

# Data sheet

## EXPLANATION




**Data sheet**  
**Sample 1050 - EL F120 Bfl**  
 Sample 1050 - EL F120 Bfl  
 Status: 25.03.2024

400 cm wide

<b>delivery form</b>	rolls	1/10" gauge
<b>construction</b>	tufted cut pile	100 % Polyamide 6, recycled
<b>pile material</b>	ECONYL® yarn	75 % PES / 25 % PA
<b>primary backing</b>	non-woven	100 % PES, 120 g/m <sup>2</sup>
<b>secondary backing</b>	Easy Lift (heavy backing), non-woven (needled, thermal fixed)	
<b>pattern</b>	digital paste printing	Chromojet
<b>total weight</b>	ISO 8543	ca. 2120 g/m <sup>2</sup>
<b>total thickness</b>	ISO 1765	ca. 7,5 mm
<b>pile thickness</b>	ISO 1766	ca. 4,6 mm
<b>total pile yarn weight</b>		ca. 1100 g/m <sup>2</sup>
<b>pile density</b>		ca. 0,15 g/cm <sup>3</sup>
<b>number of tufts</b>	ISO 8543	ca. 181700 /m <sup>2</sup>
<b>CE-number</b>	ISO 1763	1658-CPR-3139
<b>DoP-number</b>		0001
<b>Prodis-licence-number</b>		75CA6F1A
<b>Environmental Product Declaration</b>	ISO 14025+EN 15804+A2	EPD-HBM-20170151-CBC1-DE + annex LC 3

 <b>use class</b> 33 - commercial: heavy DIN EN 1307   ISO 10361	 <b>resistance of cut edges</b> DIN EN ISO 10833
 <b>luxury class</b> LC 3 DIN EN 1307   ISO 8543	 <b>slip resistance <math>\mu</math></b> $\geq 0,30$ DIN EN 14041   DIN EN 13893
 <b>stair suitability</b> intensive DIN EN 1307   DIN EN ISO 12951	 <b>thermal resistance</b> ca. 0,15 m <sup>2</sup> K/W DIN EN 12667
 <b>castor chair suitability</b> intensive DIN EN 1307   DIN EN ISO 4918	 <b>impact sound reduction <math>\Delta L_w</math></b> ca. 28 dB DIN EN ISO 717-2   DIN EN ISO 10140-3
 <b>colour fastness to light</b> $\geq 5$ DIN EN 1307   DIN EN ISO 105-B02	 <b>sound absorption <math>\alpha_w</math></b> ca. 0,2 DIN EN ISO 354
 <b>colour fastness to water</b> $\geq 4$ DIN EN 1307   DIN EN ISO 105-E01	 <b>electrical behaviour</b> body voltage $\leq 2$ kV ISO 6356
 <b>colour fastness to rubbing</b> $\geq 3-4$ DIN EN 1307   DIN EN ISO 105-X12	 <b>reaction to fire</b> BF-s1 DIN EN 13501-1   DIN EN ISO 9239-1, 11925-1











0098/2023

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# Data sheet

## EXPLANATION

**en** The info guide 'Data sheet EXPLANATION' focuses on the data sheet as such.

The data sheet contains a great deal of information about the respective product and its suitability. However, in order to be able to interpret and compare this information correctly and to use it for the upcoming purchase decision, a basic understanding of all terms and contexts is required. On the one hand, this infoguide functions as an encyclopedia and, on the other hand, is intended to provide insights into the procedures and processes of the testing laboratories.

Follow us and learn everything you always wanted to know about the data sheet!

**de** Der Infoguide „Data sheet EXPLANATION“ rückt das Datenblatt als solches in den Mittelpunkt.

Im Datenblatt steckt eine Vielzahl an Informationen zum jeweiligen Produkt und seiner Eignung. Um diese richtig interpretieren, vergleichen und für die bevorstehende Kaufentscheidung nutzen zu können, bedarf es jedoch eines grundlegenden Verständnisses aller Begrifflichkeiten und Zusammenhänge. Dieser Infoguide fungiert zum einen als Nachschlagewerk und soll zum anderen Einblicke in die Verfahren und Abläufe der Prüflabore gewähren. Folgen Sie uns und erfahren Sie alles, was Sie schon immer über das Datenblatt wissen wollten!

**fr** L'infoguide «Data sheet EXPLANATION» met l'accent sur la fiche technique en tant que telle.

La fiche technique contient une multitude d'informations sur le produit concerné et son adéquation. Pour pouvoir les interpréter correctement, les comparer et les utiliser pour la décision d'achat à venir, il est toutefois nécessaire de bien comprendre toutes les notions et les relations. Cet infoguide sert d'ouvrage de référence et donne un aperçu des procédures et des processus des laboratoires d'essai.

Suivez-nous et découvrez tout ce que vous avez toujours voulu savoir sur la fiche technique!

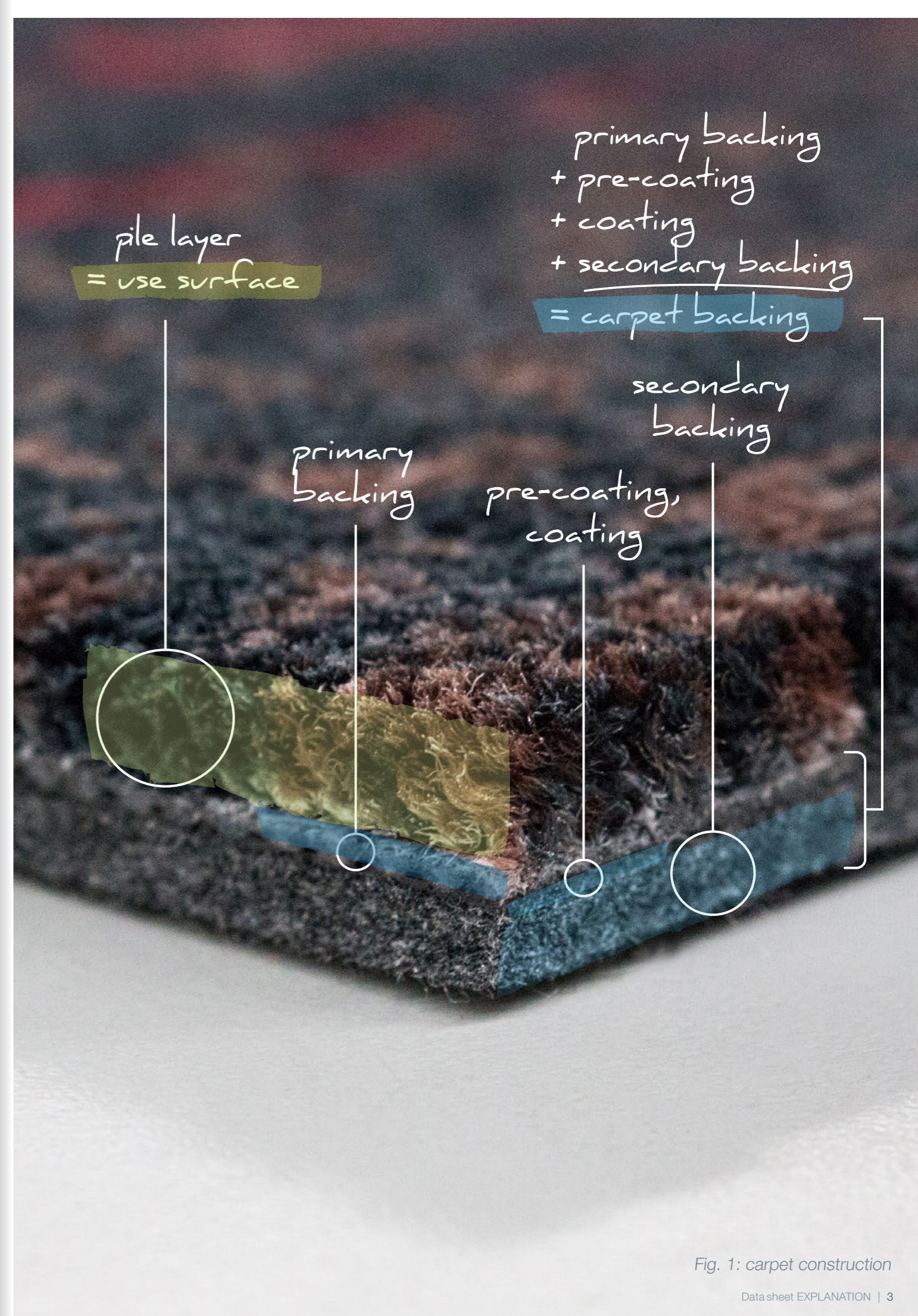


Fig. 1: carpet construction

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0 Bfl  
Bfl

HALBMOND  
TEPPICHWERKE

HTW DESIGN  
CARPET

ECONYL®  
ENDLESS POSSIBILITIES

form	rolls	400 cm wide
	tiles	
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**use class**  
33 - commercial: heavy  
DIN EN 1307 | ISO 10361



**luxury class**  
LC 3  
DIN EN 1307 | ISO 8543



**stair suitability**  
intensive  
DIN EN 1307 | DIN EN ISO 12951



**castor chair suitability**  
intensive  
DIN EN 1307 | DIN EN ISO 4918



**colour fastness to light**  
≥ 5  
DIN EN 1307 | DIN EN ISO 105-B02

**colour fastness to water**  
≥ 4  
DIN EN 1307 | DIN EN ISO 105-E01

**colour fastness to rubbing**  
≥ 3-4  
DIN EN 1307 | DIN EN ISO 105-X12



**resistance of cut edges**  
DIN EN ISO 10833



**slip resistance μ**  
≥ 0,30  
DIN EN 14041 | DIN EN 13893



**thermal resistance**  
ca. 0,15 m²K/W  
DIN EN 12667



**impact sound reduction ΔL<sub>w</sub>**  
ca. 28 dB  
DIN EN ISO 717-2 | DIN EN ISO 10140-3



**sound absorption α<sub>w</sub>**  
ca. 0,2  
DIN EN ISO 354



**electrical behaviour**  
body voltage ≤ 2 kV  
ISO 6356



**reaction to fire**  
Bfl-s1  
DIN EN 13501-1 | DIN EN ISO 9239-1, 11925-1



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The terms in the Halbmond data sheet are based on the norm **DIN EN 1307**, but there are also various synonyms for some terms, depending on the source. The most common are summarised here.

**use class\***  
= wear rating\*\*

21/31: moderate\*  
22/32: general\*  
23/33: heavy\*

= light\*\*  
occasional\*\*\*

= medium\*\*  
normal\*\*\*

= intensive\*\*\*

21-23 domestic use  
31-33 commercial use

LC 1-5

**luxury class\***  
= luxury rating class\*  
= comfort rating\*\*



for stairs & castor chairs

occasional\* = domestic\*\*\*

intensive\* = continuous\*<sup>f</sup> = permanent\*\*\*

sources:

\* DIN EN 1307  
\*\* old HTW data sheet  
\*\*\* other sources  
<sup>f</sup> www.floorsymbols.com

Fig. 2: synonymous terms

# delivery form

The delivery form indicates in which configuration the carpet is delivered to the customer.

## roll

The roll has a defined maximum width, but can be produced in almost endless lengths. For practical reasons, it is often cut directly to the room dimensions. Rolls are usually glued to the floor.

If it is used in the commercial sector, the provisions of the Construction Products Regulation apply.

## module

Modules are pieces of carpet cut from rolls of different shapes and sizes. A square module is usually referred to as a tile, while a plank is a rectangular, long module. Carpet modules can be freely combined, are easy to transport due to their small size and can be replaced individually if damaged or soiled. The modules do not necessarily have to be glued to the floor.

If they are used in commercial areas, the provisions of the Construction Products Regulation apply.

## rug & mat

The rug can come in different sizes and shapes, but is usually rectangular. It has a corresponding edge finish so that it can be laid directly on the floor of the room, but is not usually glued to it. For this reason, overlay rugs also have to fulfil less stringent requirements than glued rolls, for example. This also applies to entrance mats and bath mats.

> Nevertheless, Halbmond finishes rugs like rolls to meet the highest standards.

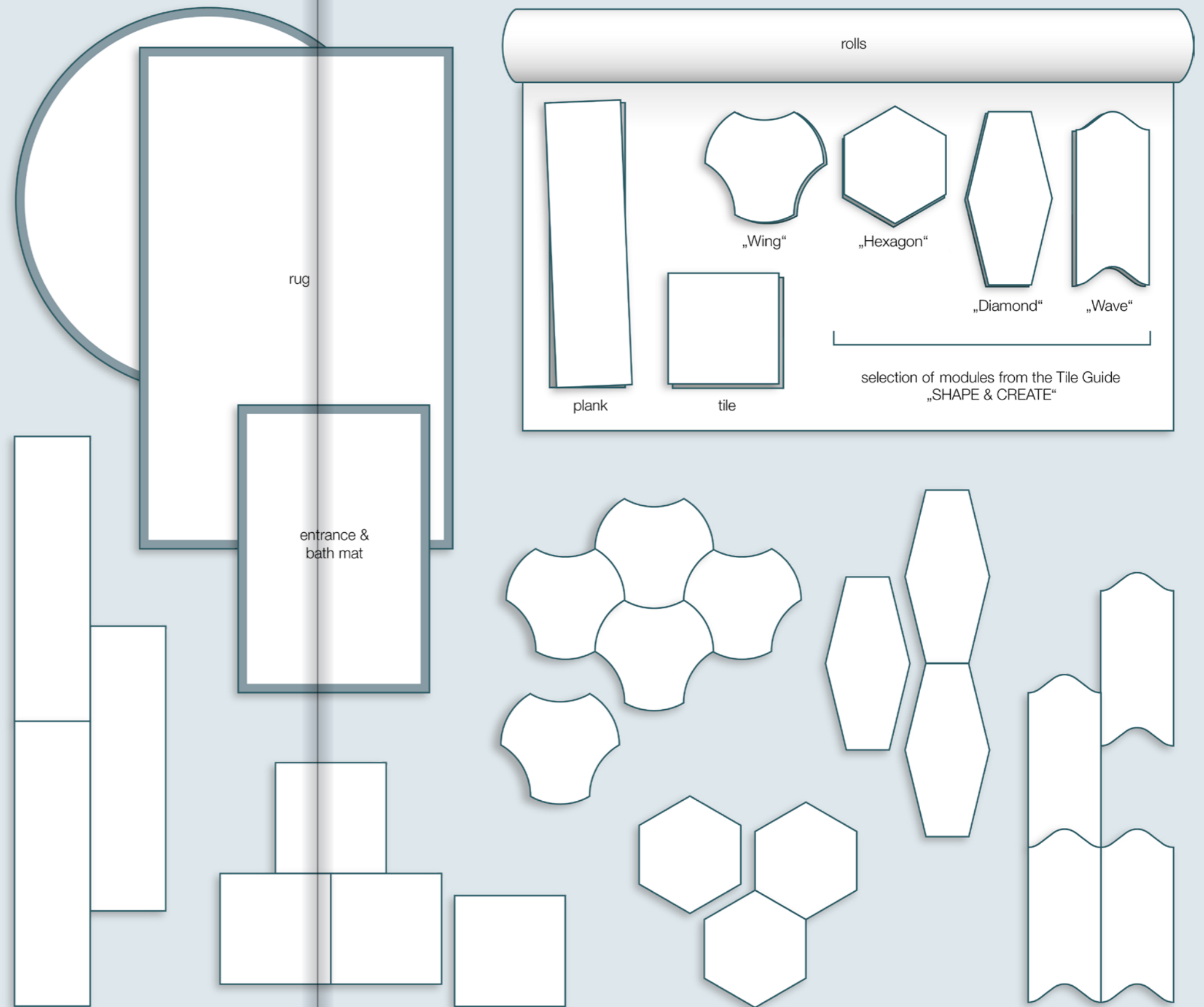


Fig. 3: delivery forms

# construction

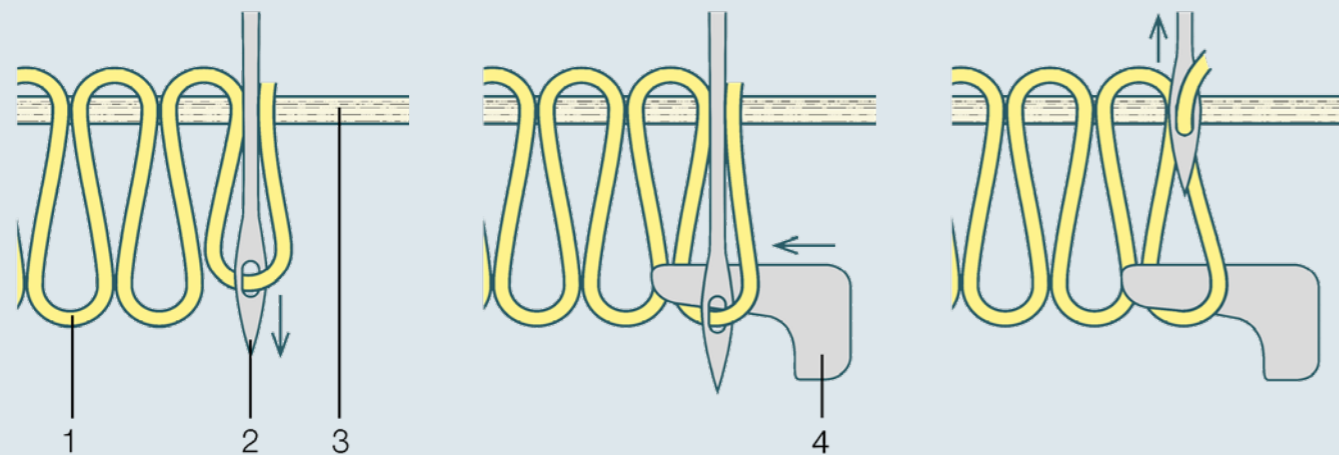
The construction describes the technical manufacturing process of the rug or carpet. Rugs are usually tufted, woven or knotted.

> *Halbmond generally uses a tufted carpet base.*

## tufting

Tufting is a technique for creating three-dimensional textile surfaces in which a thread (Fig. 4, No. 1) is inserted into the primary backing (Fig. 4, No. 3) from the back with a needle (Fig. 4, No. 2) and held by a hook (Fig. 4, No. 4) when the needle is withdrawn, so that it comes out at the front as a loop (Fig. 5, No. 1). Many dense rows of these pile nubs form the pile or pile layer (Fig. 5, No. 3). If the loop heads are cut off, a cut pile is formed (Fig. 5, No. 3a).

> *If a Halbmond carpet or rug is to be created from the tufted material, the pre-coating (Fig. 5, No. 4) must be applied to the back of the primary backing for nap binding. The coating (Fig. 5, No. 5) and secondary backing (Fig. 5, No. 6) complete the carpet backing (Fig. 5, No. 8).*



- 1 thread
- 2 needle
- 3 primary backing
- 4 hook

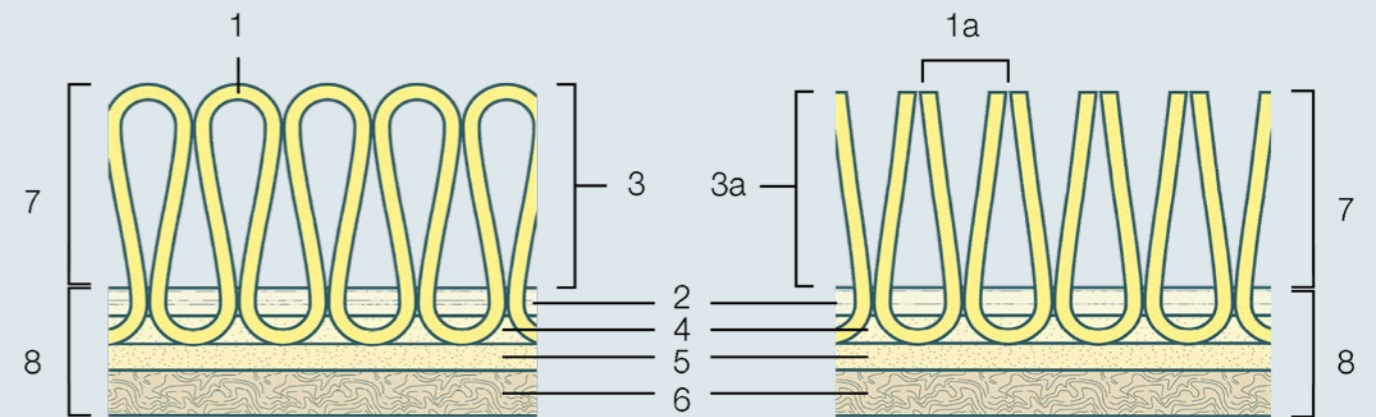
Fig. 4: tufting

## tufted loop pile

A tufted quality whose pile loops are not cut is called tufted loop pile (Fig. 5, No. 1). The appearance is reminiscent of standard terry towels - these usually have uncut, small loops - although the manufacturing process is different.

