

Textile floor coverings

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MODIFICATION HISTORY

Revision n°	Application date	Modifications
00	15/02/2019	Creation of the document. Specific tolerance for the number of tufts and loops for the products with several yarns per tufting point. Precisions related to the stains resistance test.

TABLE OF CONTENTS

1. SPECIFICATIONS FOR THE UPEC CLASSIFICATION	4
1.1. Generality.....	4
1.2. Tufted carpets with 100% polyamid pile in tiles	5
1.3. Flocked carpets in lengths or tiles with 100% polyamid pile.....	6
1.4. Flat needed textile floor coverings in lengths or tiles	7
1.5. Pile needed textile floor coverings in lengths and tiles.....	8
1.6. Specifications of acoustic options UPEC.A+ ou UPEC.A+.....	9
2. SPECIFIC TEST METHODS	10
2.1. Determining resistance to stains	10
2.2. Determining fiber composition	11

1. SPECIFICATIONS FOR THE UPEC CLASSIFICATION

1.1. Generality

This document describes the technical specifications for the UPEC classification of textile floor coverings.

- Classifications U and P are given according to the specifications defined in tables 1 to 9.
- The textile floor coverings are classified E₁ and C₀ by default, except for the flocked carpets.

The flocked carpets with compact PVC backing or with closed cells are classified E₂ (on concrete support) by default and can claim a C₁ or C₂ classification depending on the specifications of table 4 of this technical document.

Nota : E₁ means that the covering can bear the occasional presence of water (wet cleaning). E₂ means that the covering can bear the usual but not systematic presence of water (wet regular maintenance, cleaning by washing).

In this technical document, when standards are dated, only the specific version applies. When they are not dated, the latest version of the document applies (including potential amendments).

1.2. Tufted carpets with 100% polyamid pile in tiles

Table 1

Minimum requirements of standard NF EN 1307 for the following classes	Commercial use	32	33
Total mass by surface area according to NF ISO 8543		$\geq 3,5 \text{ kg/m}^2$	
Minimal thresholds of pile mass (g/m ²) according to NF ISO 8543	Loop pile	265	350
	Cut pile	400	450
Minimal threshold of pile density above the substrate (g/cm ³)			$\geq 0,10$
Resistance to damage at cut edges according to NF EN 1814	Loop pile	Satisfying behaviour	
	Cut pile		Satisfying behaviour
Linear mass (average) declared by the manufacturer	Cut pile	$\geq 7 \text{ dtex}$	
Dimensional stability according to NF EN 986		Shrinkage and increase $\leq 0,20 \%$ for every tile, in any direction and at each stage ($\leq 0,10 \%$ at the holder's request)	
Resistance to castor chair test according to NF EN 985 (test A)		$r \geq 2,4$	
Soiling test according to NF EN 1269 method A (assessment according to NF EN ISO 9405)			≥ 3
Creep test according to NF EN 995 (1)		$\boxtimes E_m \leq 0,8 \text{ mm}$	
UPEC classification		U3 P3	U3s P3

(1) When relevant

Moreover, table 2 gives precisions about allowed tolerances for identification characteristics of the covering in comparison with the values given by the manufacturer.

Table 2

Characteristics	Test method	NF EN 1307 tolerances	UPEC certification tolerances
Total mass by surface area (g/m ²)	NF ISO 8543	nominal $\pm 15\%$	nominal $\pm 10\%$
Dimensions (mm)	EN 994	$\pm 0,20\%$ in same batch	$\pm 0,20\%$ in same batch nominal $\pm 0,30\%$
Total thickness (mm)	NF ISO 1765 modified*	nominal + 15% ; -10%	nominal $\pm 10\%$
Pile thickness (mm)	NF ISO 1766 modified*	nominal + 15% ; -10%	nominal + 15% ; -10%
Pile mass by surface area above the substrate (g/m ²)	NF ISO 8543	nominal + 15% ; -10%	nominal $\pm 10\%$
Number of tufts and loops	ISO 1763	nominal + 10% ; -7,5%	nominal + 10% ; -7,5% number of tufting points \geq nominal for the products with several yarns per tufting points (ex: ColorPoint, Infinity...)
Apparent thickness of the backing (mm)	NF EN 1318		nominal $\pm 0,5 \text{ mm}$

* In the case of structured products, the results of total thickness and pile thickness are only given as an average, like for flat products, and not for each zone as described in the standard.

