

INSTALLING OF PARQUET AND FLOORING ON MASTIC ASPHALT SCREED (UG 2)

MASTIC ASPHALT SCREED (AS)

Mastic asphalt is a building screed made of bitumen, grit, sand, stone flour and additives without the addition of water. The colour of mastic asphalt is usually black. This is due to the black colour of the bitumen. Mastic asphalts, which are used as covering, are available coloured as coloured asphalt.

As a substrate for parquet and other floor coverings, the mastic asphalt surface must be sanded with quartz sand while it is still warm, following hot installation (approx. 220-230°C). This "sanding" increases the effective bonding surface (surface becomes rough and grippy) and the adhesion of the adhesives, primers or fillers is optimal. Once it has cooled down to the normal temperature, the freshly laid mastic asphalt can be used and coated (usually after approx. 2-4 hours).

AREAS OF APPLICATION AND PROPERTIES OF MASTIC ASPHALT

For interior use, mainly mastic asphalt screeds, rolled asphalt screeds and bitumen emulsion screeds are used. Hot-processed mastic asphalt screeds, mainly used in residential and industrial construction, are divided into hardness classes according to DIN EN 13813. The hardness class should be selected according to the expected stress from temperature and traffic loads. The requirements for screed compounds are specified in DIN EN 13813, the production in DIN 18560.

The designation e.g. **AS-IC 10H** has the corresponding assignment: The screed is made of asphalt (**AS** = screed compounds **Asphalt**); the penetration depth in the applied test method (cube or Indentation on **Cube**) is 1/10 mm. The suffix **H** after the **IC** indicates a heating screed (see Table 1).

Table 1: Hardness classes of mastic asphalt according to DIN EN 13813

Hardness class	Penetration depth in mm		
	Stamp 100 mm ²		Stamp 500 mm ²
	at 22 ± 1 °C, test duration 5 hrs, load 525 N	at 40 ± 1 °C, test duration 2 hrs, load 525 N	at 40 ± 1 °C, test duration 0,5 hrs, load 525 N
ICH 10 (with underfloor heating)	≤ 1.0	≤ 2.0	-
IC 10	≤ 1.0	≤ 4.0	-
IC 15	≤ 1.5	≤ 6.0	-
IC 40	-	-	1.5 to 4.0
IC 100	-	-	4.0 to 10.0

Table 2: Nominal thicknesses and hardness of unheated mastic asphalt screeds on insulation layer according to DIN 18560-2. It should be noted that the nominal thickness for heated mastic asphalt screeds should be at least 35 mm where the working load is ≤ 2 kN/m², 45 mm where the working load is ≥ 2 kN/m², and at least 15 mm for raw coverings.

Single load	Distributed load	Hardness class	Nominal thickness
-	≤ 2.0 kN/m ²	IC 10	≤ 25 mm
≤ 2.0 kN	≤ 3.0 kN/m ²		≤ 30 mm
≤ 3.0 kN	≤ 4.0 kN/m ²		≤ 30 mm
≤ 4.0 kN	≤ 5.0 kN/m ²		≤ 35 mm

TECHNICAL INFORMATION

The penetration depth, described in Table 1, DIN EN 13813, makes a statement concerning the stability of mastic asphalt. A stamp is pressed with a defined pressure onto a mastic asphalt screed sample cube heated to test temperature in water for a certain amount of time. The result is given as the penetration depth of the punch into the mastic asphalt cube in 1/10 mm. Earlier mastic asphalt formulas were produced with relatively soft bitumen and less than optimal aggregate grading curves, sometimes with a considerable excess of bitumen, which increases the thermoplastic behaviour of the mastic asphalt. This is evidenced by marks caused by heavy objects with high point loads, for example due to bed or cupboard feet.

Just as bitumen becomes soft or even liquid at high temperatures, it becomes brittle and fragile at cold temperatures. The limit temperatures specified in Table 3 must therefore not be permanently undercut. At very cold temperatures bitumen is brittle like glass. Furthermore, the harder the bitumen, the higher the limit temperature for cooling.