## tufted cut pile

Tufted cut pile is a tufted material with open yarn ends on the front, which is produced from looped fabric by cutting off the loop heads (Fig. 5, No. 1a). The appearance of tufted cut pile without a heat setting is comparable to that of velvet, whereas thermofixed or chemofixed yarns form a grainy surface. For the layman, the machine-tufted cut pile can hardly be distinguished from a hand-knotted carpet.



- 1 loop (1a cut)
- 2 primary backing
- 3 pile (3a cut pile)
- 4 pre-coating
- 5 coating
- 6 secondary backing
- 7 use surface (3/3a)
- 8 carpet backing (2, 4, 5, 6)

Fig. 5: layers of tufted carpet

## gauge

The gauge provides information about the distances between the needles or pile loops and therefore also their number per inch. For example, a product with a gauge of 1/8" has 8 columns of stitches over a distance of 1 inch (2.54 cm) in the transverse direction of the tufted material, while a product with a gauge of 1/10" has 10 stitch columns over the same distance. The density of the stitches in the longitudinal direction cannot be determined from this value (but can be calculated from the number of tufts and the gauge if required).

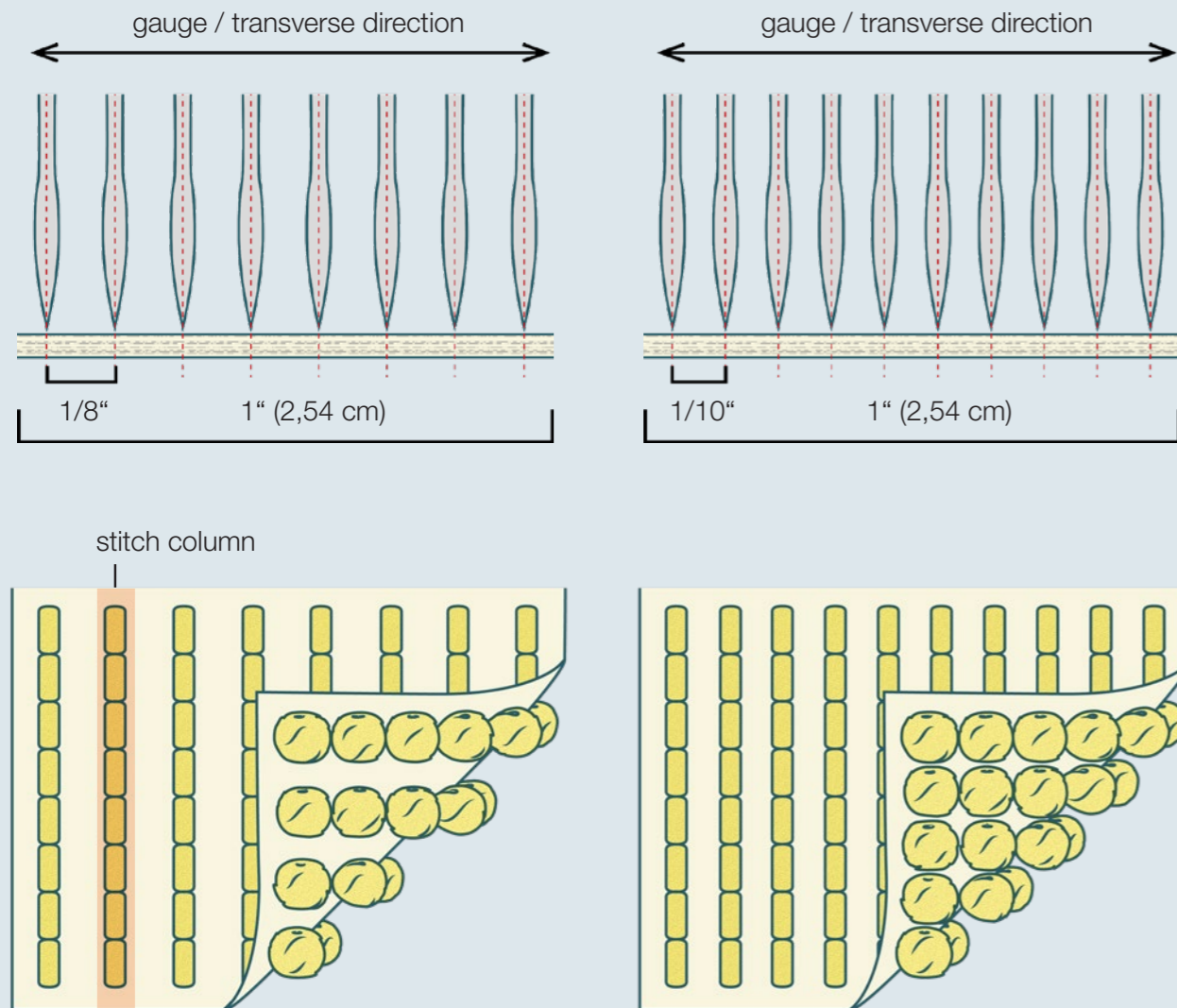


Fig. 6: gauge 1/8" and 1/10"

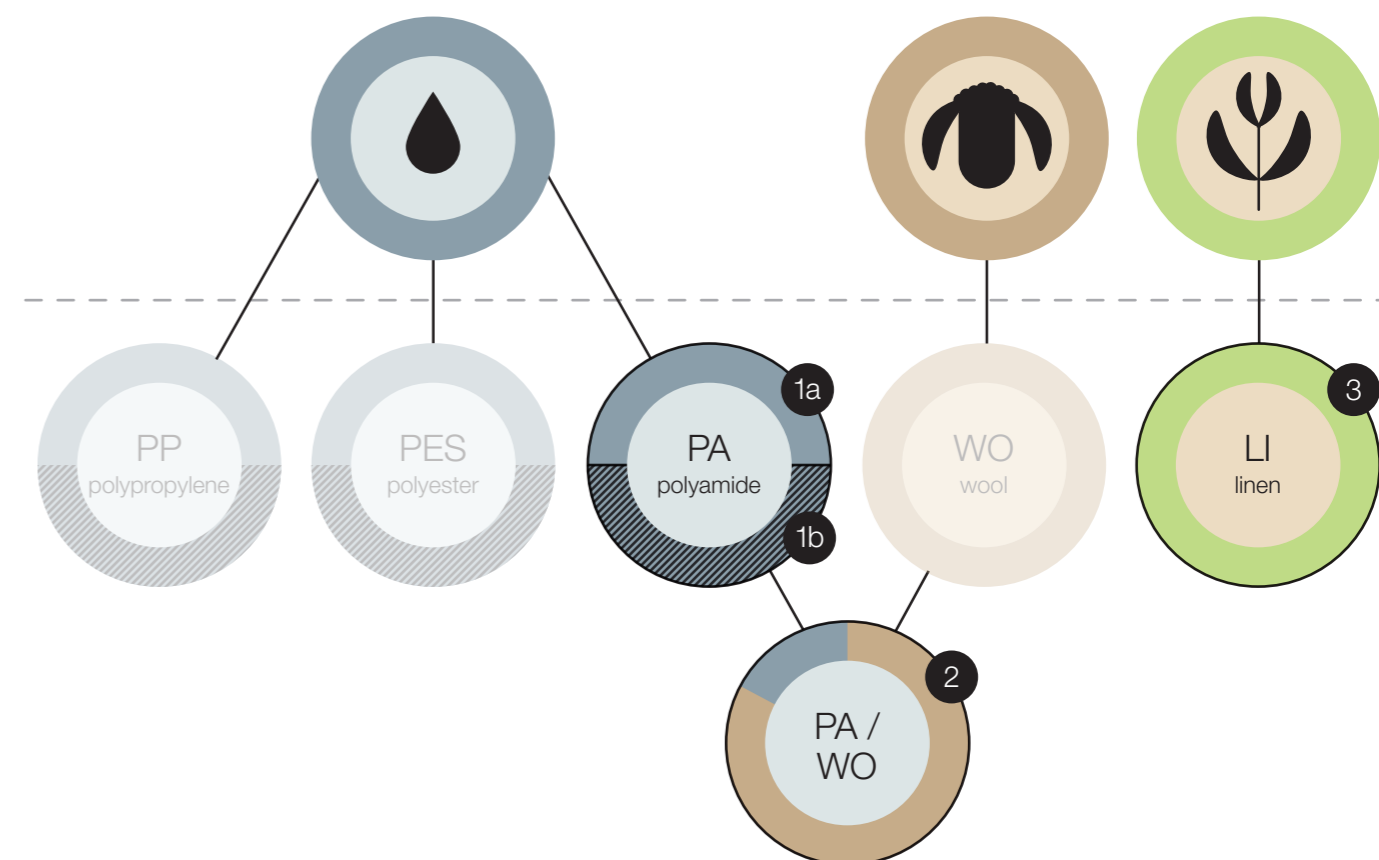


Fig. 7: tufted cut pile without coating and secondary backing

# pile material

The material from which the yarn for the pile threads is made is called pile material. This must be clearly labelled with prescribed formulations in accordance with the Textile Labelling Act. The most common pile materials for carpets and rugs are polypropylene (PP), polyester (PES), polyamide (PA) and wool (WO).

> Halbmond mainly uses polyamide (Fig. 9, No. 1a) because it is the most hard-wearing fibre. However, natural fibres such as wool blended with polyamide (Fig. 9, No. 2) and pure linen (LI) (Fig. 9, No. 3) are also processed. If recycled polyamide (Fig. 9, No. 1b) is used, this cannot initially be recognised by the material designation „PA“ itself, as it is chemically identical to first qualities. However, it is then always labelled as recycled yarn by both the yarn manufacturer and the carpet producer.



origin (outer circle):

- crude oil
- animal
- plant
- recycling

disposal (inner circle):

- biodegradation
- recycling or thermal disposal

Fig. 9: pile material overview

Fig. 8: pile layer of tufted cut pile



# primary backing

The primary backing is the textile base layer into which the pile threads are stitched (Fig. 10 and 11). This can be a woven or non-woven fabric and can consist of either a pure material or a mixture of materials.

# secondary backing

The secondary backing (Figs. 11, 12 and 13) is part of the carpet backing just like the pre-coating and coating (Fig. 11). The secondary backing has direct contact with the floor. It can be a woven fabric or non-woven like fleece or felt, for example, and fulfils various technical functions, in particular it has an acoustic and heat-insulating effect.

> Due to the wide range of requirements and applications, Halbmond uses both woven and non-woven fabrics of different thicknesses, densities and compositions as secondary backing. The customer therefore not only receives a surface as desired, but also the fulfilment of his functional suitability profile on the back of the carpet or rug.

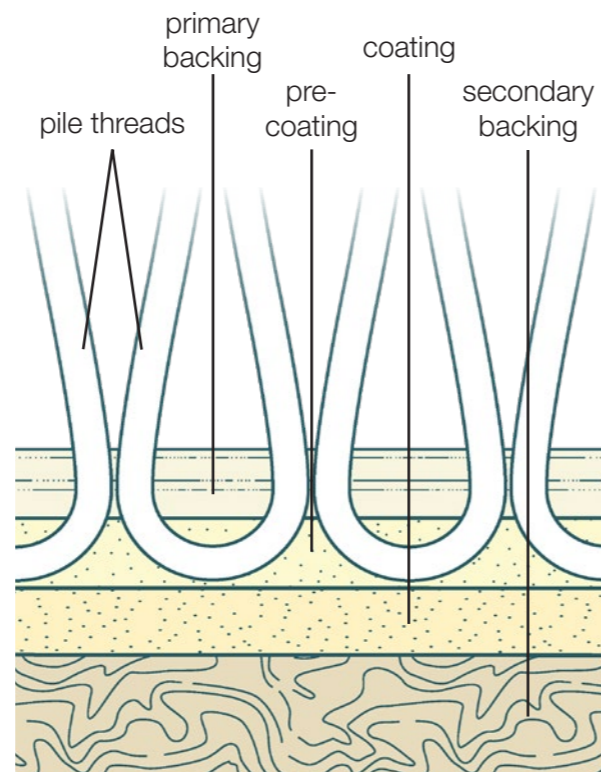
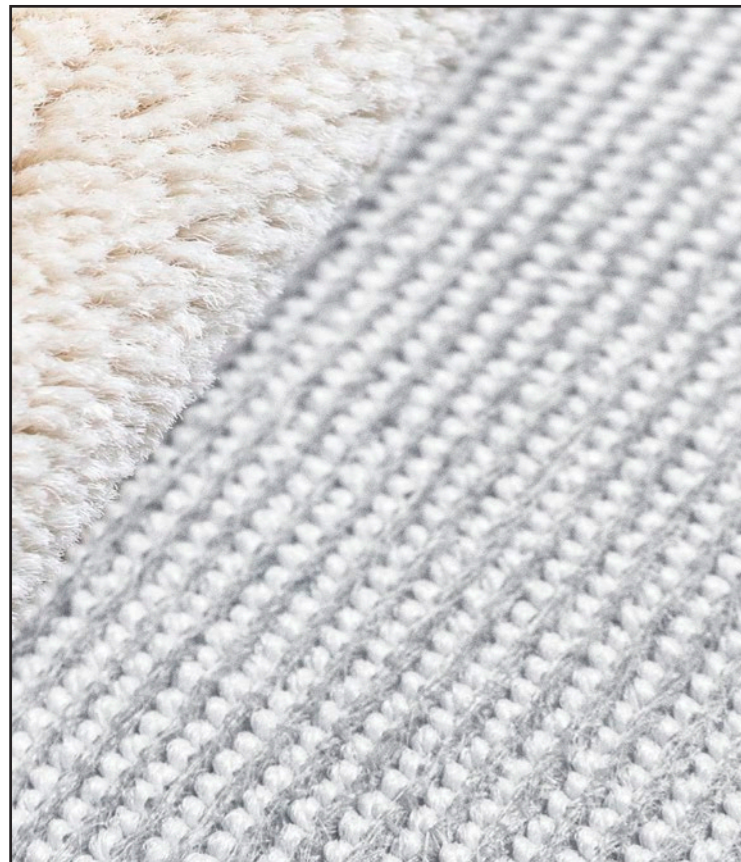


Fig. 10: non-woven primary backing from below, no backing

Fig. 11: layers of tufted carpet

# non-woven

A non-woven is a flat material consisting of single, disordered fibres. There are non-wovens whose fibre bonding is achieved entirely mechanically (e.g. needled non-wovens, hydroentangled non-wovens), those that are fused under the influence of heat (e.g. thermal bond non-wovens) and - more rarely - non-wovens that are bonded using a binding agent.

> Halbmond uses non-wovens as primary backings because they are more dimensionally stable than woven fabrics. They usually consist of a mixture of 75% polyester (PES) and 25% polyamide (PA).

> Non-wovens in the grammages 120g/m<sup>2</sup>, 280g/m<sup>2</sup>, 550g/m<sup>2</sup>, 600g/m<sup>2</sup> and 1000g/m<sup>2</sup> are used for the secondary backing. All non-wovens are needled and - apart from the 280g and 550g qualities - additionally heat-set, which results in a denser, firmer structure. The 120g non-woven secondary backing is used in combination with the heavy coating „Easy-Lift“ (EL), particularly for modules. For large tiles (e.g. 1.92m x 1.92m), the 1000g quality is generally used in conjunction with „Easy-Lift“. Halbmonds non-woven secondary backings are made of 100% polyester (PES), which comes from recycled PET bottles. In addition, a viscose (VI) variant is also available.

# woven

A woven fabric is a two-dimensional structure of threads that are usually arranged at right angles to each other and interwoven according to a specific weave binding.

> Halbmond only uses a woven primary backing for the linen carpets and linen rugs from the LIN series. This woven fabric is also made of linen and is even compostable as part of the product LIN Komp.

> For a long time, the entire carpet industry only used a polyester fabric as the secondary backing to give the tufted base carpet additional strength and dimensional stability. At Halbmond, this polyester fabric is still chosen as the secondary backing in just over half of all cases. For LIN and LIN Komp linen carpets biodegradable jute fabric is used as secondary backing.



Fig. 12: non-woven secondary backing from below



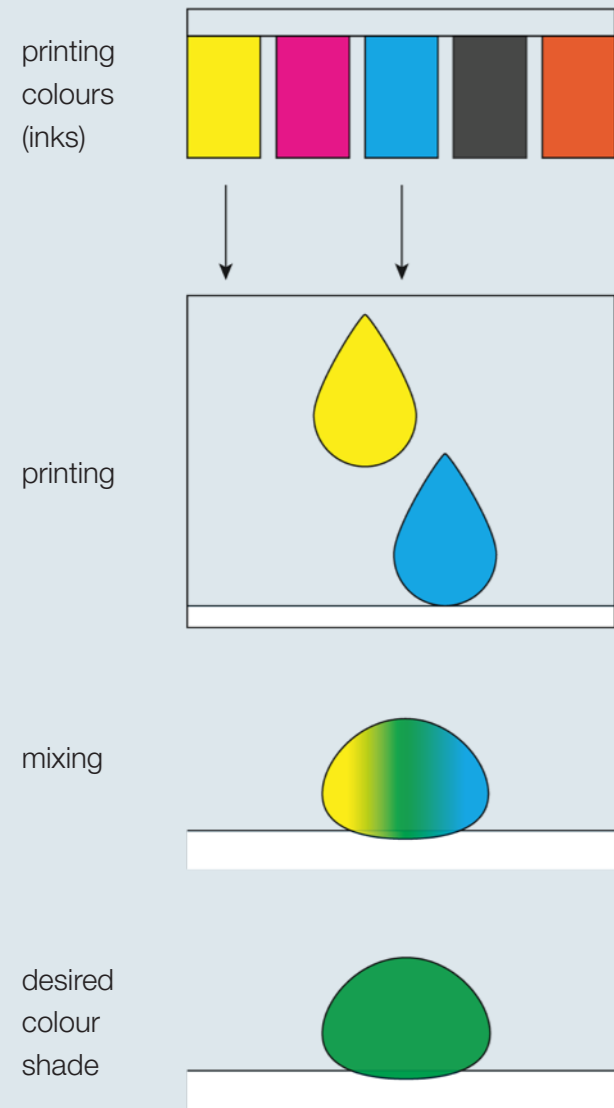
Fig. 13: woven secondary backing from below

# pattern

Pattern design can be achieved in textile production using different processes.

> At Halbmond, the pattern design is usually created by printing on the tufted, white base material, with a choice of two processes: On the **Colaris printing machine**, a few basic colour inks are used, from which all other colours can be mixed in the process (process colours). On the **Chromojet printing machine**, a selection of pre-mixed colour pastes (solid colours) are used.

## Colaris



## Chromojet

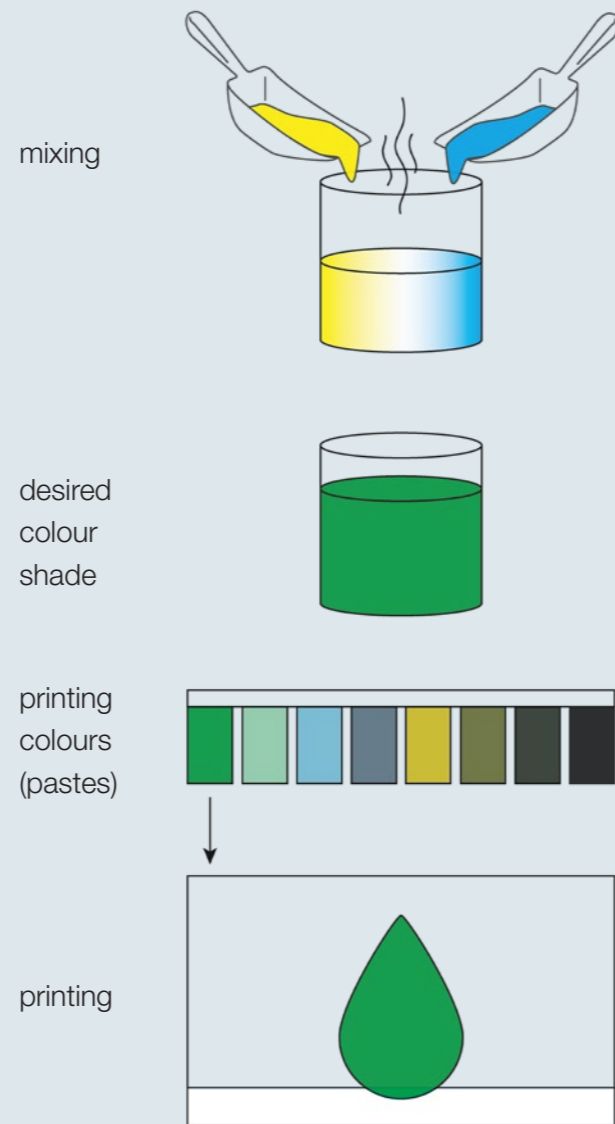


Fig. 14: printing with Colaris and Chromojet

# total weight

The total weight indicates how much a square metre of the carpet or rug weighs including all layers (Fig. 15, No. 1).

