

Standards for flooring underlayment

The standards for evaluating quality

Following many years of preparation across numerous working groups at European level (CEN), but also within the EPLF association, official sets of rules and regulations defining specifications, requirements and test procedures for laminate and click vinyl flooring underlayment exist since 2013. Before the introduction of such normatives, underlayment is not described or standardised. There are legal requirements in some countries (e.g. Ü-mark), but these exclusively regulate fire behaviour and emissions and thus no performance parameters.

SELIT was involved in this standardisation work, and was able to contribute to the fact that underlayment is now covered with requirements which are of great importance for the entire floor structure. We give you an overview of the valid sets of rules and regulations and explain why the installation of underlayment is necessary.

Why is an underlayment necessary?

Floating flooring can only work if the underlayment also is part of the overall flooring system. The underlayment represents the connection between the floor and the substrate and should perform the following basic functions:

1. Ensure professional installation

This includes compensating of unevenness and creating an installation surface that permits a floating installation.

2. Permanently protect the floor

Protecting the floor from everyday stress, for example, caused by footfall and falling objects, as well as protecting it against rising residual building moisture.

3. Improve the floor characteristics

In addition to reducing impact and footfall sound, the underlayment also influences thermal insulation and walking comfort.

What sets of rules and regulations are there?

EN 16354

Since October 2018, there is the European Standard EN 16354. This official document of the European Commission addresses all relevant criteria of a laminate flooring underlayment, defines the test method to be followed and sets out the basic minimum requirements. This ensures that the specified product properties are comparable and that the underlayment comply with the minimum requirements of CEN.

Technical leaflets EPLF and MMFA

The two similarly structured technical data sheets of EPLF and MMFA are based on EN 16354. For all relevant requirements that underlayment must fulfil, the data sheets provide explications and specific recommendations with regard to the technical data. Thus, minimum requirements are already defined here, which an underlayment should fulfil depending on the type of floor covering. The leaflets also specify recommendations for higher requirements for underlayment, which are recommended for a floor service class of 31 or higher.



Associate member



The EPLF and MMFA technical bulletins detail a number of requirements necessary for an underlayment. Below is a summary of these points.

1. Protecting the floor

Compensating unevenness (PC)



In order to mechanically protect the floor and avoid cavities, it is necessary to be able to compensate small, punctiform unevennesses. Otherwise the floor can be damaged, especially in the junction area.

Moisture protection (SD)



In the case of mineral substrates, moisture protection is mandatory to prevent damage to the floor. This can be achieved with an additional vapour barrier or with an appropriately equipped insulating underlayment.

Protection under load (DL, CC, CS)



Daily use puts a heavy load on floors and thus also on underlayment. Therefore, it must be able to withstand static loads (CC: furniture), dynamic loads (DL: walking) and temporary loads (CS) during their entire service life. This is the only way to permanently protect the floor and, above all, its connection system.

Protection from falling objects (RLB)*



Falling objects can irreparably damage the laminate surface. In addition to the quality of the floor itself, the used underlayment plays a decisive role. It strongly influences the possible drop height, which leaves no damage behind.

* only valid for laminate flooring

2. Improving living comfort

Impact sound reduction (IS)



The transmission of footfall sound in the room below is generally referred to as impact sound. Underlayment can significantly reduce this impact sound in conjunction with the floor used.

Radiated walking sound reduction (RWS)*



The walking noise perceived in the same room is called radiated walking sound. Due to the floor itself, such noise is relatively loud. However, underlayment have a noticeable influence on this. As the necessary test standard is still being developed, there is unfortunately no generally valid test and therefore still no recommendations.

Thermal insulation (R_A)



Laminate or vinyl floors are considered to be cold floors and provide relatively low thermal insulation. Underlayment can therefore significantly improve the thermal insulation properties of the floor and increase the living comfort with a higher surface temperature.

Underfloor heating (R_{A+B})



Many floors are suitable for use on floor heating systems. A distinction is made between the installation of the heating below the underlayment (e.g. water heating) and above (e.g. electric foil heating). In order to work efficiently and economically, in the first case (heating below the underlayment) the R-value of the underlayment should be as low as possible. In the second case (heating above the underlayment) the R-value of the underlayment should be as high as possible. This enables the heating system to work efficiently and economically. In general, the thermal resistance of the floor (floor plus underlayment) should not exceed 0.15 m² K/W.

	Laminate flooring (EPLF)		Floors with HDF core (MMFA class 1)		Floors without HDF core (MMFA class 2)	
	Minimum requirements	Higher requirements	Minimum requirements	Higher requirements	Minimum requirements	Higher requirements
Protection against unevenness (PC)	PC ≥ 0.5 mm		PC ≥ 0.5 mm		PC ≥ 0.5 mm	
Protection against moisture (SD)	SD ≥ 75 m		SD ≥ 75 m		SD ≥ 75 m	
Protection against loading and usage (DL, CS, CC)	DL ₂₅ ≥ 10,000 CS ≥ 10 kPa CC ≥ 2 kPa	DL ₂₅ ≥ 100,000 CS ≥ 60 kPa CC ≥ 20 kPa	DL ₂₅ ≥ 10,000 CS ≥ 10 kPa CC ≥ 2 kPa	DL ₂₅ ≥ 100,000 CS ≥ 60 kPa CC ≥ 20 kPa	DL ₇₅ ≥ 10,000 CS ≥ 200 kPa CC ≥ 10 kPa	DL ₇₅ ≥ 100,000 CS ≥ 400 kPa CC ≥ 35 kPa
Protection against falling objects (RLB)	RLB ≥ 50 cm	RLB ≥ 120 cm	inapplicable			
Impact sound insulation (IS)	IS _{Lam} ≥ 14 dB	IS _{Lam} ≥ 18 dB	IS _{HDF} ≥ 14 dB	IS _{HDF} ≥ 18 dB	IS _{LVT} ≥ 10 dB	IS _{LVT} ≥ 18 dB
Thermal resistance (R)	R ≥ 0.075 m ² K/W		R ≥ 0.075 m ² K/W		R ≥ 0.03 m ² K/W	