1.3. Flocked carpets in lengths or tiles with 100% polyamid pile

Table 3

Minimum requirements of standard NF EN 1307 for the following classes	Commercial use	32	32	33
Minimal thresholds of pile mass according to NF ISO 8543		$\geq 150 \text{ g/m}^2$		$\geq 165 \text{ g/m}^2$
Dimensional stability according to NF EN 986	Tiles	Shrinkage and increase $\leq 0,10 \%$ for every tile in any direction and at each stage Distortion out of plane $\leq 2 \text{ mm}$		
Dimensional stability according to ISO 2551	Lengths	Shrinkage and increase $\leq 0,20 \%$ for every sample in any direction and at each stage		
Dimensional stability to heat according to NF EN ISO 23999	Removable tiles	Shrinkage and increase $\leq 0,10 \%$ for every tile in any direction and at each stage		
	Glued tiles Lengths	Shrinkage and increase $\leq 0,25 \%$ for every tile or sample in any direction and at each stage		
Mass loss according to NF EN ISO 12951 (test A)		$m_v \leq 35 \text{ g/m}^2$ (test A)		
Resistance to castor chair test according to NF EN 985 (test A)			$r \geq 2,4$	
Soiling test according to NF EN 1269 (test A) (assessment according to NF EN ISO 9405)				≥ 3
Furniture leg test according to NF EN 424 adapted as indicated		No damage with : Heavy leg with 2 mm edge Light leg with 0,1 mm edge	No damage with: Heavy leg with 0,1 mm edge	
Creep test according to NF EN 995 (2)		$\Delta E_m \leq 0,8 \text{ mm}$		
UPEC classification		U3 P2	U3 P3	U3s P3

(1) When relevant

Table 4

C classification	C1	C2
Resistance to stains test according to chapter 2.1 of this technical document	Grade < 3	Grade ≥ 3

Moreover, table 5 gives precisions about allowed tolerances for identification characteristics of the covering in comparison with the values given by the manufacturer.

Table 5

Characteristics	Test method	NF EN 1307 tolerances	UPEC certification tolerances
Total mass by surface area (g/m^2)	NF ISO 8543	nominal $\pm 15\%$	nominal $\pm 10\%$
Dimensions (if tiles)	EN 994	$\pm 0,20\%$ in same batch	$\pm 0,20\%$ in same batch nominal $\pm 0,30\%$
Total thickness (mm)	NF ISO 1765	nominal + 15% ; -10%	nominal $\pm 10\%$
Apparent thickness of the backing	NF EN 1318	-	nominal $\pm 10\%$
Pile mass by surface area above the substrate (g/m^2)	NF ISO 8543	-	nominal + 15% ; -10%

1.4. Flat needed textile floor coverings in lengths or tiles

Table 6

Minimum requirements of standard NF EN 1307 for the following classes		Domestic use	22		
		Commercial use		32	33
Tiles	Total mass by surface area according to NF ISO 8543		≥ 3,5 kg/m ²		
Linear mass of the fibres (dtex)				≥ 11	≥ 15
Mass of the use-surface by surface area (g/m ²) according to NF EN 984 ⁽¹⁾	Coating of backing (type A2 NF EN 1307)	Thin deniers	≥ 130	≥ 180	≥ 225
		Thick deniers ⁽²⁾			≥ 300
	Full bath impregnation (type A3 NF EN 1307)	Thin deniers	≥ 150	≥ 200	≥ 250
		Thick deniers ⁽²⁾			≥ 350
Soiling test according to NF EN 1269 method A (assessment according to NF EN ISO 9405)			≥ 2/3	≥ 3	
Dimensional stability according to ISO 2551		Lengths	Shrinkage ≤ 1,20 % in any direction and at each stage Increase ≤ 0,50 % in any direction and at each stage		
Dimensional stability according to NF EN 986		Tiles	Shrinkage and increase ≤ 0,20 % for every tile in any direction and at each stage		
Resistance to hairiness according to NF EN ISO 12951 – Test D			≥ 2,5		
Static puncture according to NF ISO 3415 (mm)			≤ 0,80	≤ 0,50	
Creep test according to NF EN 995 (3)			ΔEm ≤ 0,80 mm		
Behaviour under the castor chair NF EN 985 Change in colours / grey scales	750 cycles		≥ 2	≥ 2/3	≥ 3
	5 000 cycles			≥ 2/3	≥ 2/3
	25 000 cycles			≥ 2	≥ 2
UPEC classification			U2s P2	U3 P3	U3s P3

(1) Moreover, individual measured values will be at most at 15% below the thresholds (average)

(2) At least 50% of the use-surface mass must be made of fibres having a linear mass ≥ 130 dtex

(3) When relevant

Moreover, table 7 gives precisions about allowed tolerances for identification characteristics of the covering in comparison with the values given by the manufacturer.