# total thickness

The total thickness indicates how thick the carpet or rug is including all layers (Fig. 15, No. 2).

# pile thickness

The pile thickness indicates the height of the visible threads protruding from the primary backing above the ground. The part embedded in the carpet or rug is not measured (Fig. 15, No. 3).

# total pile yarn weight

The pile weight indicates how much thread material has been used to produce the pile per square metre, i.e. how much is above, inside and below the primary backing (Fig. 15, No. 4). This value can no longer be measured after completion of the carpet or rug, but can only be determined approximately by calculation.

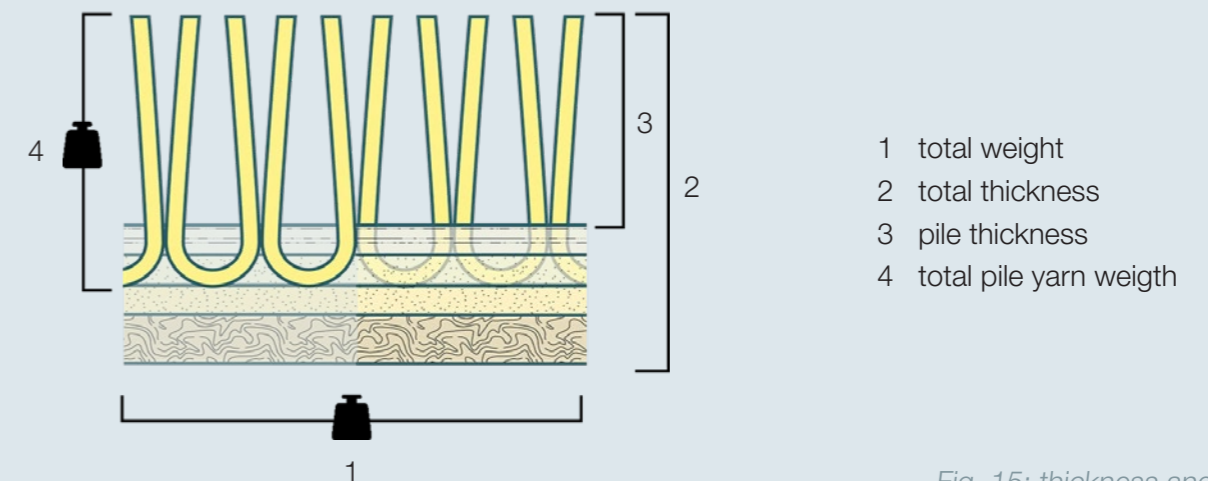


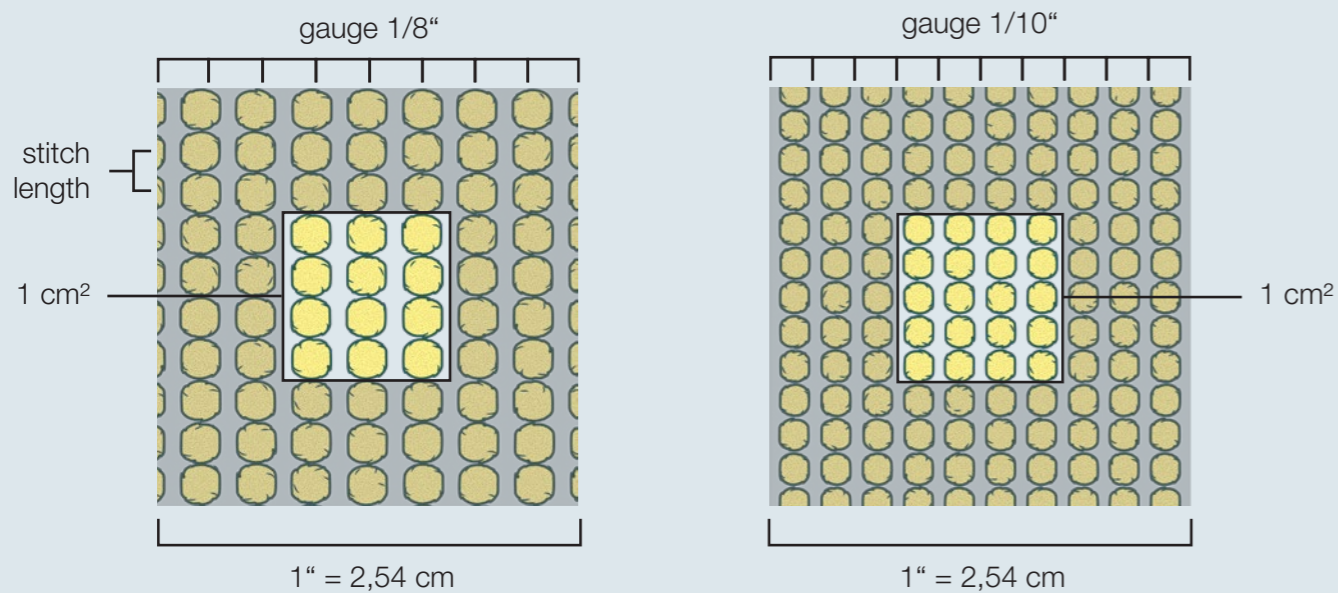
Fig. 15: thickness and weight

# pile density

Pile thickness doesn't tell the whole story, nor does the total pile yarn weight. A carpet can be high, but does not necessarily have to weigh a lot if it is only loosely tufted. In industry jargon, this is referred to as a „blender“, as the carpet looks voluminous, but its durability does not allow it to be used in commercial properties. Only the combination of pile thickness and total pile yarn weight provides a reliable indication of the quality of a carpet or rug. In this context, the term „pile density“ is used. It provides information on how much pile material is located in a certain area of the carpet above the primary backing. A higher pile density leads to the conclusion that the overall performance characteristics are improved and, in particular, that the acoustic effectiveness is better.

# number of tufts

The number of tufts indicates how many loops are present on one square metre of the floor covering. Either a pile loop (Fig. 5, No. 1) or two pile thread ends (Fig. 5, No. 1a) are counted as a tuft on the front side, while each stitch (piece of thread between two stitching points) is counted on the back side. The number of tufts is not only determined by the gauge, but also by the stitch length and thus the distance between the tufts in the longitudinal direction. The high value in the data sheet is easier to understand if you first look at the number of tufts per square centimetre (Fig. 16) and then calculate it per square metre.



Ex. 1: number of tufts 12/cm<sup>2</sup> = 120.000/m<sup>2</sup>      Ex. 2: number of tufts 20/cm<sup>2</sup> = 200.000/m<sup>2</sup>

Fig. 16: number of tufts

# CE-number

The CE-marking indicates that a product has „conformité européenne“ (European conformity), i.e. that all the requirements placed on this product by the EU have been met. The CE-marking can be presented in more or less detail, but always contains the standardised CE-mark.

> At Halbmond, the CE-marking is shown as below and can be read as follows:

The first 4 digits of the CE-number indicate the „notified body“ (test centre) that has awarded the CE-mark. The assignment can be looked up in a suitable register. The letters „CPR“ indicate that the product has been tested in accordance with the „Construction Products Regulation“. The last digits refer to a specific test certificate.

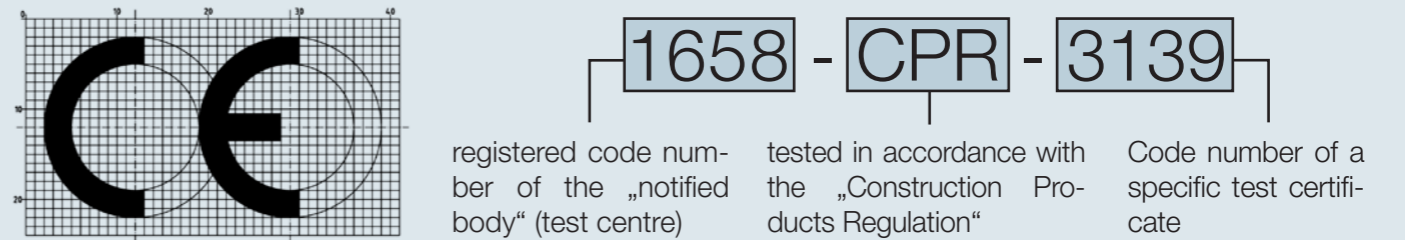


Fig. 17: CE-number

# DoP-number

The term DoP stands for „Declaration of Performance“. It confirms the consistent quality (through constant monitoring) of the approved articles and is required in addition to the CE-number in order to be able to call up the corresponding Declaration of Performance.

# Prodis-licence-number

The association „Gemeinschaft umweltfreundlicher Teppichboden e.V.“, (GUT) has been campaigning for environmental standards in the textile flooring industry since 1990. The eight-digit Prodis-licence-number consisting of letters and numbers must be entered on the GUT-Prodis website in order to access the Product Passport for the respective article. Alternatively, the QR code of the GUT-Prodis label can also be scanned. The Product Passport contains all the information on the data sheet, as well as more detailed information on the materials used and their environmental compatibility. However, it is only available online, not as a PDF.

> Below is shown an excerpt from the GUT-Prodis Product Passport for the Halbmond product „LIN Komp“ with the Prodis-licence-number 40A01761.

<https://gut-prodis.eu/en/product-testing-gut/product-passport>

# GUT-ProdIs Product Passport

- ▶ Use layer (structure): loop/cut pile
  - ▶ Production method: tufted
  - ▶ Use layer (color and pattern): C2 - patterned
  - ▶ Composition of surface: 100,00% sisal/jute/linen/bamboo (Recycled proportion: 0,00%)
  - ▶ Primary backing: woven - natural fibre
  - ▶ Backing: textile backing woven-textile fabric based - natural fibre
- 
- ▶ total thickness: 5,6 [mm]
  - ▶ total mass: 3005,0 [g/m<sup>2</sup>]
  - ▶ surface pile thickness: 1,0 [mm]
  - ▶ weight of use surface: 210,0 [g/m<sup>2</sup>]
  - ▶ number of tufts: 1039,5 [1/dm<sup>2</sup>]
  - ▶ surface pile density: 0,2 [g/cm<sup>3</sup>]

## ↓ PROPERTIES OF USE

MORE INFORMATION

- ▶ Use class: 32
- ▶ Luxury Class: LC1
- ▶ castor chair suitability: Castor chair continuously
- ▶ stair suitability: No informations available
- ▶ Resistance to fraying: No informations available
- ▶ Impact noise: No informations available
- ▶ Accoustical absorption: No informations available
- ▶ Dimensional stability: No informations available
- ▶ Light fastness: No informations available

## ↓ INFORMATION ON EMISSIONS, CHEMICALS AND POLLUTANTS

MORE INFORMATION

- ▶ VOC-Emissions: TVOC 28 < 100 [µg/m<sup>3</sup>]. details...
- ▶ Formaldehydeemission: < 10 [µg/m<sup>3</sup>]. The product meets the requirements of GUT. additional info...
- ▶ Flame retardants: For compliance with the fire class B<sub>2</sub>S<sub>1</sub> was ATH (Aluminiumtrihydroxid) added as flame retardant. What is ATH?...
- ▶ Biocides: The limits for possible residual contents of in-can preservatives, which may originate from the stabilisation of raw materials, are complied with. see Biocides...

- raw materials, are complied with. see Biocides...
- ▶ Active biocidal finishing: According to the GUT criteria none biocidal treatment was applied.
- ▶ Dyestuff classes used: reactive
- ▶ Azo dyes: Have not been used according to the GUT list of banned substances. additional info...
- ▶ Allergenic and carcinogenic dyes: Have not been used according to the GUT list of banned substances. additional info...
- ▶ Organic dyeing accelerators (e.g. chlorophenols): Have not been used according to the GUT list of banned substances. additional info...
- ▶ Plasticisers and phthalates: Have not been used according to the GUT list of banned substances. additional info...
- ▶ Polycyclic aromatic hydrocarbons: The limit values according to GUT criteria were met. additional info...
- ▶ Heavy metals: The GUT limits for contents and eluates (releasable amounts) were met. additional info...

## ↓ SVHC - SUBSTANCES

MORE INFORMATION

In this module you will find information on the content of so-called SVHC substances (Substances of Very High Concern)

Within the framework of the GUT criteria, active use of SVHC substances in the manufacture of textile floor coverings is not permitted.

According to REACH Art 33 there is an obligation to inform as soon as SVHC substances are contained in a product in concentrations of > 0.1 weight percent.

Based on the weight of an average carpet, a content of 0.1% corresponds to a quantity of SVHC of 1.7 g/m<sup>2</sup>.

In the product passport the information is provided in 3 steps even if the legally required limit of 0.1 weight percent is not reached.

A)  
The product contains SVHC substances based on the current candidate list in concentrations below 0.1 % (1 g/kg).  
Name and CAS number of the substance(s)

B)  
The product contains SVHC substances based on the current candidate list in concentrations below 0.05 % (0.5 g/kg).  
Name and CAS number of the substance(s)

C)  
The product contains no SVHC substances based on the current candidate list

This information will be available from spring 2021.

- ▶ VOC-Emissions: TVOC 28 < 100 [µg/m<sup>3</sup>]. details...
- ▶ Formaldehydeemission: < 10 [µg/m<sup>3</sup>]. The product meets the requirements of GUT. additional info...
- ▶ Flame retardants: For compliance with the fire class B<sub>2</sub>S<sub>1</sub> was ATH (Aluminiumtrihydroxid) added as flame retardant. What is ATH?...
- ▶ Biocides: The limits for possible residual contents of in-can preservatives, which may originate from the stabilisation of raw materials, are complied with. see Biocides...
- ▶ Active biocidal finishing: According to the GUT criteria none biocidal treatment was applied.
- ▶ Dyestuff classes used: reactive
- ▶ Azo dyes: Have not been used according to the GUT list of banned substances. additional info...
- ▶ Allergenic and carcinogenic dyes: Have not been used according to the GUT list of banned substances. additional info...
- ▶ Organic dyeing accelerators (e.g. chlorophenols): Have not been used according to the GUT list of banned substances. additional info...
- ▶ Plasticisers and phthalates: Have not been used according to the GUT list of banned substances. additional info...
- ▶ Polycyclic aromatic hydrocarbons: The limit values according to GUT criteria were met. additional info...
- ▶ Heavy metals: The GUT limits for contents and eluates (releasable amounts) were met. additional info...

Fig. 18: Excerpt from GUT-ProdIs Product Passport for the HALBMOND product „LIN Komp“



# use class

The use class provides information about the area of application (private or commercial) and the intensity of use (moderate to very heavy) for which a textile floor covering is suitable.

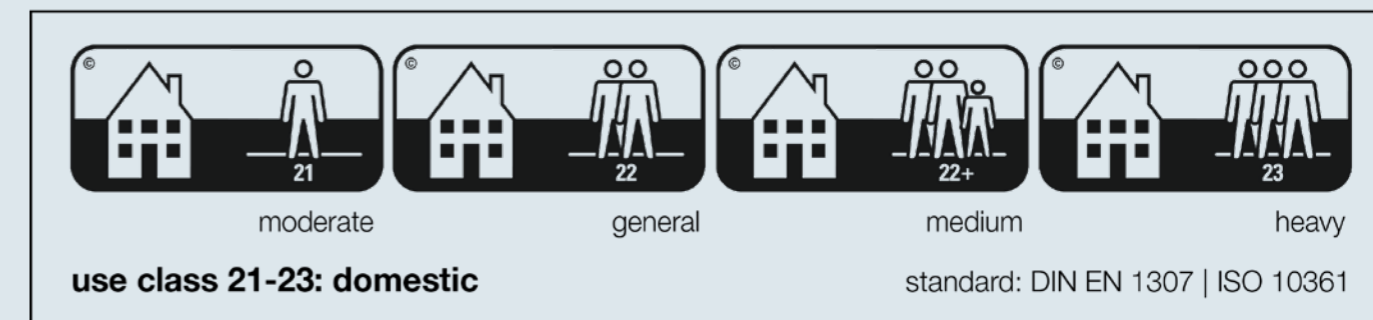


Fig. 20: use class 21-23

**Use classes 21-23** characterise the suitability of textile floor coverings for **domestic use**. Class 21 stands for moderate, 22 for general, 22+ for medium (if existing) and 23 for heavy use. Domestic areas can be, for example: **bedrooms, guest rooms, hobby rooms, home offices, living rooms and children's rooms, kitchens, bathrooms, corridors, entrance areas, etc.**

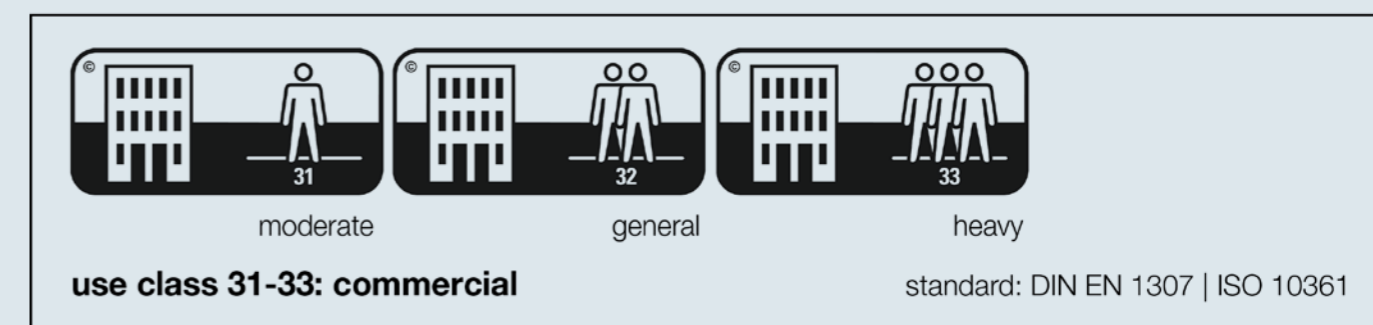


Fig. 21: use class 31-33

**Use classes 31-33** characterise the suitability of textile floor coverings for **commercial use**. Class 31 stands for moderate wear, 32 for general wear and 33 for heavy wear. Commercial areas can be, for example: **hotel lobbies, corridors and rooms, open plan offices, waiting rooms, classrooms, shops and department stores, airports, etc..**

<b>form</b>	rolls	400 cm wide		
<b>construction</b>	tufted cut pile	1/10" gauge		
<b>pile material</b>	ECONYL® yarn	100 % Polyamide 6, recycled		
<b>primary backing</b>	non-woven	75 % PES / 25 % PA		
<b>secondary backing</b>	Easy Lift (heavy backing), non-woven (needled, thermal fixed)	100 % PES, 120 g/m <sup>2</sup>		
<b>pattern</b>	digital paste printing	Chromojet		
<b>total weight</b>	ISO 8543	ca. 2120 g/m <sup>2</sup>		
<b>total thickness</b>	ISO 1765	ca. 7,5 mm		
<b>pile thickness</b>	ISO 1766	ca. 4,6 mm		
<b>total pile yarn weight</b>		ca. 1100 g/m <sup>2</sup>		
<b>pile density</b>	ISO 8543	ca. 0,15 g/cm <sup>3</sup>		
<b>number of tufts</b>	ISO 1763	ca. 181700 /m <sup>2</sup>		
<b>CE-number</b>		1658-CPR-3139		
<b>DoP-number</b>		0001		
<b>Prodis-licence-number</b>		75CA6F1A		
<b>Environmental Product Declaration</b>	ISO 14025+EN 15804+A2	EPD-HBM-20170151-CBC1-DE + annex LC 3		

<ul style="list-style-type: none"> <li> <b>use class</b> 33 - commercial: heavy DIN EN 1307   ISO 10361</li> <li> <b>luxury class</b> LC 3 DIN EN 1307   ISO 8543</li> <li> <b>stair suitability</b> intensive DIN EN 1307   DIN EN ISO 12951</li> <li> <b>castor chair suitability</b> intensive DIN EN 1307   DIN EN ISO 4918</li> <li> <b>colour fastness to light</b> ≥ 5 DIN EN 1307   DIN EN ISO 105-B02</li> <li> <b>colour fastness to water</b> ≥ 4 DIN EN 1307   DIN EN ISO 105-E01</li> <li> <b>colour fastness to rubbing</b> ≥ 3-4 DIN EN 1307   DIN EN ISO 105-X12</li> </ul>	<ul style="list-style-type: none"> <li> <b>resistance of cut edges</b> DIN EN ISO 10833</li> <li> <b>slip resistance μ</b> ≥ 0,30 DIN EN 14041   DIN EN 13893</li> <li> <b>thermal resistance</b> ca. 0,15 m<sup>2</sup>K/W DIN EN 12667</li> <li> <b>impact sound reduction ΔL<sub>w</sub></b> ca. 28 dB DIN EN ISO 717-2   DIN EN ISO 10140-3</li> <li> <b>sound absorption α<sub>w</sub></b> ca. 0,2 DIN EN ISO 354</li> <li> <b>electrical behaviour</b> body voltage ≤ 2 kV ISO 6356</li> <li> <b>reaction to fire</b> Bfl-s1 DIN EN 13501-1   DIN EN ISO 9239-1, 11925-1</li> </ul>
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We reserve the right to make technical changes that serve to improve quality. In rare cases, permanent shading may occur in velour carpets without impairing the usability. The cause of this is not due to the material or construction. Therefore, no warranty can be assumed for this. Halbmond's carpets and rugs must be installed in accordance with the respective Halbmond installation recommendations and the state of the art. All information is based on current knowledge and experience. They can only be general information without guarantee of properties, as we have no influence on the construction site conditions and processing. Due to the wide range of possible influences when using our products, they do not exempt the installer from carrying out his own tests and trials. Regular maintenance cleaning is decisive for the cleanliness, value retention and good appearance of the floor covering.

