KLUMPP COATINGS

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Flame Resistance of pre-finished Parquet Floorings – Klumpp Coatings' Fire Guard

The most important characteristics of pre-finished parquet floorings are described by the CE-label, which is specified through DIN EN 14342 in turn. In addition to the release of formaldehyde and pentachlorophenol, slipping performance, heat conductance, breaking resistance and biological durability, the fire related properties of wooden- and parquet floorings are classified too.

The classification is following the EN 13501-01. Thereby, according to the strength of the wear layer, the used species of wood and the corresponding bond to the underground, a classification can be reached even without verification. The following chart shows the classification in detail.

Product 1), 7)	**Product in detail**4)	**Minimum specified raw density**5) **(kg/m³)**	**Minimum specified total thickness (mm)**	**Characteristics of the substrate**	**Classification**3) **for floorings**
Wooden and parquet floorings	Solid coated floorings of oak and beech	Beech: 680 Oak: 650	8	Glued to the bottom 6)	C_{fl}-s1
	Solid coated floorings of oak, beech and pine	Beech: 680 Oak: 650 Pine: 450	20	With or without air gap at the bottom	C_{fl}-s1
	Other types of coated solid-wood floors	390	8	Without air gap at the bottom	D_{fl}-s1
			20	With or without air gap at the bottom	D_{fl}-s1
Parquet	Coated multi-layer parquet with an oak top-layer of at least 5mm thickness	650 (top-layer)	10	Glued to the bottom 6)	C_{fl}-s1
			14 2)	With or without air gap at the bottom	C_{fl}-s1
Parquet	Other types of coated multi-layer parquet	500	8	Glued to the bottom 6)	D_{fl}-s1
			10	Without air gap at the bottom	D_{fl}-s1
			14 2)	With or without air gap at the bottom	D_{fl}-s1
Veneer floorings	Coated veneer floorings	800	6 2)	Without air gap at the bottom	D_{fl}-s1

1) Installation according to EN ISO 9239-1 on to an underground complying to at least D-s2, d0 and a density of 400 kg/m³ or with an air gap at the bottom
2) An interlayer complying at least to class E featuring a maximum thickness of 3 mm, is applicable for parquet without air gaps, showing a thickness of at least 14 mm and for veneered floorings.
3) Class according to the decision of the commission 2000/147/EC attachment, chart 2.
4) Can be used for coating: Acryl, polyurethane und soap (50 to 100 g/m²), or oil (20 to 60 g/m²).
5) Conditioned according to EN 13238 (50 % relative humidity, 23 °C)
6) Underground complying to at least class A2-s1, d0.
7) Also applies to steps.

If the properties indicated in the chart of total minimum thickness are met, the manufacturer has the right to classify his product without prior testing. All residual products must be specially tested on flame resistance.

Klumpp Coatings' **Standard UV-Sealer** for parquet floorings is already able to reach critical heat flux values between 3,9 - 6,00 KW/m², depending from the wood species. This allows at least a partly classification into C_{fl}-s1 category.

On top of that, Klumpp Coatings' special flame resistant **Fire Guard** UV-Sealers can achieve higher values, allowing a classification into C_{fl} and even B_{fl}- category. A test series conducted with (standard prefinished) parquet (ships plank, laid floating, 4mm top layer) of the wood species maple, beech and oak resulted in the following "critical-heat-flux-ranges". The two different **Fire Guard** Sealers are directly compared to the reference (standard UV-sealer):

Material	Applied quantity	Achievable critical heat flux	Achievable category after EN 14342*
Standard UV-Sealer	100 g/m²	3,9 – 6,0* KW/m²	Dfl-s1, Cfl-s1
Fire Guard UV-Sealer Art. Nr. V161-0189-012	100 g/m²	5,4 – 7,5* KW/m²	Cfl-s1
Fire Guard UV-Sealer Art. Nr. V161-0189-006	100 g/m²	6,4 – 9,0* KW/m²	Cfl-s1, Bfl-s1

* the defined ranges shall give a rough indication of the technically possible Cfl-classification, depending on the (base) panel properties, thickness of the top layer as well as the wood species

Because of the partly high variation of the critical-heat-flux values using the same coating system on different types of wood, a pre-test to better estimate the possible result of the test is highly recommendable. In order to arrive at the different categories, following minimum critical heat flux values must be achieved:

Dfl-s1 min. 3,0 KW/m²)
Cfl-s1 min. 4,5 KW/m²)
Bfl-s1 min. 8,0 KW/m²)