Table 7

Characteristics	Test method	NF EN 1307 tolerances	UPEC certification tolerances
Total mass by surface area (g/m ²)	NF ISO 8543	nominal ± 15%	nominal + 15% ; -10%
Dimensions (if tiles)	EN 994	± 0,20% in same batch	± 0,20% in same batch
Total thickness (mm)	NF ISO 1765	nominal + 15% ; -10%	nominal + 15% ; -10%
Use-surface mass by surface area (g/m ²)	NF EN 984	nominal ± 15%	nominal ± 15%
Apparent thickness of the backing (tiles)	NF EN 1318	-	nominal ± 0,5 mm
Fibre composition of the use-surface	§ 2.2 of this technical document	-	nominal ± 5%

1.5. Pile needed textile floor coverings in lengths and tiles

Table 8

Minimum requirements of standard NF EN 1307 for the following classes		Domestic use	22		
		Commercial use		32	33
Tiles	Total mass by surface area according to NF ISO 8543		≥ 3,5 kg/m ²		
Linear mass of the fibres (dtex)				≥ 11	≥ 15
Soiling test according to NF EN 1269 (method A) (assessment according to NF EN ISO 9405)			≥ 2/3		≥ 3
Dimensional stability according to ISO 2551		Lengths	Shrinkage ≤ 1,20 % in any direction and at each stage Increase ≤ 0,50 % in any direction and at each stage		
Dimensional stability according to NF EN 986		Tiles	Shrinkage and increase ≤ 0,20 % for every tile in any direction and at each stage Distortion ≤ 2 mm		
Resistance to castor chair test according to NF EN 985 (test A)				≥ 2,4	
Resistance to hairiness according to NF EN ISO 12951 – Test D		Type B1 products NF EN 1307	Requirements of standard NF EN 1307		
		Type B3 products NF EN 1307	≥ 2,5		
Creep test according to NF EN 995 ⁽¹⁾			ΔEm ≤ 0,80 mm		
UPEC classification			U2s P2	U3 P3	U3s P3

(1) When relevant

Moreover, table 9 gives precisions about allowed tolerances for identification characteristics of the covering in comparison with the values given by the manufacturer.

Table 9

Characteristics	Test method	NF EN 1307 tolerances	UPEC certification tolerances
Total mass by surface areas (g/m ²)	NF ISO 8543	nominal ± 15%	nominal +15% ; -7,5%
Dimensions	EN 994	0,20% in same batch	0,20% in same batch nominal ± 0,30%
Total thickness (mm)	NF ISO 1765	nominal +15% ; -10%	nominal +15% ; -10%
Thickness of pile above the substrate (Type B1, B2 and B3 products according to NF EN 1307)	NF ISO 1766	nominal +15% ; -10% for B2 and B3	nominal +15% ; -10% for B1, B2 and B3
Use-surface mass by surface area (g/m ²) (Type B1, B2 and B3 products according to NF EN 1307)	NF EN 984	nominal +15% ; -10% for B2 and B3	nominal +15% ; -10% for B1, B2 and B3
Apparent thickness of the backing	NF EN 1318	-	nominal ± 0,5 mm
Fibre composition of the use-surface	§ 2.2 of this technical document	-	nominal ± 3%

1.6. Specifications of acoustic options UPEC.A+ ou UPEC.A++

Table 10

Performances	Conditions	Specifications	
		UPEC.A+	UPEC.A++
Impact sound insulation (ΔL_w)	batch glued when tested*	$15 \text{ dB} \leq \Delta L_{wr} < 22 \text{ dB}$	$\Delta L_{wr} \geq 22 \text{ dB}$
	batch held when tested**		
Acoustic absorption (α_w)		$\alpha_{wr} \geq 0,1$	$\alpha_{wr} \geq 0,15$
Walking noise ($L_{n,e,w}$)		Class A : $L_{n,e,w} < 65 \text{ dB}$ (Nota 1)	Class A by default (Nota 2)

Nota 1 : The walking noise test will be made if measured (ΔL_w) is inferior to 17 dB.

Nota 2 : the walking noise will not be checked because the walking noise for soft floor coverings is inherently linked to their ΔL_w , it was shown that a ΔL_w superior or equal to 17 dB systematically led to a class A walking noise. The measure of ΔL_w superior or equal to 17 dB is a sufficient evidence to guarantee the class A walking noise of a soft floor covering in the meaning of standard NF S 31 074.

(*) Products installed fully glued (needed, flocked)

(**) Products freely installed or held with repair product preparation (tiles)

Test conditions :

The test station complies with the standard NF EN ISO 10140-5.