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# luxury class

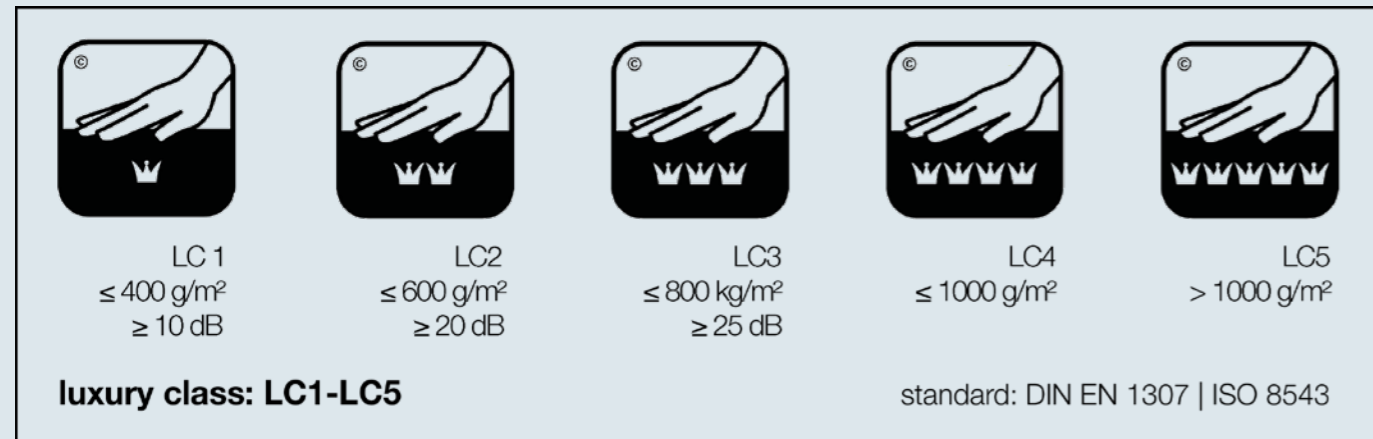


Fig. 22: luxury class

The luxury class of a textile floor covering is based on the **weight per unit area of its use surface**. One crown corresponds to the lowest luxury class (LC1), five stand for the highest comfort (LC5). The luxury class also allows an **assignment of the impact sound insulation** to the respective total weight without measurement. Accordingly, a carpet in class LC1 absorbs more than 10 dB, one in class LC2 more than 20 dB and carpets from class LC3 more than 25 dB of the impact sound generated.

# stair suitability

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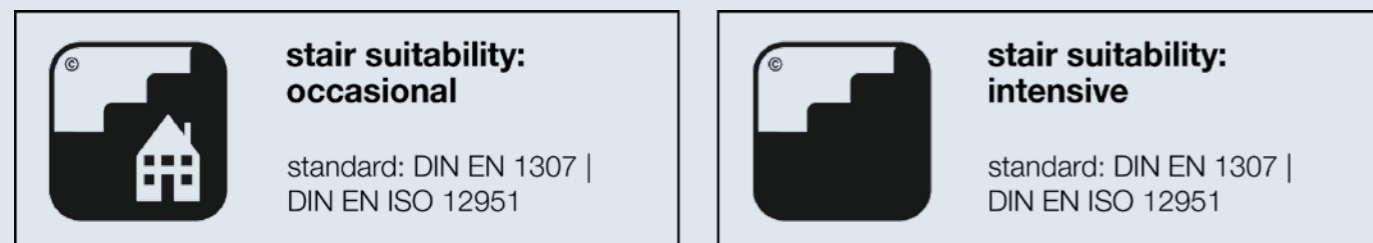


Fig. 23: stair suitability

If the floor covering is **suitable for occasional use on stairs**, the carpet is sufficiently abrasion-resistant at the edge of the stairs for **moderate use**. It is only recommended for **domestic areas**. If the floor covering has an **intensive stair suitability rating**, it is also sufficiently abrasion-resistant at the edge of the stairs for **heavy and permanent use** and is suitable for installation in **commercial areas**.

testing p. 46

# castor chair suitability



Fig. 24: castor chair suitability

If the floor covering has a **chair castor suitability rating of „occasional“**, it remains visually appealing with **moderate use by office chair castors**. It is only recommended for **domestic use**. If the floor covering has an **„intensive“ chair castor suitability rating**, it remains visually appealing even with **heavy and constant use by chair castors** and is also suitable for installation in **commercial areas**.

# COLOUR FASTNESS

testing p. 48

# colour fastness to light



Fig. 25: colour fastness to light

A floor covering is lightfast if it is **colourfast when exposed to natural light**. The colour result is rated with a value between 1 (= very low) and 8 (= excellent). From a test score of 5, the floor covering is suitable for commercial use.

testing p. 50

# colour fastness to water



Fig. 26: colour fastness to water

The floor covering has colour fastness to water if it **does not lose any colour and also does not stain anything else**. Water resistance is assessed with a value between 1 (= very low) and 5 (= excellent). From a test score of  $\geq 4$  for discolouring and  $\geq 2-3$  for staining, the floor covering is suitable for commercial use.

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# colour fastness to rubbing



Fig. 27: colour fastness to rubbing

A textile floor covering has colour fastness to rubbing if it **does not lose colour or stain other fabrics when subjected to mechanical stress in dry or wet condition**. Both the dry and wet rubbing fastness is assessed with a value between 1 (= very low) and 5 (= excellent). From test scores of  $\geq 3-4$  for dry rubbing fastness and  $\geq 3$  for wet rubbing fastness, the floor covering can be used in commercial areas.

All colour fastnesses (to light, to water, to rubbing) are assessed using a **standardised contrast scale**, the **grey or blue scale**. These are explained at the beginning of the „test procedures“ section.

scales p. 40

testing p. 54

# resistance of cut edges



Fig. 28: resistance of cut edges

If the floor covering has a high resistance of cut edges, it remains attractive at the cut edges during installation and in use, i.e. the **backing does not delaminate**, it **does not lose loops** and **does not fray**. This property is particularly important when the carpet is used for modules.

# slip resistance



Fig. 29: slip resistance

Slip resistance is guaranteed if the floor covering has a **dynamic coefficient of friction of  $\geq 0,3$  in dry and wet condition**, i.e. there is **sufficient grip on the floor covering for the user to prevent slipping**. The new symbol now additionally contains the coefficient of friction as a numerical value.

**Carpet always fulfils this requirement.**



testing p. 56

# thermal resistance



Fig. 30: thermal resistance

The symbol indicates that the adjacent measured value for the thermal resistance of the carpet was determined at a room temperature of 23 °C. The thermal resistance indicates **how well a material can be penetrated by heat** (low thermal resistance = fast/good penetration, high thermal resistance = slow/poor heat conduction). If the thermal resistance is  $\leq 0,17 \text{ m}^2\text{K/W}$ , it can be assumed that the floor covering does not significantly slow down the spread of heat by the underfloor heating. In this case, the old symbol with underfloor heating can often still be found.

# ACOUSTICS

No other floor covering can have such a positive influence on room acoustics as carpet! While hard floors largely reflect sound waves (echoing in the same room) or transmit them through the adjacent and surrounding building architecture (your neighbour hears you walking), even a conventional carpet absorbs more sound than, for example, a laminate floor with impact sound insulation laid underneath. This has a positive effect on both attenuation (reduction of sound volume and echo in the same room) and insulation (reduction of sound transmission to neighbouring rooms). By consciously designing the carpet pile and backing, it is possible to influence not only the degree of sound reduction (dB) but also the affected frequency range (Hz).

> We will be happy to provide you with further information on this topic in a personal consultation or in our „Acoustics“ Infoguide.

## What is needed in my situation?

To keep it simple: the neighbour or hotel guest **below** you will be grateful for the **impact sound reduction**, and good **sound absorption** will benefit you and your colleagues **in the same** open plan office.

testing p. 58

# impact sound re- duction $\Delta L_w$



Fig. 31: impact sound reduction

The floor covering **reduces the volume of all sounds transmitted through the architecture** into neighbouring rooms by the specified dB value. The impact sound level in the room below is measured.

testing p. 60

# sound absorption $\alpha_w$

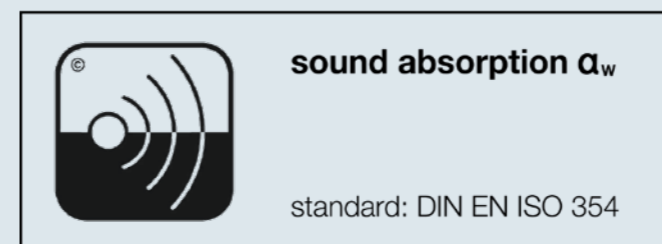


Fig. 32: sound absorption

Conversations or music generate airborne sound in the room. The sound absorption coefficient  $\alpha_w$  is a maximum of 1 (= 100%) and indicates **how much of the airborne sound is absorbed** by the floor covering. The  $\alpha_w$  value summarises 18 measured individual values for different frequency ranges, the  $\alpha_s$  values, and forms an average. It is **not possible to deduce** from the  $\alpha_w$  value alone **which frequencies** are attenuated to what extent.

# ELECTRICAL BEHAVIOUR

By walking on a floor with shoe soles or by friction of clothing when sitting, materials become statically charged. The spontaneous discharge in the form of a low electric shock (such as when touching a car door or a door handle) can be unpleasant but also harmful to people and/or sensitive electronics or trigger dangerous chemical reactions. To ensure that this charge does not exceed a dangerous level, for special room utilisation concepts **antistatic**, **dissipative** or **conductive** flooring (sometimes also carpeting) is used. For example:

- in intensive care rooms such as operating rooms
- in laboratories
- in server rooms
- in the industrial production of highly sensitive components
- in the processing of fuels and solvents
- in the generation of flammable or explosive dusts, gases and compounds

A distinction is made between **conductive** and **dissipative** floor coverings according to their vertical resistance. Whether a floor covering should be earthed can be found in the installation recommendation, but depends primarily on the context in which it is installed. If a carpet is to be earthed, this must always be carried out by specialised professionals. For this purpose, it is usually bonded to a copper tape net using conductive glue and this is connected to a potential equalisation system by an electrician. Other earthing installation systems are also possible; the decisive factor is the functionality of the overall structure and compliance with applicable standards.

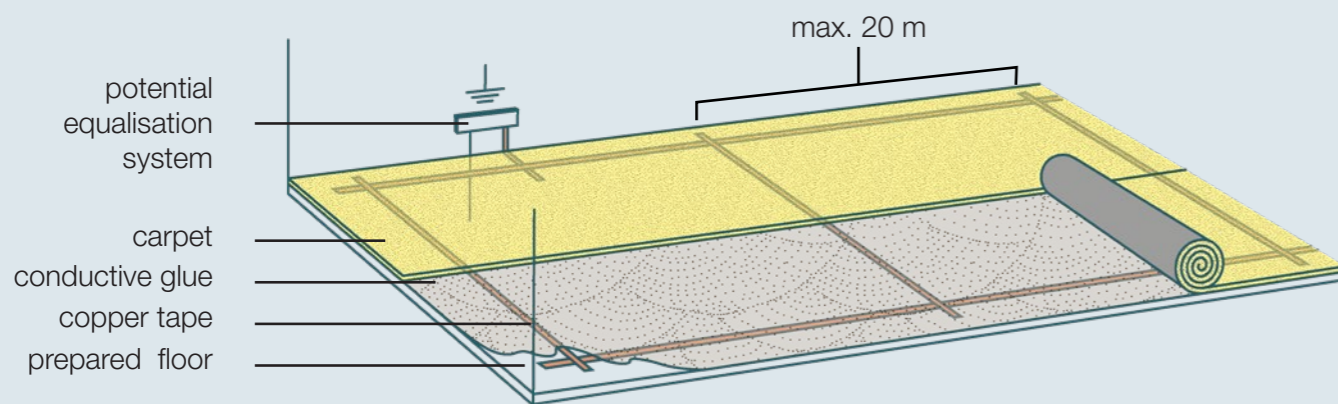


Fig. 33: installation example conductive carpeting

## antistatic

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Fig. 34: antistatic

The floor covering is considered antistatic if the measured **body voltage of a person** walking on it is **below 2 kV**.

## electrostatic discharge (ESD)



Fig. 35: electrostatic discharge

If the measured **vertical resistance** of the floor covering to current flow is  $\leq 10^9 \Omega$  (1.000.000.000  $\Omega$ ), it is considered **electrically dissipative**. Connection to potential equalisation is recommended.

Conductive floor coverings are sufficient for rooms with electronic devices such as data centres.

If the measured **vertical resistance** of the floor covering to current flow is  $\leq 10^6 \Omega$  (1.000.000  $\Omega$ ), it is considered **electrically conductive** and leads off the voltage even faster as electricity. This requires connection to a potential equalisation system.

Conductive floor coverings are used, for example, in areas with unprotected electronic components, explosive substances, laboratories and medical facilities.

# reaction to fire

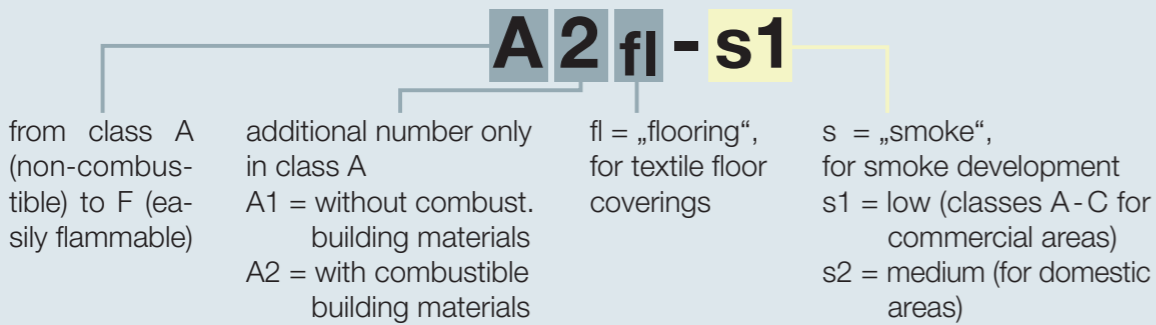
testing p. 64

Floor coverings used in commercial buildings are classed as construction products and are therefore subject to the Construction Products Regulation, which defines the fire protection classes. Fire protection classes A1fl and A2fl-s1 (non-flammable) only apply to mineral hard floors, while **the highest possible fire protection classes for textile floor coverings are Bfl-s1 and Cfl-s1** (flame-retardant), which permit installation in **commercial areas**.

> All Halbmond carpets achieve classes Bfl-s1 or Cfl-s1.

# WHERE DOES THE DATA IN THE DATA SHEET COME FROM?

> Our carpets are tested in our in-house Halbmond laboratory during development, prior to market launch and also during production. In addition, tests that require specially equipped rooms or special machines or that have to be carried out by independent third parties can be carried out by external laboratories. The tests are repeated at regular intervals or when the production process changes in order to ensure long-term compliance with the legal requirements and the continuation of the certified quality. And now you can see how we test...














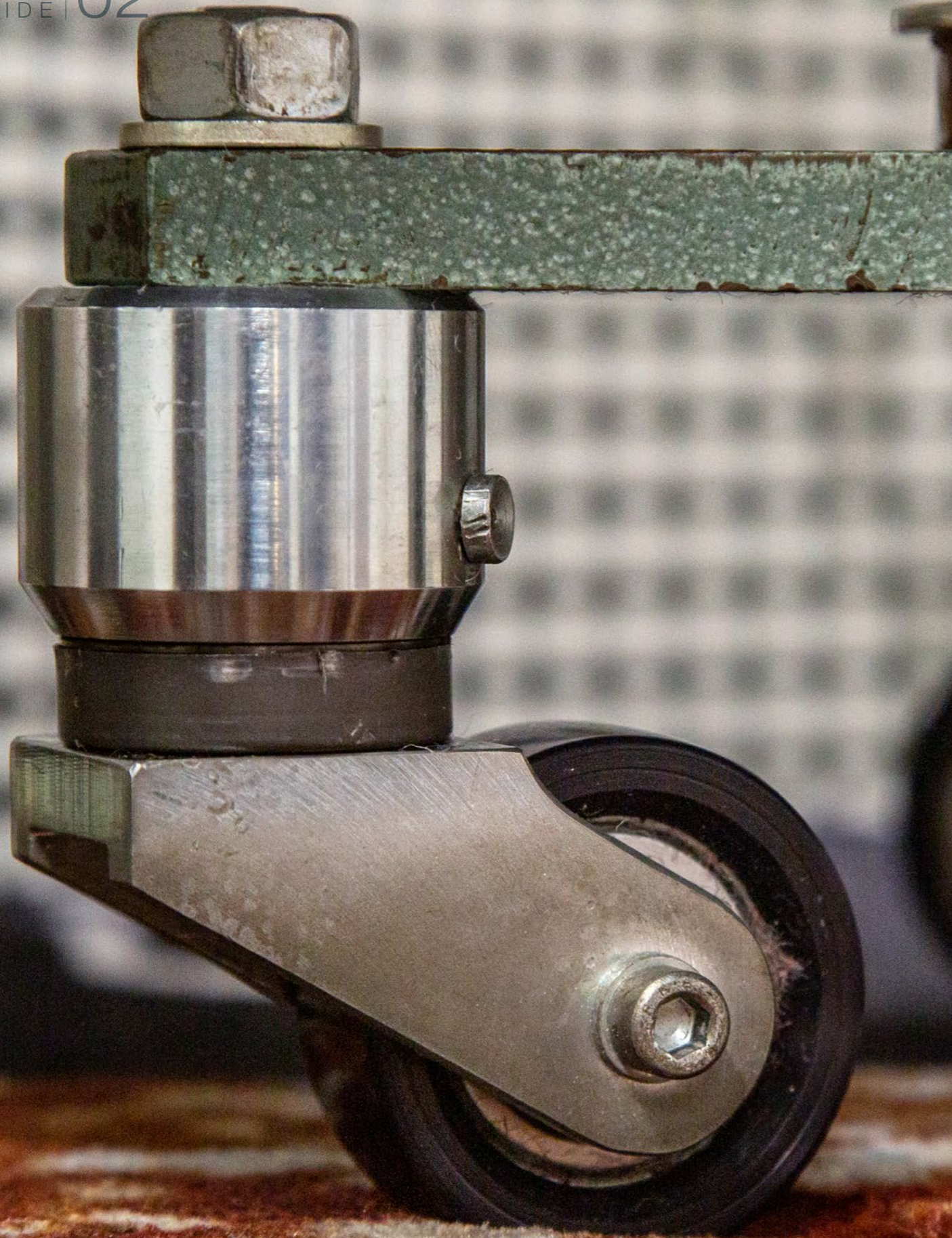
Building authority requirement		Fire protection class according to standard DIN EN 13501-1	
COMMERCIAL (31-33)	non-combustible	 	A1fl A2fl-s1 <b>not relevant for textile floor coverings (only fulfilled by mineral hard floors)</b>
	flame-retardant	 	Bfl-s1 Cfl-s1
DOMESTIC (21-23)	normally flammable	     	A2fl-s2 Bfl-s2 Cfl-s2 Dfl-s1 Dfl-s2 Efl
	easily flammable		Ffl

Fig. 36: fire protection classes



# TEST PROCEDURES



# grey and blue scale

In order to be able to assess changes in the colour, brightness and structure of textiles after exposure as objectively as possible, there are standardised contrast scales for comparison: the grey and blue scale.

## The grey scale - universal

The grey scale is available in 2 versions. If the colour change (e.g. discolouring or fading) of a textile is to be assessed, the dark grey scale is used for comparison, while the light version is used to assess the staining of an adjacent fabric. Each of the two grey scales consists of standardised contrast pairs, which represent colour fastness from 1 (very low) to 5 (very high) in half steps. In the contrast pair, which corresponds to grade 5, no difference can be recognised between the two sides, i.e. the light scale shows two identically light samples, the dark scale two identically dark ones. The contrast pair with a grade of 1 shows a very clear contrast between the two samples, which would correspond to strong staining or strong fading.

