPa, <i>Min</i>	2 700	1 300	2 100	950	IS 1966 (Part 2)
ii)	Structural integrity properties:					
	a) Permittivity, s ⁻¹ , <i>Min</i>	0.02	0.02	0.02	0.02	IS 14324
	b) Apparent opening size (AOS), mm, <i>Max</i>	0.60	0.60	0.60	0.60	IS 14294
iii)	Durability properties:					
	a) Resistance to installation damage, Percent retained strength, SC/SW/GP (see Note 2, <i>Min</i>)	← 95/93/90 →		← 95/93/90 →		IS 17420
	b) Ultraviolet stability at 500h, Retained strength, Percent of original strength, <i>Min</i>	70	70	70	70	IS 13162 (Part 2)

NOTES

1 The parameter shall be tested when product is supplied with seam. Refer to IS 16345 for stitch and overlap seam requirements.

2 Resistance to installation damage (loss of load capacity or structural integrity) when subjected to mechanical installation stress in clayey sand (SC), well graded sand (SW) and crushed stone classified as poorly graded gravel (GP).

3 Class 2 geotextiles may be specified for aggregate cover thickness of first lift over the geotextile exceeding 300 mm and aggregate diameter less than 50 mm or for aggregate cover thickness of first lift over the geotextile exceeding 150 mm, aggregate diameter less than 30 mm and construction equipment contact pressure less than 550 kPa based on field experience, laboratory testing and visual inspection of a geotextile sample removed from a field test section.

4 Permittivity and permeability of geotextile shall be greater than that of the soil.

5 For Class 1, the required MARV tear strength for woven monofilament geotextiles shall be 250 N.

Amendment No. 1 to IS 16391 : 2015

(Page 5, Annex A) — Substitute the following for the existing entries for IS 6359 : 1971, IS 1966 (Part 2) : 2009, IS 13321 (Part 1) : 1992, IS 15060 : 2001

<i>IS No.</i>	<i>Title</i>
IS 6359 : 2023	Method for conditioning of textiles (<i>first revision</i>)
IS 1966 (Part 2) : 2022/ ISO 13938-2 : 2019	Textiles — Bursting properties of fabrics: Part 2 Pneumatic method for determination of bursting strength and bursting distension (<i>third revision</i>)
IS 13321 (Part 1) : 2022/ ISO 10318-1 : 2015	Geosynthetics: Part 1 Terms and definitions (<i>first revision</i>)
IS 15060 : 2018/ ISO 10321 : 2008	Geosynthetics — Tensile test for joint seams by wide-width strip method (<i>first revision</i>)

(Page 5, Annex A) — Delete the entry for IS 16380 : 2015.

(Page 5, Annex A) — Insert the following new entry at the end:

<i>IS No.</i>	<i>Title</i>
IS 16345 : 2020	Geosynthetics — Guidelines for installation of geotextile used in subgrade separation in pavement structures (<i>first revision</i>)
IS 17420 : 2020 ISO 10722 : 2019	Geosynthetics — Index test procedure for the evaluation of mechanical damage under repeated loading — Damage caused by granular materials (laboratory test method)

(Page 7, Annex C) — Delete and renumber subsequent Annex.