In addition to standard NF EN ISO 10140-1, 3, 4, the following points are detailed:

- The temperature of the superior surface of the tile at the center must be $20^\circ\text{C} \pm 2^\circ\text{C}$,
- The installation of the samples (conditioned for 24h at $20 \pm 2^\circ\text{C}$) on the slab is made with glue (needed and flocked) or repair product preparation (tiles):
 - o Glued installation made with acrylic adhesive (less than 5% solvent) with surface mass between 250 and 300 g/m², spread with a thin serrated trowel
 - o Held installation with a repair product (surface mass of $150 \pm 20 \text{ g/m}^2$), applied with a roll

The calculation method is the one of standard NF EN ISO 717/2.

2. SPECIFIC TEST METHODS

2.1. Determining resistance to stains

2.1.1 Application field

These dispositions describe a test method to determine the resistance of a textile floor covering to staining agents that can possibly be used in some premises.

2.1.2 Principle

Several liquid or thick substances are applied on a sample for a defined amount of time. After cleaning, the change of aspect is evaluated in specific lighting conditions.

2.1.3 Staining agents

- Coffee ((120 ± 5) g of ground coffee per liter of water) warmed at (60 ± 2) °C),
- Olive oil,
- Red wine,
- Wine vinegar.

2.1.4 Apparatus

- Pipettes,
- Glass lids (for instance watch glass) of 40 mm diameter,
- White cotton cloth,
- Stiff nylon brush (for instance nail brush),
- Daylight lighting apparatus with an intensity of (1500 ± 200) as described in standard NF EN 1471,
- Cleaning liquid:
water-based solution of neutral wet agent (soap) composed of sodium dodecylsulfate (laboratory sodium laurylsulfate of standard quality) with a 0.1% concentration. The solution will be prepared right before testing with tap water and used in a 1-hour time frame.

2.1.5 Sampling

Testing must be done on two colours, one light and one dark.

For each colour, take two samples of dimensions 200 x 200 mm.

Identify the spots for each agent with a mark or a scheme.

2.1.6 Method of operating

The samples must be initially conditioned in the standard test atmosphere for textile as described in EN ISO 139.

Apply a small quantity (5 drops) of each staining agent described at paragraph 1.4.3 on both samples.

Cover the staining agent with a glass lid (with the bulge onto the stain).

Leave in contact for (30 ± 2) min on a sample and 2 h ± 8 min on the other.

When contact time is over, remove the lid and proceed with cleaning.

Stamp the stains with the cloth to remove as much liquid as possible.

Clean with the brush and the cleaning liquid with a straight back and forth movement repeated 10 times.

Put the samples in standard atmosphere for textile for at least 24 hours before evaluation.

2.1.7 Evaluation

Place the samples on the observation table in the conditions described in standard NF EN 1471.

The evaluation must be done independently by at least three people.

Every observer evaluates the grade of residual stains according to the following scale:

Grade 5: no visible stain,

Grade 4: light stain visible from certain angles,

Grade 3: moderate visible stain,

Grade 2: important visible stain,

Grade 1: very strong visible stain.

Take the median grade for each stain on each sample.

Round to the lower integer.

2.2. Determining fiber composition

2.2.1 Field of application

These dispositions describe a test method to determine the fiber composition of textile floor coverings.

2.2.2 Principle

The different fibers, of determined dry mass, composing the textile floor covering are dissolved one by one with the use of several chemical reactives in order to determine the percentage of each fiber composing the floor covering.

2.2.3 Apparatus and solutions

- Scale of 0.1 mg accuracy ;
- Desiccator ;
- Ventilated oven (105 ± 3 °C);
- Graduated flask ;
- 3 glass beakers ;
- 3 crucibles ;
- Glass stick ;
- Formic acid at 80% (of chemical formulation CH₂O₂) – CAS 64-17-6 ;
- Dodecane (Decalin – Decahydronaphthalene – C₁₀H₁₈) – CAS 91-17-8 ;
- Xylene ;
- Shaving machine or shears.
- Fume cupboard
- Relevant PPE (gloves, goggles, lab coat...)

2.2.4 Sampling

- Take a relevant sample of the batch ;
- Identify the components of the textile floor covering based on the label of the sample;
- Shave the sample with the shaving machine;
- Take the fibres of the textile floor covering .

2.2.5 Samples conditioning

As the determined masses are dry, there is no necessity to condition the samples or to realize the tests in a conditioned atmosphere.