The stressed test specimen to be evaluated (carpet or adjacent fabric) is compared with its unstressed original sample and the contrast pair of the grey scale is selected which has an equally large difference in brightness between the two colour fields. If, for example, it is the sample pair with a score of 4, the test specimen can be assessed with a score of 4 for **colour fastness to water or rubbing**.

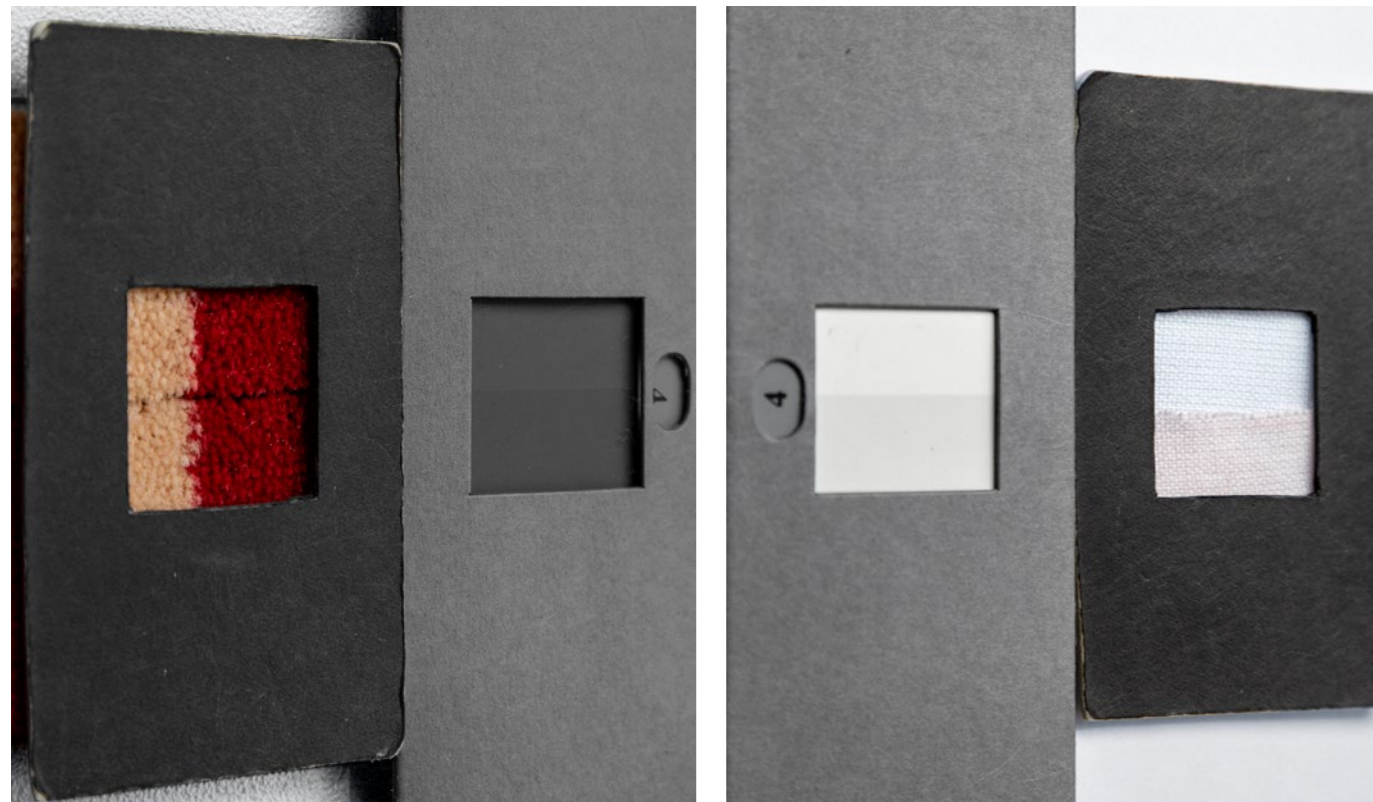


Fig. 38: carpet test specimen and dark grey scale Fig. 39: adjacent fabric and light grey scale

## The blue scale - always new

The blue scale, also known as the wool scale or light fastness standard, is used to assess the colour changes of a textile test specimen in comparison to its unclaimed original. It consists of 8 standardised wool fabric samples, each corresponding to a light fastness level. A new blue scale is exposed during each test and cannot be used again after this. Depending on the exposure or weathering conditions, both the test specimens and the wool samples fade more or less, which is why only a comparison between the test specimens and the blue scale from the same test run may be made.

For this purpose, both the test specimens and the blue scale are placed in templates, each covering about half of the specimen, i.e. protecting it from influences. All samples must be exposed to light or weathering in the prescribed manner in terms of duration and source and then removed from the templates. Each test specimen and each wool sample now has an original and a faded section. If, for example, the contrast of the test specimen is comparable to that of the blue scale sample 5, a grade of 5 for **colour fastness to light** can be awarded.



Fig. 40: test specimen and blue scale before exposure Fig. 41: test specimen and blue scale after exposure

# use class

> To determine the use class of a carpet, Halbmond carries out a drum test with the Vettermann drum in accordance with the ISO 10361 standard.

A short-term test with 5.000 rotations and a long-term test with 20.000 rotations are carried out for each carpet. First, all test specimens are labelled with the order number, target number of rotations and stroke direction. Those that are to be subjected to 5.000 rotations are then fixed in the Vettermann drum with the pile side towards the centre of the drum. A steel ball with 14 rubber stamps is placed inside, the drum is closed and the counter is set to 5.000 rotations. After around 5 ½ hours, the test specimens can be removed. The remaining test specimens are tested in the same way for 20.000 rotations, which takes around 21 hours.

Both samples are evaluated independently by at least 3 people in accordance with the DIN EN 1307 standard, whereby a subjective grade is first given for any changes in structure, roughness, colour and pattern. In addition, the colour change between the test specimen and the untested original is determined using a grey scale and offset with the subjective grade. Finally, a recommendation can be given for the use of the carpet in domestic (21-23) or commercial (31-33) areas.

Fig. 43: steel ball with rubber stamps in Vettermann drum

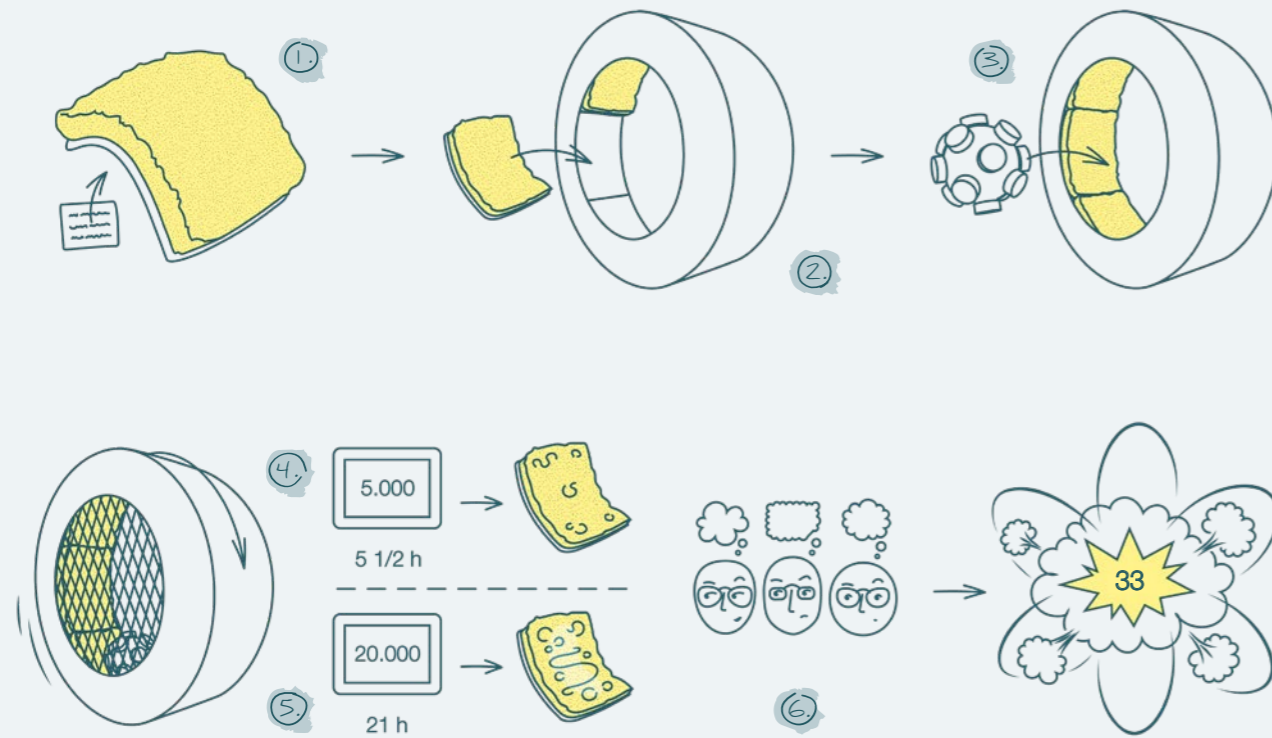


Fig. 42: testing use class



# stair suitability

> The suitability of a carpet for laying on stairs is determined at Halbmond using a treadwheel test device based on the DIN EN ISO 12951 standard.

For this purpose, a rectangular, elongated test specimen must first be cut to shape and fixed to the test table under a constant pre-tension. Carpets whose primary backing layer is already visible when the product is bent around the edge of the test table are generally considered unsuitable for use on stairs (unless this is part of the design). The treadwheel now moves back and forth in 2.000 revolutions along the same path up to the edge of the machine, simulating the typical walking situation of a staircase with shoe soles.

After removal of the test specimen, independent assessment is carried out by at least 3 inspectors. With the aid of a metal angle, the test specimen is bent by 90° so that the now clearly visible edge area can be compared with the flat, also stressed pile area and examined for damage or visibility of the primary backing layer, yarn, pattern and contrast changes, fraying, nap loss and, where necessary, loop destruction. A corresponding recommendation for occasional or intensive use is derived.



Fig. 45: treadwheel test device

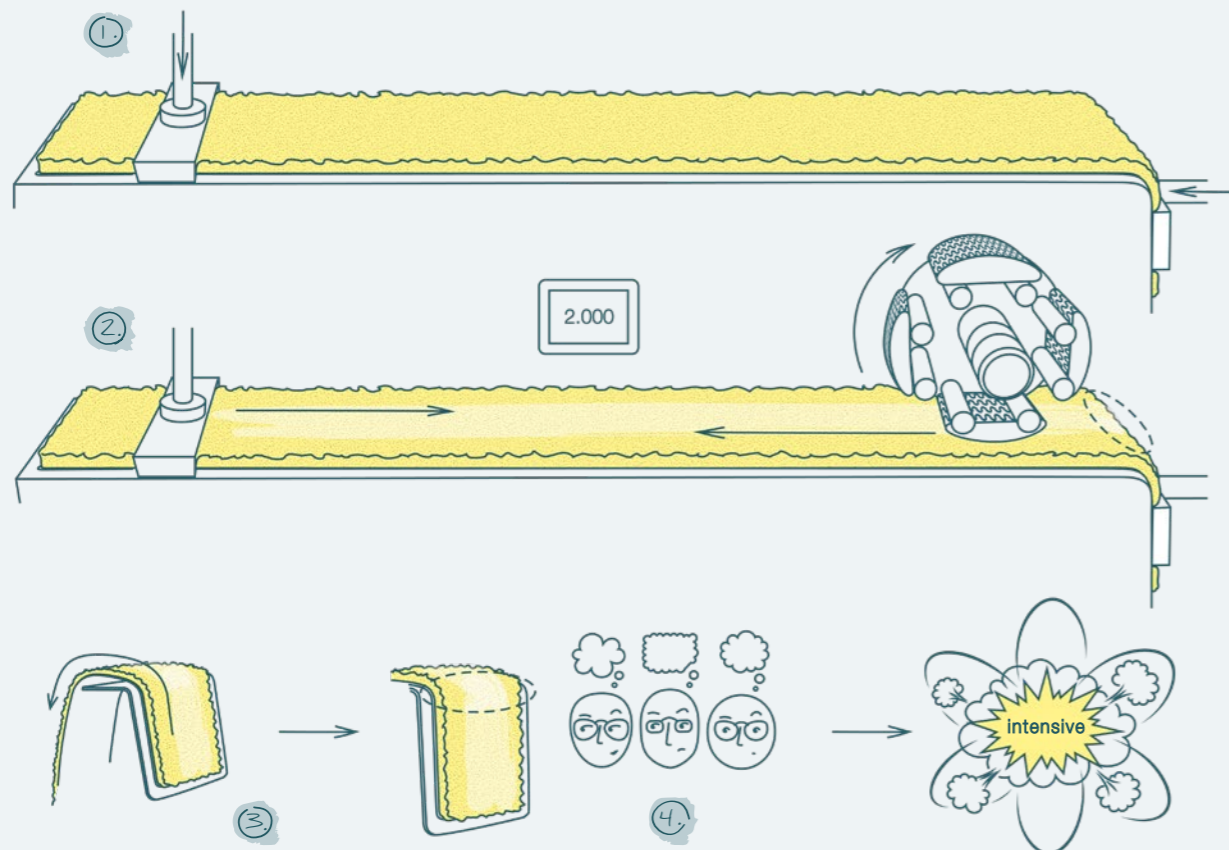


Fig. 44: testing stair suitability

# castor chair suitability

> The resistance of a carpet to abrasion from the castors of an office chair is tested at Halbmond using a chair castor test device based on the DIN EN ISO 4918 standard.

First, two round test specimens must be cut out of the carpet and divided into four semi-circles, one of which is subjected to the movements of the chair castors for 5.000 rotations, a second for 25.000 rotations of the support table and a third is held back as a comparison specimen (a fourth runs along for technical reasons). A carrier plate must be fitted with two test specimens and inserted into the testing machine, the roller holder lowered onto the carpet and the machine put into operation. After 5.000 rotations, approximately 4 ½ h, the first test specimen must be replaced by a placeholder to ensure a consistently uniform height level. The 25.000-tour test specimen is subjected to a further 20.000 rotations, approximately 17 ½ h, and then removed.

Both samples are evaluated independently by at least 3 people, whereby a subjective grade is first awarded for any changes in structure, roughness, colour and pattern. In addition, the colour change between the test specimen and the untested original is determined using a grey scale and combined with the subjective grade. Finally, a recommendation for the use of the carpet can be derived.

Fig. 47: chair castor tester

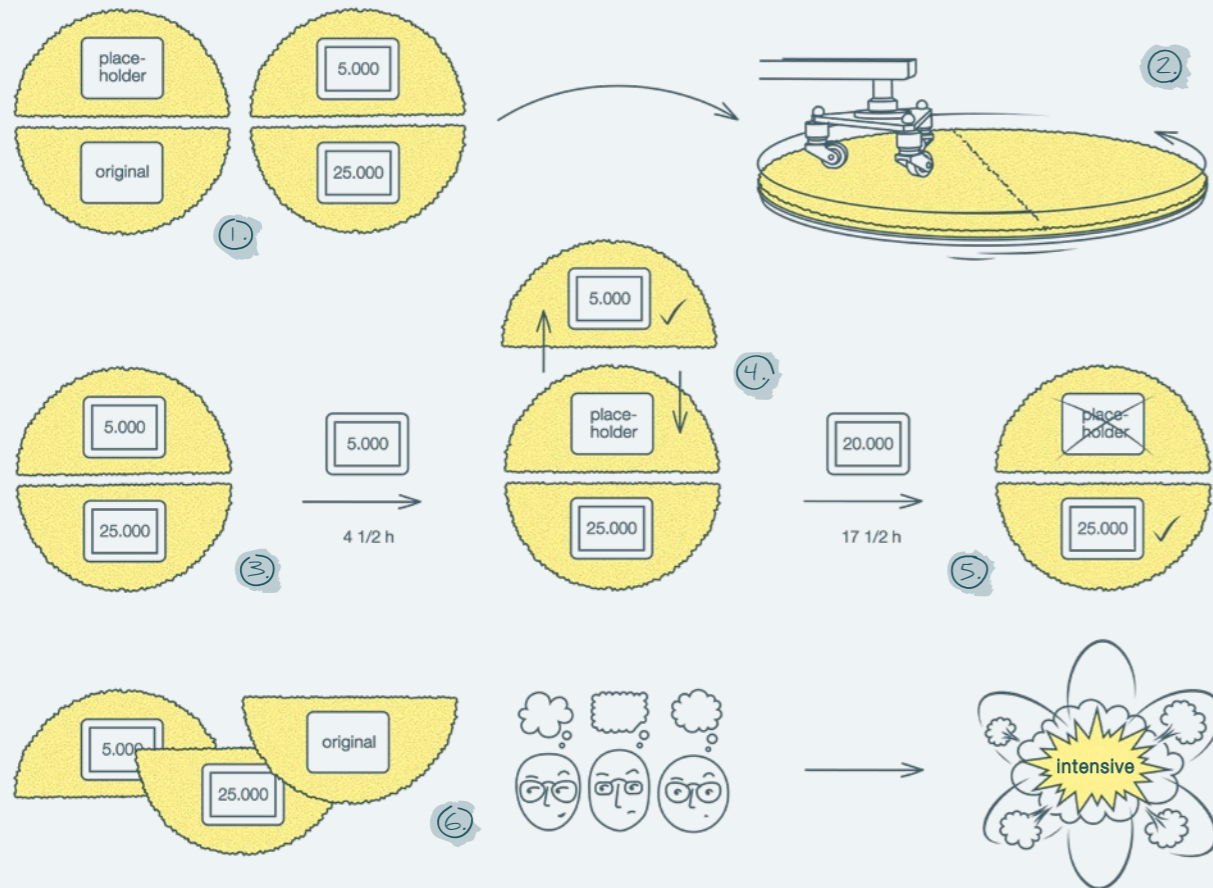


Fig. 46: testing castor chair suitability



# colour fastness to light

> To determine the colour fastness of a textile when exposed to artificial xenon arc light, a xenotest is carried out at Halbmond in accordance with the DIN EN ISO 105-B02 standard.

Firstly, the backs of all 37 test specimens must be numbered. The samples and a blue scale for later comparison are fixed in sample carriers using a cover plate. Half of the upper sides to be tested are covered by the cover plate, i.e. protected from light. The test device is then loaded with the test specimens and the reference specimen and switched on. After an irradiation time of 96 hours, the test specimens can be removed and assessed after a further 24 hours of air conditioning.

The independent assessment by at least 3 persons is carried out using the exposed blue scale. If the exposed and unexposed halves of the test specimen show the same contrast as the exposed and unexposed halves of the blue scale specimen with fastness 5, the test specimen is awarded a grade 5 and is authorised for commercial use.