Table 3: **Areas of application for mastic asphalt screed**

acc. to DIN EN 18560-7		acc. to DIN EN 18560-1
heated spaces	ICH 10	≤ 10 °C
	IC 10	≤ 5 °C
	IC 15	≤ 0 °C
unheated spaces	IC 15	≤ 0 °C
outdoors	IC 40	no information
cold storage rooms	IC 40 oder IC 100	no information

Mastic asphalt screeds are installed floating on a separating layer or on an insulating layer. Due to its much lower shrinkage compared to cement screed, AS is usually installed without joints.

Mastic asphalt screeds are non-conductive and impermeable to water when properly formulated. They are therefore well suited for use in switching and transformer rooms, among other things, and in combination with a sealing layer (bituminous sheeting) as sealing in accordance with DIN 18195-5. Built into living spaces, the properties of mastic asphalt, such as high impact sound insulation and good thermal insulation, its elasticity and the resulting pleasant walkability, give the user a high degree of comfort. Due to its low weight and dry installation, it is particularly suitable for the renovation and refurbishment sector.

Due to the non-absorbent AS, a slower setting is to be expected when using dispersion-based and water-containing laying materials, on the one hand, and on the other hand, increased dimensional changes occur when directly gluing swelling pressure-sensitive floor coverings (e.g. parquet).

Since mastic asphalt is a thermoplastic material, it can deform (indent) under high point loads. Equally, for this reason, the existence of great tension on the top surface (such as due to the wood swelling pressure) can lead to horizontal expansion or cambering of the mastic asphalt. When installing parquet, it is advisable to prefer to choose multi-layer parquet or mosaic parquet as the surface covering.

PREPARATION OR TESTING OF THE SUBSTRATE:

In addition to the universal test requirements according to DIN 18356 and 18365, a number of special characteristics should be taken into account when laying surface coverings on mastic asphalt.

- The sanding of the mastic asphalt makes an important contribution to optimum adhesion of the subsequent laying materials. It must have been properly applied and must not be removed during substrate preparation.
- The mastic asphalt must be a sufficient distance from the wall (in accordance with DIN 18 560) when it is covered with wood flooring. This distance should be at least 10 mm, or preferably 15 mm, and proportionally more for larger surfaces. If this is not present, the edge joint must be trimmed.
- Usually new mastic asphalt is ready for installation and needs no other preparation except cleaning (vacuuming).

TECHNICAL INFORMATION

INSTALLING FLOORING AND PARQUET ON MASTIC ASPHALT:

On mastic asphalt almost all types of floor coverings and parquet (preferably mosaic and multi-layer parquet) may be bonded with laying materials from STAUF. STAUF adhesive application tables should be taken into account when selecting appropriate products.

When bonding with dispersion adhesives, it is essential that a levelling compound is applied beforehand. The layer thickness of the levelling compound should be at least 2-3 mm, for cement-based levelling compounds at the most 5 mm. Anhydrite levelling compounds build up considerably less tension during drying and can therefore be applied in thicker layers. Layer thicknesses over 10 mm are possible in principle, but depend on the thickness and quality of the AS. As a rule of thumb, the thicker the mastic asphalt screed, the thicker the layer of calcium sulphate levelling compound.

Fillers with a layer thickness of 2 mm or more form an absorbent, even substrate which can absorb some of the water during subsequent bonding with dispersion parquet adhesives. When subsequently bonding floor coverings such as PVC, textile coverings, linoleum or rubber coverings, fillers accelerate the drying of the adhesive.

With higher layer thicknesses of levelling compounds, a longer drying time must be expected due to the impermeability of the screed. An optimal and shrinkage reduced possibility to level AS is the use of reaction resin levelling compounds, such as the STAUF PU levelling compound. It is water- and solvent-free and can be bonded with STAUF reactive resin adhesives in any layer thickness, already after 24 hours.