Make sure the drying operations last at least 4 hours and at most 16 hours at 105 ± 3 °C with ventilation. *If the drying period is less than 14 hours, make sure the mass is constant. It can be considered as so when the mass variation, after a new drying of 60 minutes, is less than 0.05%*

2.2.6 Method of operating

2.2.6.1 Method for the floor coverings only composed of polyamide.

- This method only applies to textile floor coverings 100% composed of polyamide fiber.
- Prepare approximately 10 ml of 80% formic acid for each gram of sample;
- Put the textile fibres (minimum 2g) in a beaker
- Slowly pour the formic acid in the beaker
- Stir the mix with a glass stick
- Leave to rest approximately 15 minutes, stirring once in a while with the glass stick
- After 15 minutes, check if the textile fibers are completely dissolved
- Give a 100% polyamide result if there is no visible trace of fibers after visual examination of the beaker.
- If some fibers are still visible, sample new fibers and proceed with chapter 2.2.6.2 to characterize the fibers.

2.2.6.2 Method for floor coverings composed of polyamide and other fibers.

2.2.6.2.1 Method with 80% formic acid

This method applies to textile floor coverings composed of polyamide and another kind of fibers (most of the time polypropylene).

- Take 3 crucibles and mark them as 1, 2 and 3
- Dry the 3 crucibles at 105°C between 4 and 16 hours in the oven and put them in the desiccator for 4 hours;
- Put crucible 1 on the scale and note the mass $m_{\text{crucible 1}}$;
- Put the textile fibers taken with the shaving machine in crucible 1 : at least 1g of textile fiber.
- Repeat these operations for crucibles 2 and 3;
- Put the 3 crucibles to dry in the oven at $105^{\circ}\text{C} \pm 3^{\circ}\text{C}$
- Let the 3 samples dry at 105°C between 4 and 16 hours and make sure that constant mass is achieved.
- Take out the 3 crucibles from the oven and put them in the desiccator.
- Let cool down until ambient temperature is reached.
- After complete cool down, take out the 3 crucibles and weigh one by one, note the values m_0
- Prepare approximately 100 ml of formic acid at 80% per gram of sample in a graduated flask.
- Put the fibers of crucible 1 in the beaker.
- Slowly pour the formic acid in the beaker.
- Stir the mix with a glass stick
- Proceed in the same way for the other two beakers.
- Leave to rest for approximately 15 minutes, stirring once in a while with the glass stick.
- Take an empty and clean flask.
- Put empty and clean crucible 1 on its neck;
- Pour the content of the beaker in the crucible and let filter.
- Clean the beaker with a small amount of formic acid and pour in the crucible to gather the remaining textile particles.
- Let filter;

- Rinse the sample completely by successively pouring enough of:
 - Hot water
 - Diluted ammonia
 - Cold water
- Repeat these operations for each beaker
- After filtering, empty the filtered formic acid in a collecting tray and clean the flask;
- Put the crucibles in the oven set up at $105^{\circ}\text{C} \pm 3^{\circ}\text{C}$ for drying
- Let dry the samples between 4 and 16 hours to make sure constant mass is achieved.
- Take out the crucibles from the oven and put them in the desiccator;
- Let cool down until ambient temperature is reached;
- Take out the crucibles from the desiccator and weigh m_1 ;
- Calculate the percentage of polyamide or nylon : $\% = \frac{m_0 - m_1}{m_0} \times 100$.

2.2.6.2.2 Hot method using dodecane (C₁₀H₁₈)

This method applies to textile floor coverings composed of polyamid, polypropylene and polyester.

When the polyamid and/or nylon fibers have been dissolved (step 2.2.6.2.1):

- Put the sample of crucible 1 in a beaker
- Put the beaker on a heating plate
- Prepare approximately 50 ml of dodecane (decahydronaphtalene or decalin) per gram.
- Slowly pour the reactive in the beaker and stir
- Heat until boiling
- Leave to boil for approximately 5 minutes, stirring once in a while
- Take an empty and clean flask
- Put empty and clean crucible 1 on its neck
- Pour the content of the beaker in crucible 1 and let filter
- Clean the beaker with a small amount of cold dodecane and pour in the crucible in order to gather the remaining textile particles
- Put the 3 crucibles on paper towel in order to absorb the dodecane leftovers
- Put the crucibles in the oven at 80°C
- Let the samples dry between 4 and 16 hours to make sure constant mass is achieved.
- Take out the crucibles from the oven and put them in the desiccator.
- Let cool down until ambient temperature is reached.
- Take out the crucibles from the desiccator and weigh
- Note the mass of each sample
- Calculate the percentage of polyester : $\% = \frac{m_0 - m_2}{m_0} \times 100$
- Repeat the operations for crucibles 2 and 3.