Fig. 49: test specimens in the „Xenotest 220“ test device

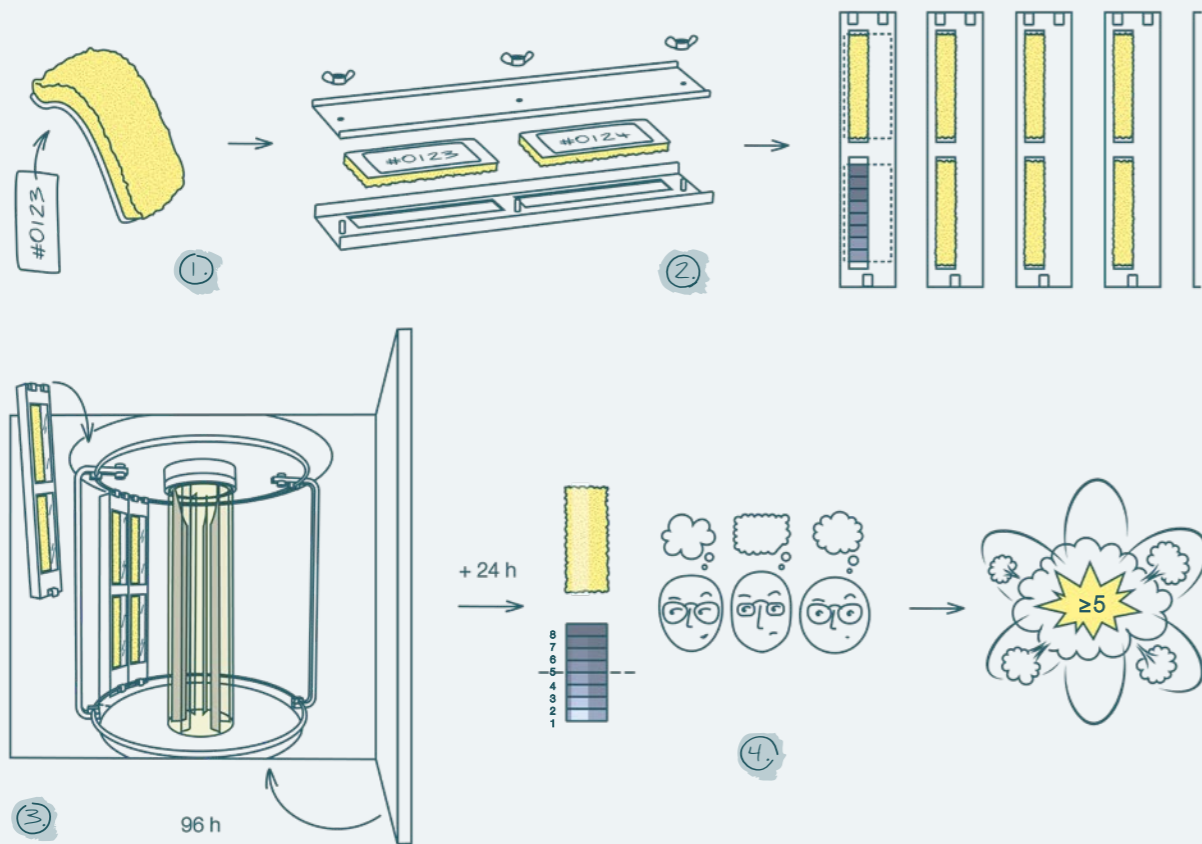
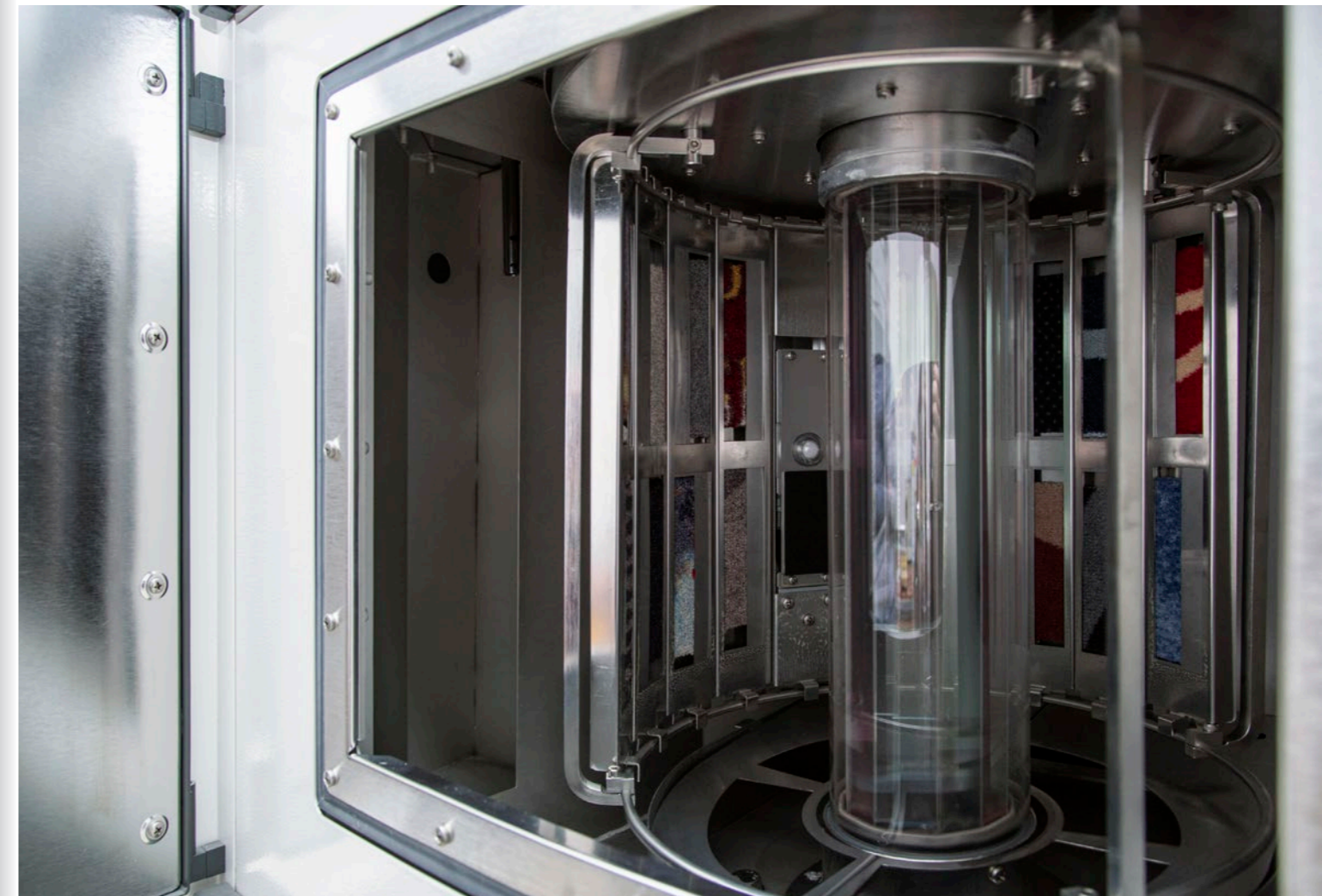


Fig. 48: testing colour fastness to light

# colour fastness to water

> If the colour fastness of a carpet against staining on other textiles when wet is to be determined, this is carried out at Halbmond in accordance with the DIN EN ISO 105-E01 standard.

Generally, an adjacent fabric made of cotton is used. If the carpet pile is made of polyamide or a polyamide-wool blend, the staining of a polyamide and, if necessary, woollen adjacent fabric is also tested. As many test specimens as adjacent fabrics must be cut to size and stapled together in pairs. After wetting with distilled water, ten test specimens are stacked in the test device - the perspirometer - separated by acrylic resin plates, weighted down with a cover plate and covered. The stack of samples is stored in the drying cabinet at 37°C for 4 hours, then removed, the samples are separated again and the adjacent fabric (still attached to the respective test specimen) is dried thoroughly at max. 60°C.

Both the test specimen and the adjacent fabric must be assessed by at least 3 persons. The test specimen is examined for discolouration, the adjacent fabric for staining and their contrast to the respective untreated original is assessed using the corresponding grey scale. For the object area, the mark for discolouration should be  $\geq 4$ , that for staining  $\geq 2-3$ .

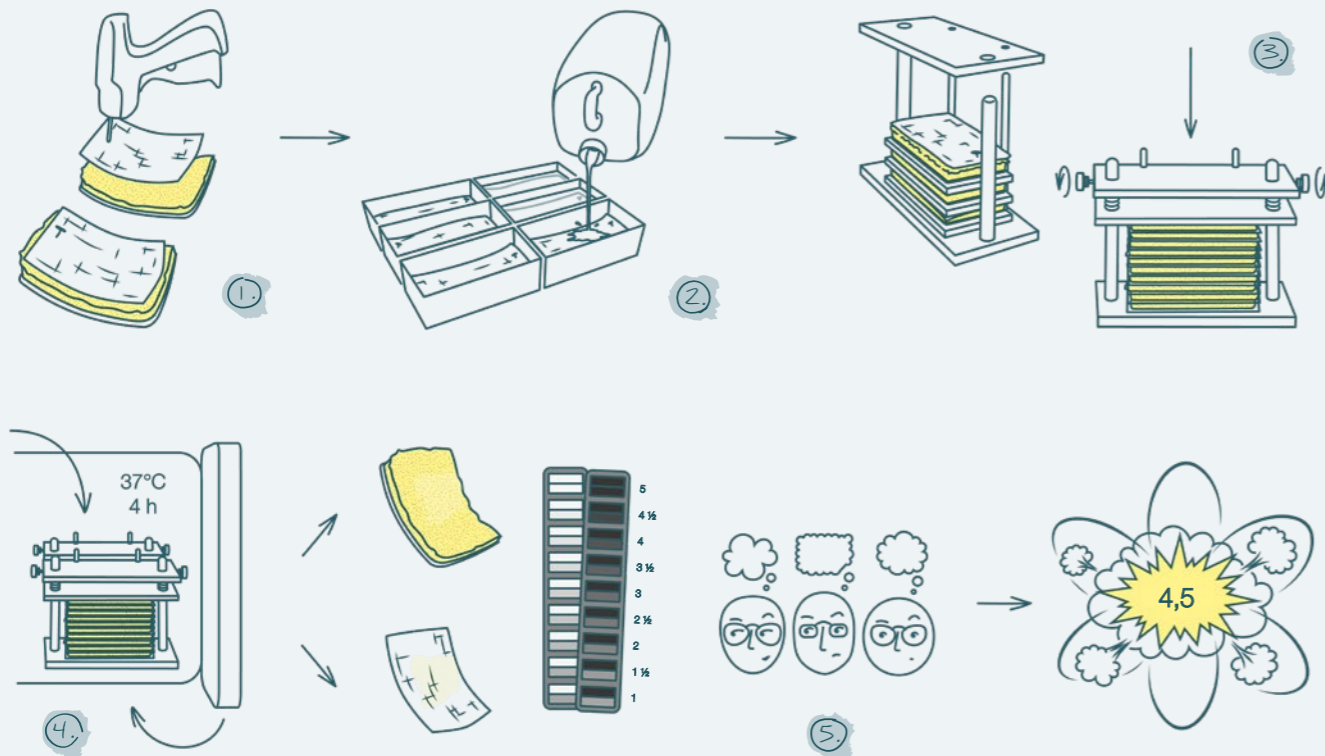
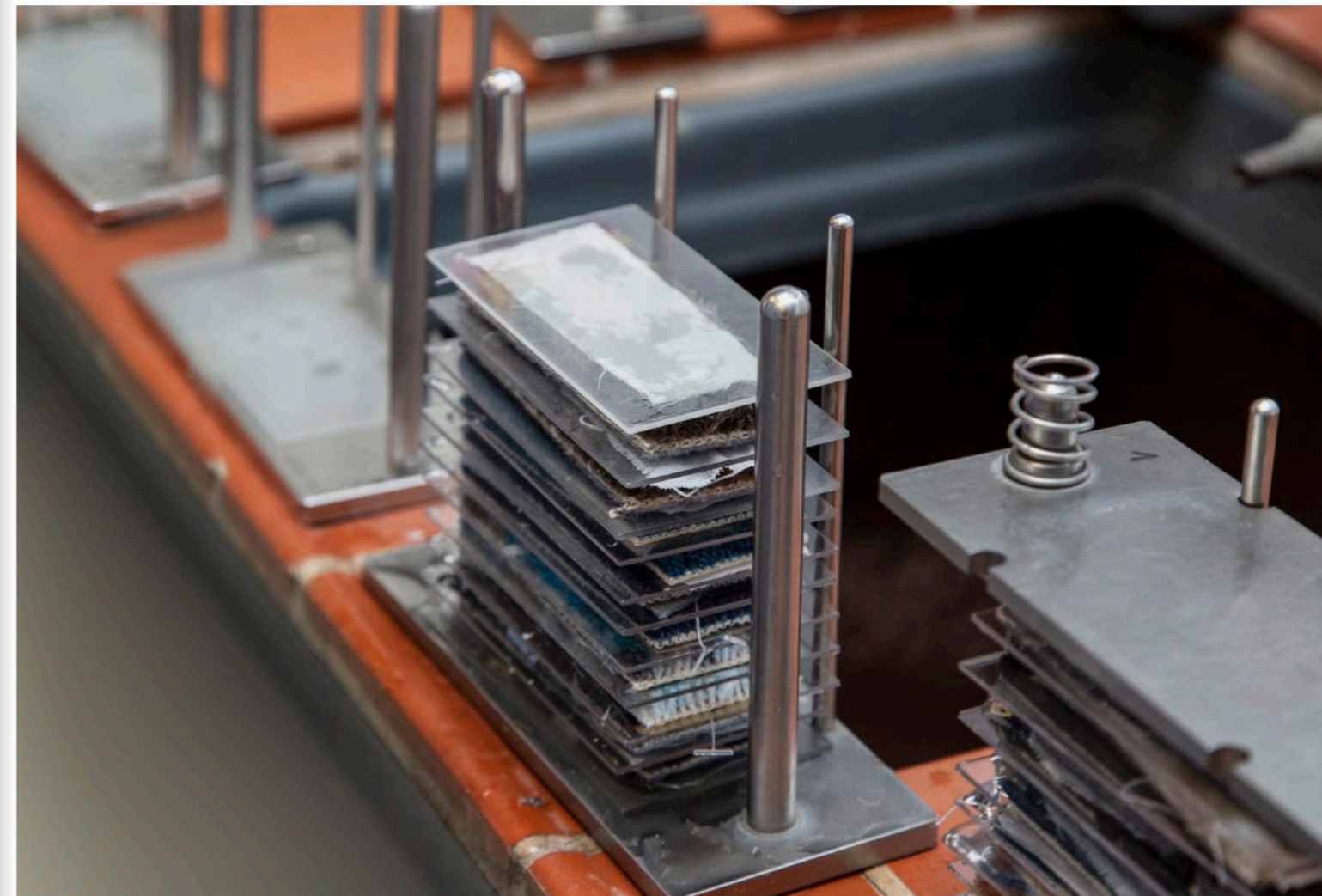


Fig. 50: testing colour fastness to water

Fig. 51: sample stack of test specimens and acrylic resin plates



# colour fastness to rubbing

> To determine the colour fastness to rubbing - i.e. the colour fastness of a printed carpet to other textiles when subjected to mechanical stress in dry and wet conditions - Halbmond carries out a test using the Crocktester in accordance with the DIN EN ISO 105-X12 standard.

Two adjacent fabrics made of cotton are required for each test specimen, one of which must be soiled in distilled water before the test begins. The carpet is then inserted into the test device, the test pin is covered with a dry piece of cotton and also inserted. When the test begins, the test pin moves over the carpet ten times. The test specimen remains in the test device while the test pin can be removed to change the fabric. The procedure is repeated in the same way with a wet piece of cotton. After the wet adjacent fabric has dried in the air, each of the two pieces is stretched over a white cardboard card.

An independent assessment is carried out by at least 3 people using a grey scale. Each of the adjacent fabrics is assessed individually for staining. The dry rubbing fastness should be  $\geq 3-4$  and the wet rubbing fastness  $\geq 3$  for commercial use.

Fig. 53: rubbing fastness testing device „Crocktester“

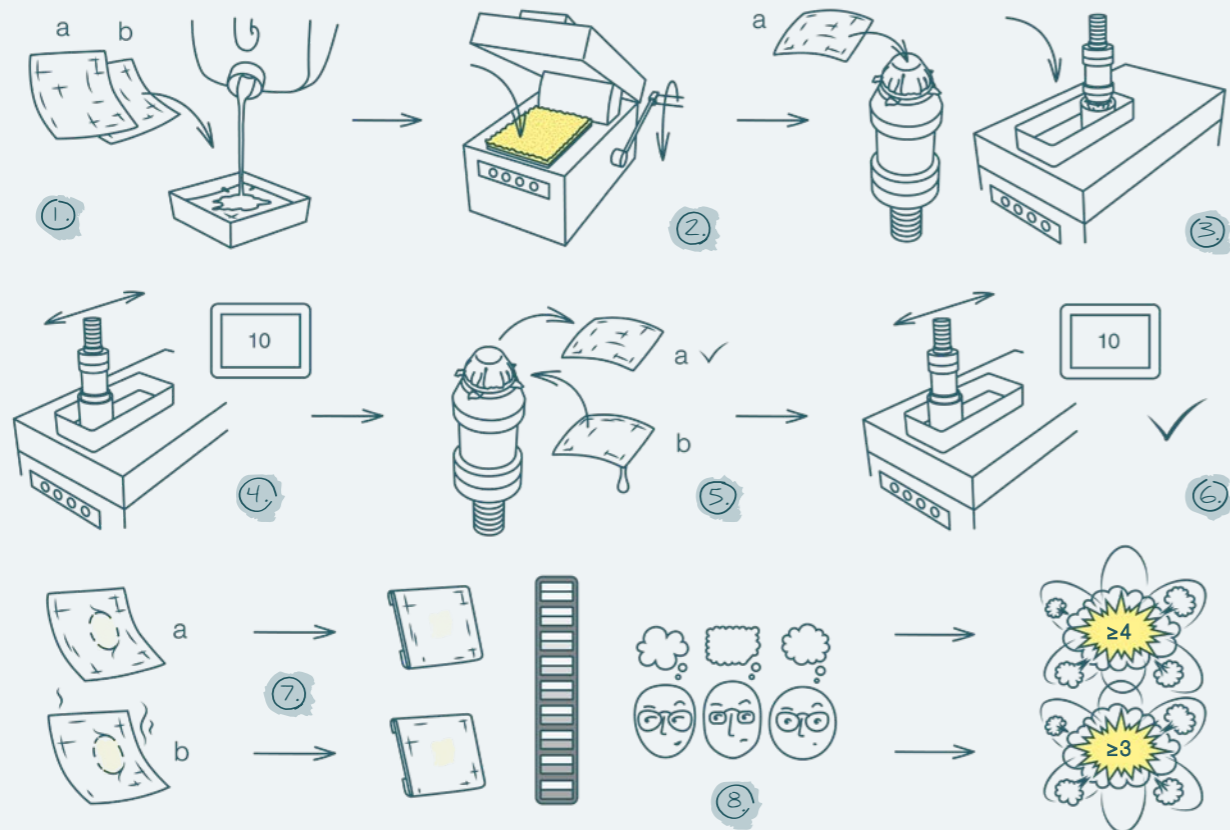


Fig. 52: testing colour fastness to rubbing



# resistance of cut edges

> The resistance of cut edges of carpets can be determined at Halbmond using the modified Vettermann drum test in accordance with DIN EN ISO 10833.

For this purpose, rolls and modules are prepared differently. In both cases, the carpet is cut into rectangular, elongated shapes. The long edges of two pieces are laid close together and joined with adhesive tape from the back, the short edges must also be wrapped with tape. To test modules, 2 such pairs - one in the longitudinal direction, one in the transverse direction - are cut to size. This simulates the installation situation of the modules in the building. The test specimens must now be fixed in the Vettermann drum with the pile layer facing inwards. A heavy steel ball with 6 rubber stamps is placed inside, the drum is closed and set in motion. After around 11 ½ hours and 11.000 rotations, the test specimens can be removed, thoroughly vacuumed and assessed by at least 3 people.

If no changes in the appearance of the cut edge (fraying, overhanging of nubs or threads, delamination of the secondary backing) are recognisable, a test score of 5 can be awarded. A significant impairment of the appearance corresponds to test grade 1.