Mastic asphalt screeds or bitumen are dissolved by non-reactive liquid extenders (plasticisers). As a result, direct bonding with adhesives with a high plasticiser content is not possible without further ado. Depending on temperature, plasticiser concentration and type of plasticiser, these migrate to the upper surface layer and reduce the surface strength of the AS. "Migration barriers" in the form of a 2-component epoxy resin primer such as STAUF VEP 195 or ideally the use of adhesive without plasticising ingredients, such as STAUF SPU 570 or STAUF SMP 950, should be used.

MASTIC ASPHALT SCREED IN THE RENOVATION AREA

In the renovation area, the quartz sand applied during installation is often removed when the surface covering is removed together with the installation materials such as filler or adhesive. Here it is recommended to mill or grind the surface down to the visible grain. The best results are achieved with the aid of suitable disc cutters, which, in comparison with roller cutters, are more gentle on the substrate and do not cause cracks to form in the screed. If there is a high excess of binder on the surface or if there are defects in the AS, the bitumen can also be liquefied with a flame jet. This enables both the rubbing in of quartz sand and a frictional bond to newly laid mastic asphalt screeds.

The subsequent application of reactive primers or adhesive primers then ensures a secure bond between AS and filler and/or adhesive.

PRIMERS FOR USE WITH ADHESIVES / LEVELLING COMPOUNDS ON MASTIC ASPHALT

	STAUF Flooring adhesives	STAUF Dispersion- based adhesive for parquet flooring	STAUF Reactive resin adhesives*	e. g. STAUF GS or STAUF XP 20
STAUF D 54 (undiluted)				✓
STAUF VDP 160 (undiluted)			✓	✓
STAUF WEP 180 (undiluted) + STAUF quartz sand			✓	✓
STAUF VEP 195 + STAUF quartz sand or VP160			✓	✓

*When using STAUF SMP 930, STAUF Multilayer or adhesives with high plasticiser content on sanded mastic asphalt, use STAUF VEP 195 as a primer.

1) As a rule, levelling is required and recommended for resilient and textile floor coverings according to DIN 18365.

2) The layer thickness of cement-based fillers must not exceed 5 mm.

3) If possible, preferably use calcium sulphate based fillers such as STAUF GS.

TECHNICAL INFORMATION

APPLICABLE ADHESIVE SYSTEMS

	STAUF Flooring adhesives	STAUF Dispersion- based adhesive for parquet flooring	STAUF Reaction resin parquet adhesives	Substrate preparation
Textile floorings	✓			Clean the substrate well; depending on the condition and requirements, prime and fill. 1),2),3),4)
Resilient flooring	✓			
Linoleum	✓			
Laminate flooring (full-surface bonding)			✓	
Solid wood flooring		✓	✓	
Multi-layer parquet		✓	✓	
Wood block	Bonding in general not possible, please contact us.			

- 1) If dispersion-based wood flooring adhesives are used, fill with mastic asphalt (not required for upright lamella parquet). When bonding wood or parquet types that are sensitive to swelling pressure, it is advisable to apply a levelling compound.
- 2) As a rule, a levelling compound is required and recommended for elastic floor coverings.
- 3) The layer thickness of cement-based fillers must not exceed 5 mm.
- 4) When bonding solid planks, strip parquet and other types of solid parquet, a camber due to the wood welling up cannot be completely ruled out. The strength class should correspond to an IC15, better IC10 mastic asphalt screed and the nominal thickness should be at least 35 mm (better more), which must be confirmed by the planner in any case.

The information provided above corresponds to the current stage of development. The information is purely indicative and non-binding, since we have no control over the installation process and because the actual installation conditions on site vary. Therefore, no claims can be made based on this information. The same is true for the commercial and technical advisory services that are provided without obligation and free of charge. We therefore recommend carrying out sufficient testing of your own in order to determine whether the product is suitable for the intended purpose. 022020