Fig. 55: carpet test specimens in the „Vettermann drum“

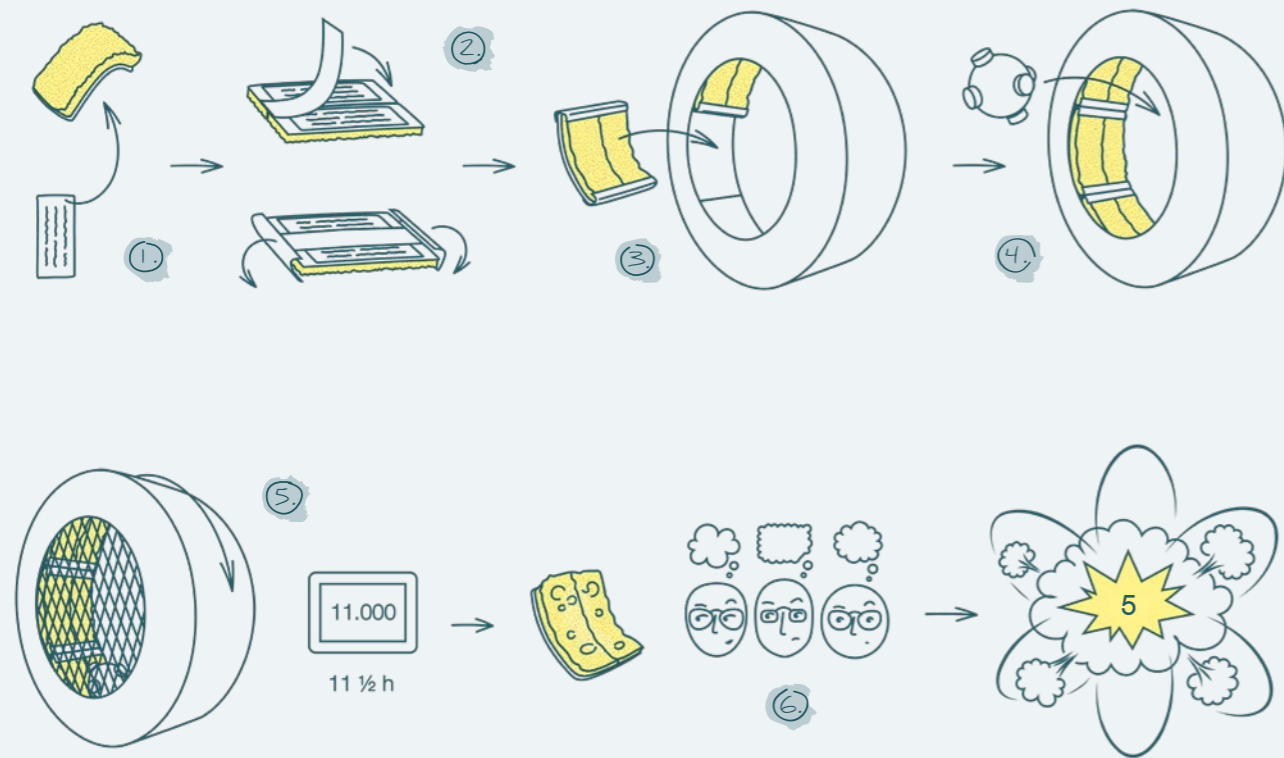
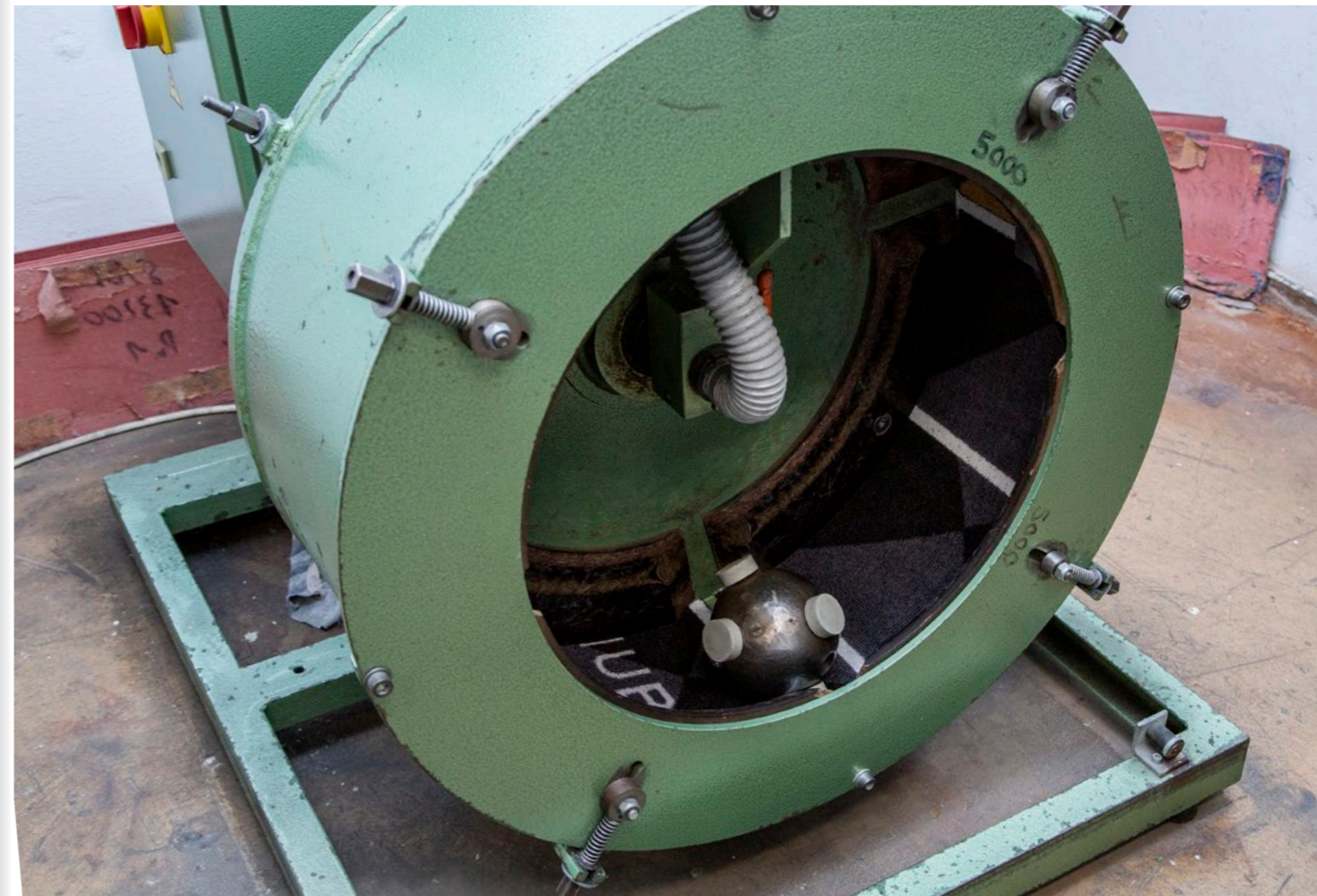


Fig. 54: testing resistance of cut edges



# thermal resistance

> At Halbmond, the test procedure for determining the thermal resistance of a carpet can be carried out using the plate device and the heat flow measuring plate device in accordance with the DIN EN 12667 standard.

For this purpose, a heating panel, a heat flow measuring plate, a first temperature sensor, the carpet - with the pile layer facing upwards -, another temperature sensor and various weighting layers are first stacked on appropriate insulation. This simulates the structure of an underfloor heating system with a carpet laid on top. The laboratory power supply unit is now activated, set to the target values and the heating process begins. After 4 hours, the temperatures at the lower and upper temperature sensors can be read in °C and the heat flow in mV.

The thermal resistance can be calculated from these values and other factors using a formula; it is given in m<sup>2</sup>K/W. For laying the carpet over underfloor heating, it should be ≤ 0,17 m<sup>2</sup>K/W.

Fig. 57: test setup for thermal resistance

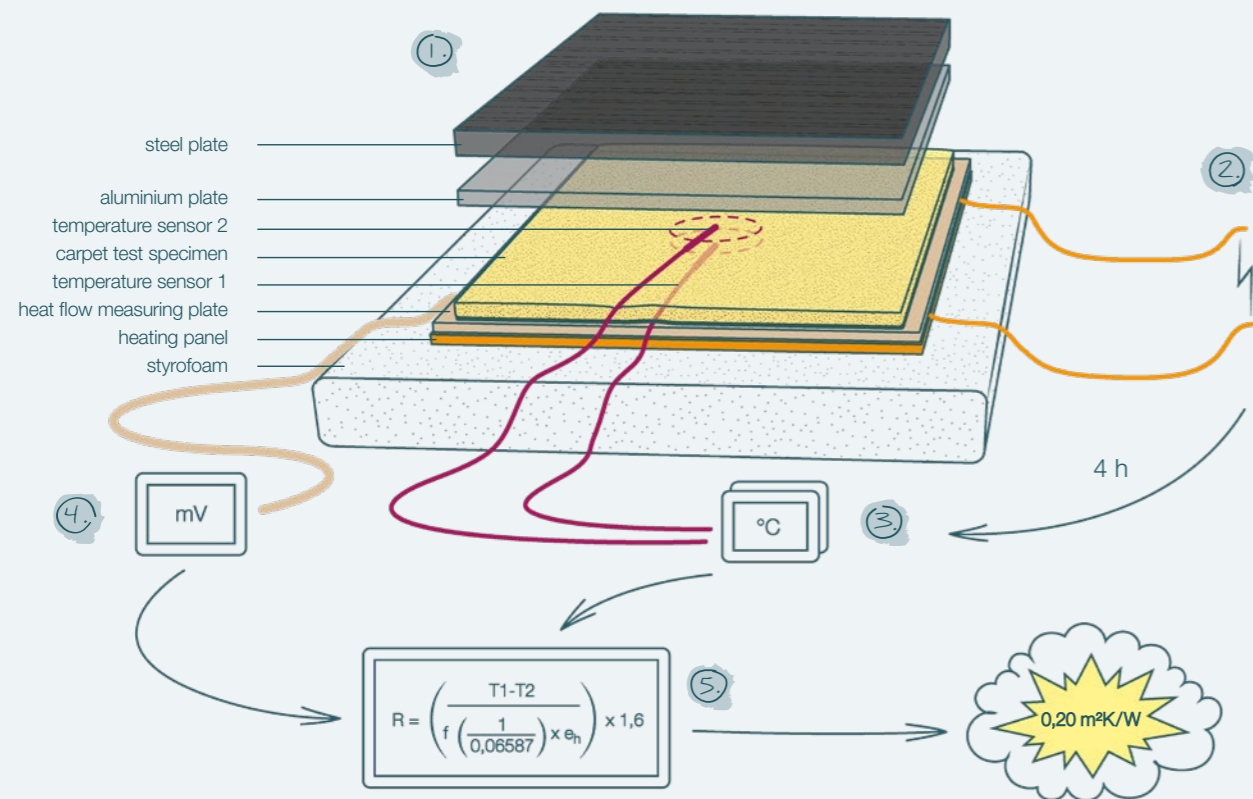


Fig. 56: testing thermal resistance



# impact sound reduction $\Delta L_w$

> The measurement of the impact sound reduction of a textile floor covering is commissioned externally by Halbmond in accordance with the DIN EN ISO 10140-3 standard.

To determine the impact sound reduction, 2 rooms located one above the other are required. The temperature of the separating ceiling should be 18 - 25 °C. The test specimen is laid in the upper transmitter room and a standardised tapping machine is positioned on it to generate impact sound. This tapping machine has 5 parallel hammers with a mass of 500 g each, which hit the existing surface with a total of 10 hits per second and thus reproducibly simulate walking on it by a person wearing shoes. In the receiving room below, the incoming sound pressure level is measured in a frequency range from around 100 to 5000 Hz. A standardised impact sound level with ceiling covering ( $L_n$ ) is measured. The test specimen is then removed from the transmitting room, the hammer mechanism is positioned in the same place as before and the measurement is repeated. The standardised impact sound level without ceiling covering ( $L_{n0}$ ) is determined. Several measurement runs are carried out on at least 3 test specimens. The difference between the standard impact sound levels  $L_{n0}$  and  $L_n$  describes the improvement in the impact sound insulation effect, i.e. the impact sound reduction due to the carpet or rug, and is given as the weighted single value  $\Delta L_w$  in dB.

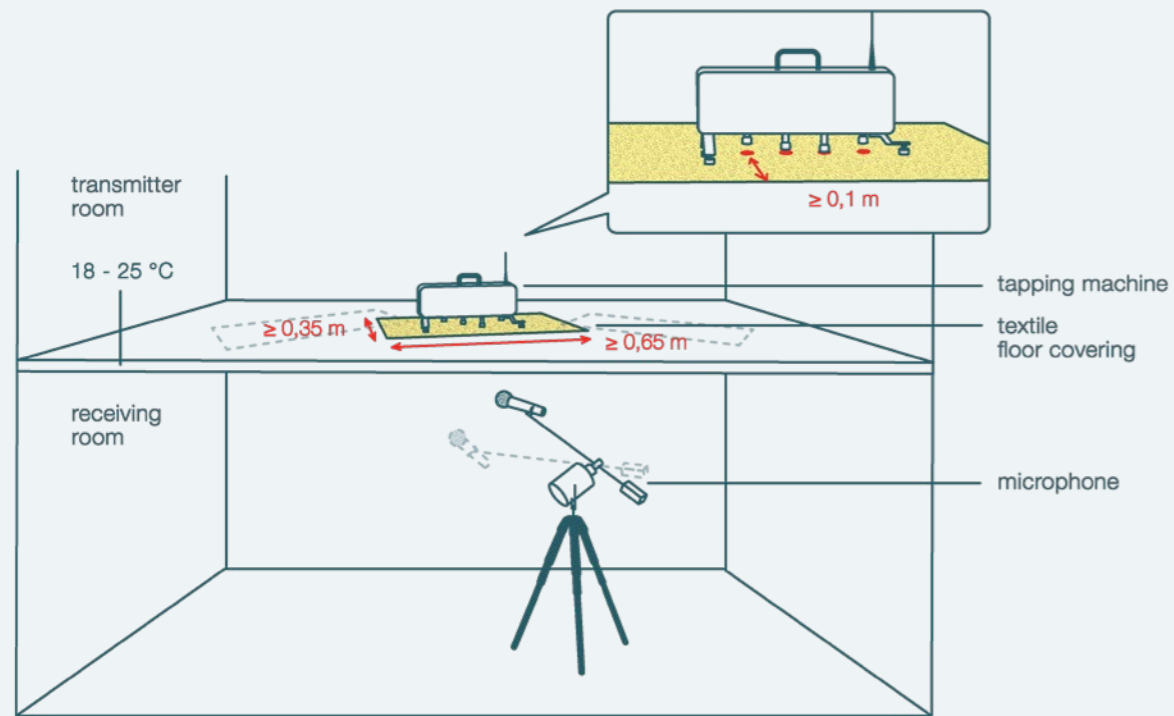


Fig. 58: testing impact sound reduction

Fig. 59: tapping machine in the upper test room during impact sound reduction test; source: TFI Aachen



# sound absorption $\alpha_w$

> The measurement of the sound absorption coefficient  $\alpha_w$  of a textile floor covering is commissioned externally by Halbmond in accordance with the DIN EN ISO 354 standard.

Measurements are carried out with and without the test specimen under the same ambient conditions (at least 15°C room temperature, 30 - 90 % relative humidity) and compared with each other in order to be able to derive the acoustic effect of the carpet. This must cover a floor area of 10 - 12 m<sup>2</sup> for a room size of around 200 m<sup>3</sup>. It must be positioned neither parallel to the edges of the room nor too close to them. Spherical sound sources and directional microphones are used, whose distance from the wall and object is also specified. The loudspeaker now generates sound waves whose decay after the sound source is switched off (reverberation time) is recorded and displayed as a decay curve. This decaying sound field must be sufficiently diffuse, which can be achieved by standing, hanging or rotating diffusers. A total of at least 12 different decay curves must be measured, each resulting from a different combination of at least 2 different sound source positions and 3 microphone positions. The sound absorption coefficient is then calculated for the third-octave bands from 100 - 5000 Hz ( $\alpha_s$  values) and additionally summarised in a weighted single value ( $\alpha_w$  value).

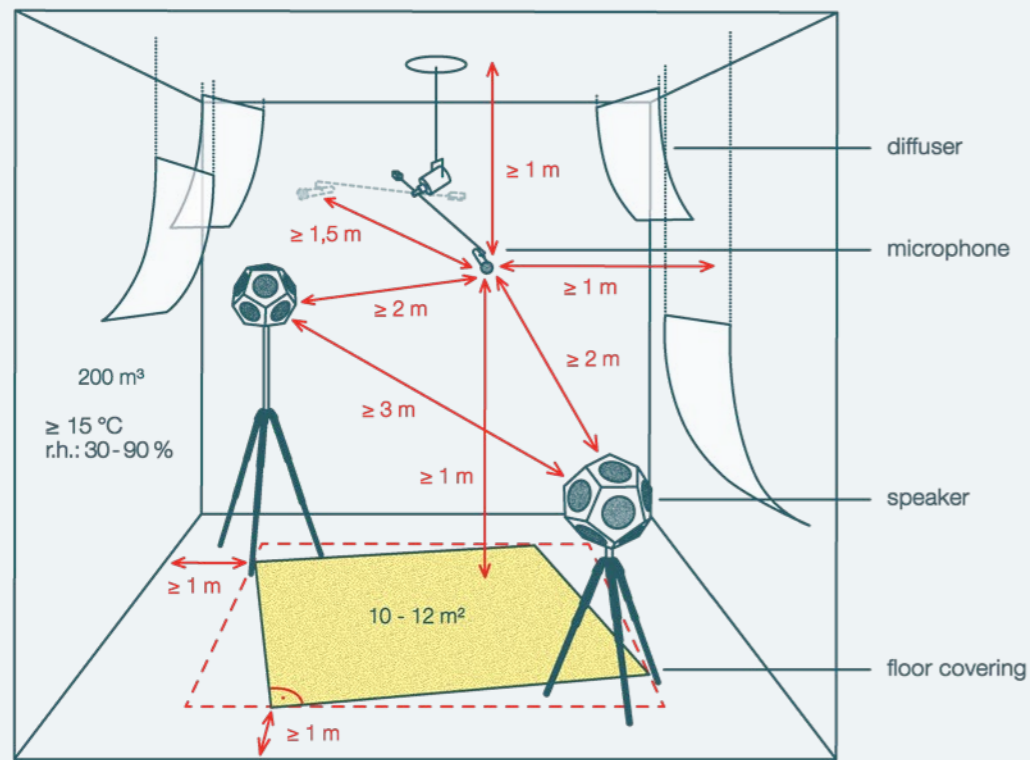


Fig. 60: testing sound absorption

Fig. 61: TFI echo room with loudspeakers, microphone, diffusers and test specimen; source: TFI Aachen



# electrical behaviour

> To determine the electrostatic behaviour - in this case the antistatic properties - of a carpet, Halbmond commissions an external walk-on test in accordance with the ISO 6356 standard.

The electrical chargeability of a floor covering depends not only on its structure but also, for example, its moisture and cleanliness, the relative humidity of the room, the sole material, walking style and weight of the person walking on it. The measured values determined in the laboratory do not necessarily reflect the real conditions of use after the floor covering has been laid, but they do allow comparison with other products tested in the same way. To guarantee this comparability, 2 standardised reference samples are tested first.

The test room has a temperature of 23 °C and a relative humidity of 25 %. The test person walks in standardised sandals with cleaned special soles on the previously air-conditioned and deionised test specimen, which is separated from the buried metal floor by a rubber mat. A specified inspection schedule must be followed and the inspection should ideally always be carried out by the same person. A hand electrode carried by the test person continuously measures their body tension. The procedure is repeated twice. Selected maximum values from all 3 passes are analysed. If the calculated average value is  $\leq 2$  kV, the carpet test specimen is considered antistatic.

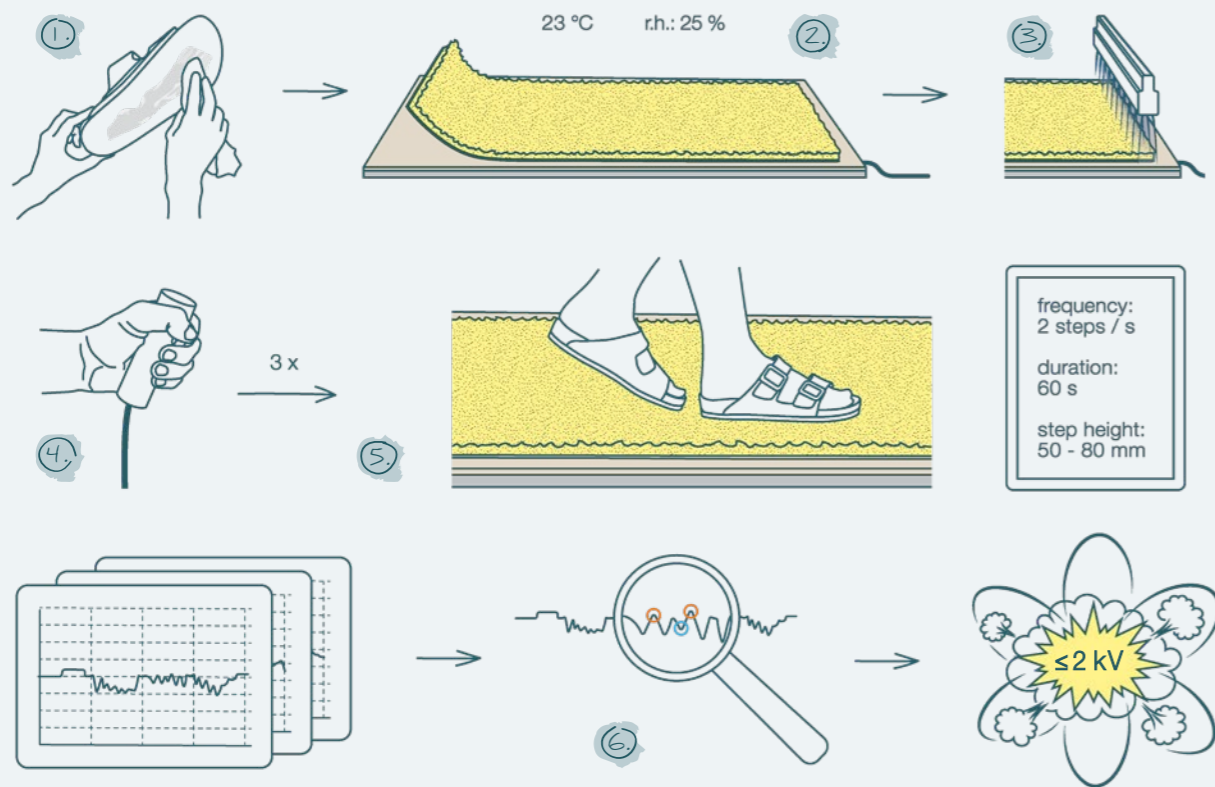


Fig. 62: testing electrical behaviour

Fig. 63: walk-on test on floor covering with hand electrode; source: TFI Aachen





# reaction to fire

> To determine the fire behaviour of a textile floor covering, Halbmond commissions an external test in accordance with the DIN EN ISO 9239-1 standard.

Before starting the test, the test chamber must first be calibrated in order to create the required heat flux profile. The test specimen is then pushed horizontally under the gas-heated radiator, which is inclined by 30°. Here it is exposed to a defined heat flow, as would typically affect the floor covering in the neighbouring corridor in the event of a room fire. Ignition flames are also brought into contact with the hot end of the sample for 10 minutes. After inflammation, each flame front that forms must be detected and its horizontal spread along the length of the sample recorded. In addition, the smoke development must be recorded via the light attenuation in the chimney. The test is carried out on 3 identical test specimens.

The results are evaluated in terms of burning distance as a function of time, critical heat flow when the flames are extinguished and smoke density as a function of time. All special observations such as flaring, melting, blistering, duration and location of smoldering after the flame has gone out, burning through to the carrier plate, etc. must also be recorded and influence the assignment to one of the fire classes.

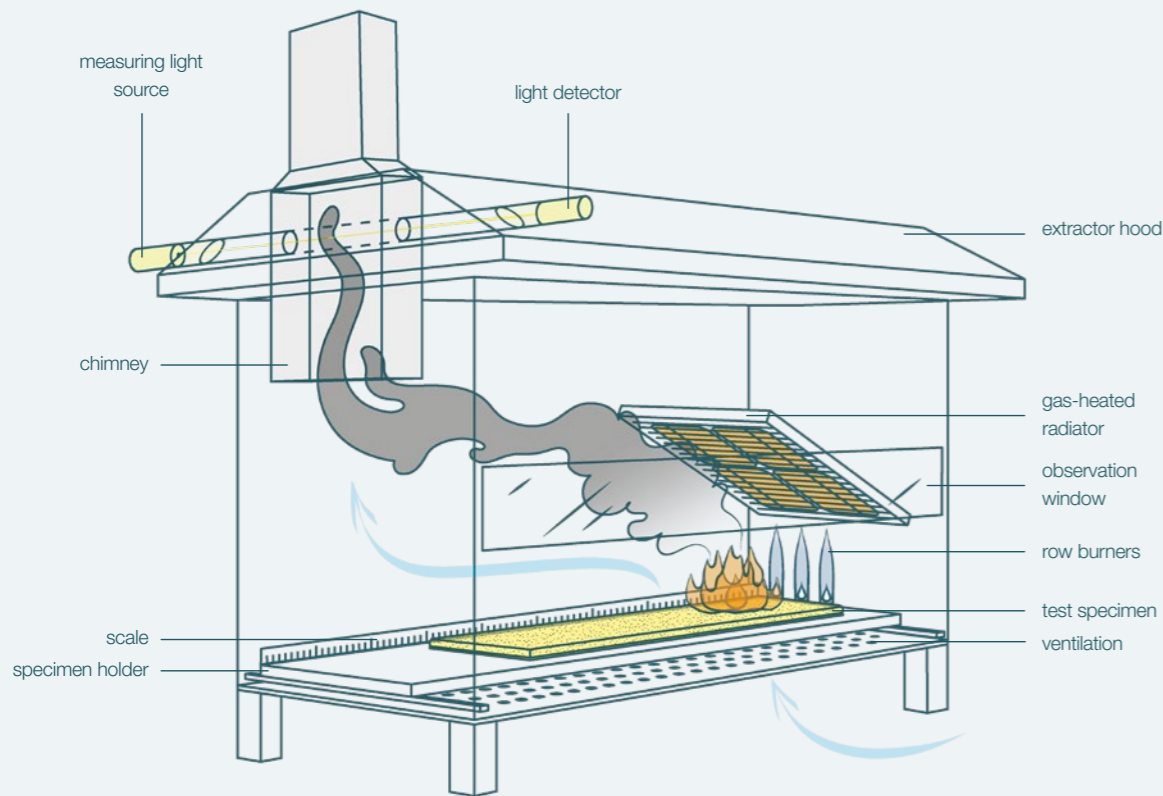


Fig. 64: testing reaction to fire



Fig. 65: recording the progress of the fire in the „Radiant Panel“ test chamber; source: TFI Aachen

# certifications

> The Halbmond data sheet currently only shows a selection of the certifications received. Detailed information can be found, for example, in the publicly accessible EPD and GUT-Prodis-Pass documents (see below).

**HALBMOND** **HTW DESIGN CARPET**

**TEPPICHWERKE**

**ECONYL®**  
ENDLESS POSSIBILITIES

<b>form</b>	rolls	400 cm wide	
	tiles		
<b>construction</b>	tufted cut pile	1/10" gauge	
<b>pile material</b>	ECONYL® yarn	100 % Polyamide 6, recycled	
<b>primary backing</b>	non-woven	75 % PES / 25 % PA	
<b>secondary backing</b>	Easy Lift (heavy backing), non-woven (needled, thermal fixed)	100 % PES, 120 g/m <sup>2</sup>	
<b>pattern</b>	digital paste printing	Chromojet	
<b>total weight</b>	ISO 8543	ca. 2120 g/m <sup>2</sup>	
<b>total thickness</b>	ISO 1765	ca. 7,5 mm	
<b>pile thickness</b>	ISO 1766	ca. 4,6 mm	
<b>total pile yarn weight</b>		ca. 1100 g/m <sup>2</sup>	
<b>pile density</b>	ISO 8543	ca. 0,15 g/cm <sup>3</sup>	
<b>number of tufts</b>	ISO 1763	ca. 181700 /m <sup>2</sup>	
<b>CE-number</b>		1658-CPR-3139	
<b>DoP-number</b>		0001	
<b>Prodis-licence-number</b>		75CAGF1A	
<b>Environmental Product Declaration</b>	ISO 14025+EN 15804+A2	EPD-HBM-20170151-CBC1-DE + annex LC 3	

<p> <b>use class</b> 33 - commercial: heavy DIN EN 1307   ISO 10361</p> <p> <b>luxury class</b> LC 3 DIN EN 1307   ISO 8543</p> <p> <b>stair suitability</b> intensive DIN EN 1307   DIN EN ISO 12951</p> <p> <b>castor chair suitability</b> intensive DIN EN 1307   DIN EN ISO 4918</p> <p> <b>colour fastness to light</b> ≥ 5 DIN EN 1307   DIN EN ISO 105-B02</p> <p><b>colour fastness to water</b> ≥ 4 DIN EN 1307   DIN EN ISO 105-E01</p> <p><b>colour fastness to rubbing</b> ≥ 3-4 DIN EN 1307   DIN EN ISO 105-X12</p>	<p> <b>resistance of cut edges</b> DIN EN ISO 10833</p> <p> <b>slip resistance <math>\mu</math></b> ≥ 0,30 DIN EN 14041   DIN EN 13893</p> <p> <b>thermal resistance</b> ca. 0,15 m<sup>2</sup>/K/W DIN EN 12667</p> <p> <b>impact sound reduction <math>\Delta L_w</math></b> ca. 28 dB DIN EN ISO 717-2   DIN EN ISO 10140-3</p> <p> <b>sound absorption <math>\alpha_w</math></b> ca. 0,2 DIN EN ISO 354</p> <p> <b>electrical behaviour</b> body voltage ≤ 2 kV ISO 6356</p> <p> <b>reaction to fire</b> Bfl-s1 DIN EN 13501-1   DIN EN ISO 9239-1, 11925-1</p>
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We reserve the right to make technical changes that serve to improve quality. In rare cases, permanent shading may occur in velour carpets without impairing the usability. The cause of this is not due to the material or construction. Therefore, no warranty can be assumed for this. Halbmond's carpets and rugs must be installed in accordance with the respective Halbmond installation recommendations and the state of the art. All information is based on current knowledge and experience. They can only be general information without guarantee of properties, as we have no influence on the construction site conditions and processing. Due to the wide range of possible influences when using our products, they do not exempt the installer from carrying out his own tests and trials. Regular maintenance cleaning is decisive for the cleanliness, value retention and good appearance of the floor covering.

Halbmond Teppichwerke GmbH • Brückenstraße 1 • 08606 Oelsnitz/V. • Tel.: +49 (0) 37421 / 42 420 • info@halbmond.de • www.halbmond.de



## Green Label Plus

from the **Carpet and Rug Institute (CRI)**

- examines carpets, upholstery and adhesives
- > sets even higher standards than „Green Label“, certifies **very good indoor air quality (IAQ)** due to **very low emissions of volatile organic compounds (VOC emissions)**

## EDP (Environmental Product Declaration)

-> see page 24

from the **Institut Bauen und Umwelt e.V. (IBU)**

- > examines construction products
- > Type III - Environmental labeling according to ISO 14025, based on the life cycle assessment according to ISO 14040/44, describes the **environmental impact of a product** and its **suitability for sustainable construction**
- > online fully viewable by EDP no.:

<https://ibu-epd.com/en/published-epds/>



## GUT - Label

-> see page 21

from the **Gemeinschaft umweltfreundlicher Teppichboden e.V. (GUT)**

- > examines textile floor coverings
- > associated GUT-Prodis Product Passport (product information system), which includes **pollutant, emission, usage and recycling aspects**
- > online fully viewable by Prodis license no.:

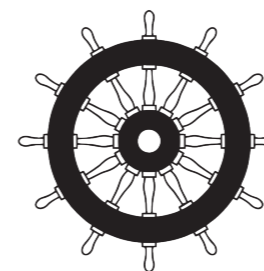
<https://gut-prodis.eu/en/>



## Wheelmark

from the **International Maritime Organization (IMO)**

- > examines marine equipment
- > in accordance with Marine Equipment Directive 2014/90/EU (MED), Symbol is supplemented by the number of the inspection body and year of inspection and authorizes **EU-wide use on board** according to the modules fulfilled



0000/YYYY



product Interior  
PREMIUM

# CERTIFICATE

for

## TÜV PROFiCERT-product Interior PREMIUM

The following product/product group particularly fulfills the criteria V1.3 of the TÜV PROFiCERT-product Interior certification. This certificate does not acquit the producer of his responsibility to comply with all legal requirements and product properties.



**Halbmond Teppichwerke GmbH**  
Brückenstr. 1  
08606 Oelsnitz  
Germany

**Polyamid textiler Zweitrücken**

Result of the emission testing: TÜV PROFiCERT-product Interior PREMIUM fulfilled  
Thus, the results comply with the emission thresholds of

✓ AgBB	✓ BREEAM Exemplary Level	✓ EU-Ecolabel
✓ 	✓ Finnish M1 classification	✓ Austrian Eco Label UZ 35
✓ Belgian VOC regulation	✓ GUT / PRODIS	✓ MVV TB Annex 8+9 / ABG
✓ LEED v4 (outside North America)	✓ DE-UZ 128 (Blue Angel)	✓ CAM Italy

Certificate registration No. **70 710 2988-4**

Certificate valid from 2022-12-14 to **2025-11-14**

Audit report No. 22-001185

First certification 2022-12-14




  
 Darmstadt, 2022-12-14  
 Certification body of TÜV Hessen  
 - Head of Certification body -



## TÜV PROFiCERT - Label

from the certification body of TÜV Hessen

- > examines furnishings
- > guarantees compliance with **pollutant and emission limits**, the certificate includes a **list of labels whose requirements are also met**
- > corresponding report can be viewed online using the certificate number

<https://www.proficert.de/en/1067/products/>

> The adjacent example of a TÜV PROFiCERT certificate for the Halbmond product „Polyamide textile secondary backing“ shows that the emission limits of other certifications are also complied with. However, as the product has not been explicitly tested by the relevant certification bodies, the corresponding labels are not shown in the data table. These would be in this case:



## AgBB - Label

from the **Ausschuss zur gesundheitl. Bewertung von Bauprodukten (appointed and commissioned by the state)**

- > authoritative assessment scheme for indoor construction products
- > guarantees **compliance with the emission limits for volatile organic compounds (VOC, VOC and SVOC)**, the AgBB scheme is constantly being further developed and is the **basis for the „Requirements for structural systems with regard to health protection“ (AGB)**, among other things

## „ÉMISSIONS DANS L’AIR INTÉRIEUR“

from the **French Ministère de la Transition écologique**

- > evaluates interior products and materials
- > in the French market mandatory labeling according to Décret n° 2011-321, guarantees **compliance with the emission limits for volatile organic compounds (VOC)** according to standard ISO 16000, test methodology corresponds to that of the Deutsches Institut für Bauprodukte (DIBt) and the AgBB



## LEED v4 (Leadership in Energy and Environmental Design)

from the **U.S. Green Building Council (USGBC)**

- > assesses the sustainability of existing/planned buildings comprehensively
- > depending on the total number of points from 8 categories, one of the **4 quality levels (certified, silver, gold, platinum)** is achieved
- > internationally accepted





## BREEAM (Building Research Establishment Environmental Assessment Methodology)

from the **Building Research Establishment (BRE)**

- > examines the life cycle phases of buildings with regard to sustainability
- > the achieved „Hea 02 Indoor air quality - Exemplary Level“ indicates that the **indoor air quality** meets all health requirements
- > originally from GB, internationally accepted



## Finnish M1 classification

from the **Finnish Building Information Foundation (RTS)**

- > examines construction products
- > voluntary, Finnish emission classification, M1 is the highest level to be achieved and certifies **minimal VOC emissions**



## Blue Angel

from the **Dt. Institut für Gütesicherung und Kennzeichnung e.V. (RAL)**

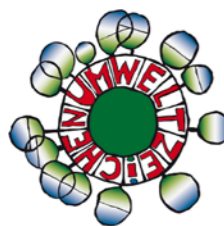
- > DE-UZ 128 evaluates textile floor coverings
- > guarantees **low-pollutant, low-emission, low-odour and non-hazardous properties**



## EU-Ecolabel

from the **European Commission**

- > examines consumer goods
- > European Ecolabel according to Regulation (EC) No. 66/2010, certifies **special environmental compatibility** and **comparatively low health impact**
- > internationally accepted



## Austrian Ecolabel

from the **Bundesministerium für Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie of the Republic of Austria**

- > UZ 35 examines textile floor coverings
- > limit values are set for the ingredients contained; in addition, **the pollutant and emission specifications of GUT** (Gemeinschaft umweltfreundlicher Teppichboden e.V.) and the attached list of standards apply

> It also fulfils the **Belgian VOC Regulation**, the **MVV TB Annex 8+9 / ABG** and the **CAM Italy**.

# GLOSSARY

<b>delivery form</b>	delivery condition of the textile floor covering
<b>roll</b>	„endless“ carpet wound on rolls
<b>module</b>	cut-to-size „puzzle pieces“ of carpet
<b>rug &amp; mat</b>	cut-to-size carpet with edging
<b>construction</b>	production process of the surface without carpet backing
<b>tufting</b>	piercing of thread loops into primary backing material
<b>tufted loop pile</b>	tufted carpet with loop pile
<b>tufted cut pile</b>	tufted carpet with cut loop pile
<b>gauge</b>	distance between the tufting needles in the transverse direction
<b>pile material</b>	exact material composition of the carpet pile threads in accordance with the Textile Labelling Act
<b>primary backing</b>	flat material into which tufting is done
<b>secondary backing</b>	combination of pre-coating, coating and textile/foam layer
<b>non-woven</b>	flat textile made of bonded, non-woven fibres
<b>woven</b>	flat textile made from systematically crossed threads
<b>pattern</b>	technical procedure to realize the pattern or design
<b>total weight</b>	overall weight of all carpet layers per m <sup>2</sup>
<b>total thickness</b>	overall thickness of all carpet layers
<b>pile thickness</b>	height of the visibly protruding pile threads
<b>total pile yarn weight</b>	thread material required to produce the pile per m <sup>2</sup>
<b>pile density</b>	ratio of material to air volume per cm <sup>3</sup> of the pile layer
<b>number of tufts</b>	number of thread loops per m <sup>2</sup>
<b>CE-number</b>	guarantees „European conformity“, i.e. the fulfilment of an EU-wide prescribed product quality
<b>DoP-number</b>	is required in addition to the CE number to access a specific test certificate
<b>Prodis-licence-number</b>	leads to the „GUT-Prodis Product Passport“ of the Gemeinschaft umweltfreundlicher Teppichboden e.V., which evaluates textile floor coverings
<b>Environmental Product Declaration (EPD)</b>	test report of the Institut Bauen und Umwelt e.V. which assesses building products in terms of their sustainability and recyclability
<b>use class</b>	suitability for domestic area (21-23) or commercial area (31-33)
<b>luxury class</b>	from pile layer thickness derived comfort classes from LC1 (lowest) to LC5 (highest)
<b>stair suitability</b>	resistance to edge abrasion when laid on stairs
<b>castor chair suitability</b>	resistance to surface abrasion during office chair use
<b>colour fastness</b>	colour stability to various environmental and usage influences; this includes light, water and rub resistance
<b>colour fastness to light</b>	colour stability when exposed to daylight -> does not bleach out
<b>colour fastness to water</b>	colour stability in wet condition and direct contact -> does not discolour or stain anything else

<b>colour fastness to rubbing</b>	colour stability under friction in dry and wet condition -> does not stain anything else
<b>resistance of cut edges</b>	resistance of abutting carpet cut edges during installation and especially in use -> no fraying
<b>slip resistance</b>	sufficient static friction (coefficient of friction $\geq 0,3$ ) when walking on the floor covering in dry and wet conditions
<b>thermal resistance</b>	material property that counteracts the heat penetration of the floor covering
<b>acoustics</b>	behaviour of the sound waves in the room
<b>impact sound reduction <math>\Delta L_w</math></b>	reduction of impact sound transmission to rooms below due to floor covering versus uncovered floors
<b>sound absorption <math>\alpha_w</math></b>	reduction of sound wave echo and volume in the same room
<b>electrical behaviour</b>	property of static charging or dissipation
<b>antistatic</b>	charge-inhibiting property that keeps a person's body voltage lower than 2 kV after walking on the carpet
<b>electrical discharge capability</b>	current-dissipating property even at low charge ( $\leq 10^9 \Omega$ )
<b>electrical conductivity</b>	current-dissipating property even at very low charge ( $\leq 10^6 \Omega$ ); reliably accessible only through earthing
<b>reaction to fire</b>	fire and smoke development properties in accordance with the fire protection classes (domestic and commercial)

English

German

French

delivery form	Lieferform	forme de livraison
roll	Bahnenware	rouleaux
module	Modul	modules
rug & mat	Abgepasster Teppich	tapis
construction	Warenkonstruktion	type de fabrication
tufting	Tuften	tufting
tufted loop pile	Tufting-Schlinge	boucle tuftée
tufted cut pile	Tufting-Velours	velours coupé tufté
gauge	Teilung	jauge
pile material	Polmaterial	composition de la couche d'usage
primary backing	Tuftingträger	premier dossier
secondary backing	Rückenausrüstung	second dossier
non-woven	Vlies	voile non-tissé
woven	Gewebe	tissu
pattern	Mustergestaltung	type de coloris
total weight	Flächengewicht	masse totale par unité de surface
total thickness	Gesamtdicke	épaisseur totale
pile thickness	Polschichtdicke	épaisseur de velours utile
total pile yarn weight	Poleinsatzgewicht	masse de velours utile
pile density	Polrohndichte	masse volumique de velours de surface
number of tufts	Noppenzahl	nombre de touffes ou de boucles
CE-number	CE-Nummer	numéro CE
DoP-number	DoP-Nummer	numéro DoP
Prodis-licence-number	Prodis-Lizenz-Nummer	numéro de licence Prodis
Environmental Product Declaration (EPD)	Umwelt-Produktdeklaration (EPD)	déclaration environnementale de produit (EPD)
use class	Gebrauchsklasse	classe d'usage
luxury class	Luxusklasse	classe de luxe
stair suitability	Treppeneignung	aptitude à l'usage dans les escaliers
castor chair suitability	Stuhlrolleneignung	aptitude à l'emploi sous les sièges à roulettes
colour fastness	Farbechtheiten	solidité des couleurs
colour fastness to light	Lichtechtheit	solidité des teintures à lumière

colour fastness to water	Wasserechtheit	solidité des teintures à l'eau
colour fastness to rubbing	Reibechtheit	solidité des teintures au frottement
resistance of cut edges	Schnittkantenfestigkeit	résistance des bords de coupe
slip resistance	Gleitwiderstand / Rutschsicherheit	résistance au glissement
thermal resistance	Wärmedurchlasswiderstand	résistance thermique
acoustics	Akustik	acoustique
impact sound reduction $\Delta L_w$	Trittschallminderung	isolation aux bruits de choc
sound absorption $\alpha_w$	Schallabsorptionsgrad	absorption acoustique
electrical behaviour	Elektrisches Verhalten	comportement électrostatique
antistatic	Antistatik	antistatique
electrical discharge capability	Elektr. Ableitfähigkeit	capacité de dissipation
electrical conductivity	Elektr. Leitfähigkeit	conductivité
reaction to fire	Brandverhalten	comportement au feu

notes:

