

Product Information

Dolit HWF

KI.WG.003 | 10/10/2024



CRS
Chemical Resistant Systems

PRODUCT GROUP

Water glass mortars

BINDER BASE

Water glass

PROPERTIES / APPLICATION

3-component mortar mass based on water glass for the production of acid resistant tile linings and masonry. Unlike conventional water glass putties, Dolit HWF can also be used for neutral stresses and is resistant to water, among other things.

Dolit HWF is typically used when there is a strongly acidic load in combination with increased temperature, but neutral, aqueous loads cannot be ruled out.

In ore processing, Dolit HWF is mainly used in (pressurised leaching) autoclaves, especially in the steam zone.

In the chemical industry and process technology, Dolit HWF is used for lining washing, drying and absorption towers and chimneys, as well as for laying acid resistant ceramic tiles and bricks in secondary containments, production areas and tank farms.

- Temperature resistance
 - Up to 450 °C
 - The temperature resistance is basically dependent on the individual chemical stress.
- Very good resistance to acids (not to hydrofluoric acid).
- Water-resistant, resistant to neutral pH value, resistant to rainwater (can be used outdoors).
- Very good resistance to oxidising media, organic solvents, oils, greases and fuels.
- Very good resistance to aggressive gases and flue gas components.
- Free of halogens
- Can be used for neutral loads.
- Can be used as an injection and grouting compound.
- Application on metallic substrates possible without pre-treatment.

SYSTEM DESIGN

Dolit HWF Mortar mass

Dolit HWF Jointing compound

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PHYSICAL DATA

Physical property	DIN	ASTM	Value	Unit
Density Dolit HWF Mortar mass	DIN EN ISO 1183-1		2.15	g/cm ³
Density Dolit HWF Jointing compound	DIN EN ISO 1183-1		2.13	g/cm ³
The following values include mean values determined on non-tempered samples. They apply to Dolit HWF Mortar mass.				
Flexural strength		ASTM C 580	16	MPa
Compressive strength		ASTM C 579	60	MPa
Tensile strength		ASTM C 307	7	MPa
Modulus of elasticity		ASTM C 580	16000	MPa
Adhesive strength to concrete/screed	DIN EN ISO 4624		> Inherent tensile strength concrete	MPa
Adhesive strength to ceramic tiles	DIN EN 12004-1		> Inherent tensile strength	MPa
Therm. Coefficient of linear expansion	DIN 51045		1.5 x 10 ⁻⁵	1/K
Thermal conductivity	DIN EN ISO 22007		1.2	W/mK

PRECONDITIONS

The temperatures for the substrate, ambient air and Dolit materials must be between 10 °C and 30 °C during application. The optimum processing temperature is 20 °C. Higher and lower temperatures affect the working time and consistency of the composition. Consumption and application performance may change as a result.

During application, the substrate must be kept absolutely dry. No moisture (condensate, mist, etc.) may get onto the surfaces to be protected.

Unevenness must already be levelled out in the substrate.

Distance to dew point has to be at least 3 K, at a relative humidity of above 70 % at least 5 K.

The construction site must be protected from draught and direct sunlight.

If tiles laid in a hollow joint are to be jointed with a Dolit mortar material, the bedding joint must be hardened and dry again. The open joint should have a rectangular cross-section, be at least 15 mm deep and 5 - 8 mm wide. The side surfaces of the tiles must be free of mortar material and the joint must be clean.

CONCRETE / SCREED

Refer to DIN EN14879-1.

The substrate must be pretreated to achieve sufficient adhesive tensile strength. It must be free from cement slurry, cement skin, loose and friable parts, structural defects and separating substances.

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The residual moisture of cementitious substrates must not exceed 4 %.

The effect of water or water vapour pressure on the back of the coating/lining must be prevented.

All water glass mortars inherently have a certain porosity that allows liquids to penetrate. For this reason, concrete surfaces are to be provided with a liquid barrier layer according to the basic rules of acid proof construction. This surface must be prepared in such a way that the water glass mortar to be applied to it can adhere sufficiently.

STEEL

Refer to DIN EN14879-1.

The steel surface is blasted to near white blast cleaning. A surface cleanliness of Sa 2½ according to DIN EN ISO 12944-4 and the roughness grade "Medium (G)" according to DIN EN ISO 8503-1; minimum surface roughness $R_z = 70 \mu\text{m}$ must be achieved. After blasting, the reformation of rust must be prevented by suitable measures.

DELIVERY FORM / BEST BEFORE DATE

Component	Item no.	Quantity	Package	Months
Dolit-HW-Solution 1	5221001001	25 kg	Hobbock	24
Dolit-HW-Solution 2	5221002002	20 kg	Canister	24
Dolit-Filler HW	5221137001	25 kg	Bag	24

- Store and transport all components in a dry and frost-free place.
- The minimum shelf life applies to a storage temperature of 20 °C. Higher temperatures shorten, lower temperatures extend the minimum shelf life.
- If the Dolit-HW-Solution 2 shows solid particles (crystallisation at low temperatures), a homogeneous solution can be produced again by briefly heating to 40 °C (maximum 2 days). The package should be closed and shaken occasionally for mixing.

Safety notice

- For handling, storage and transport, observe the relevant safety data sheets!

WORKING EQUIPMENT

NOTE! The materials to be processed can have an aggressive effect on mixing and processing tools due to the solvents, acidic, alkaline or abrasive components they contain. Therefore, please use only suitable tools for mixing and processing.

Measuring cup	Mortar mixer	Joint injector
Scale	Trowel	Duo agitator
Mixing vessel	Joint iron	Spiral stirrers

GISCODE

Product	GISCODE
Dolit HWF Mortar mass	n. s.
Dolit HWF Jointing compound	n. s.

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MIXING RATIO / CONSUMPTION

BEDDING AND JOINTING MORTAR

DOLIT HWF MORTAR MASS

Component	kg/litre	Part by weight	kg/batch	Litres/batch
Dolit-HW-Solution 1	0.215	100	2.850	2.000
Dolit-HW-Solution 2	0.045	21	0.600	0.600
Dolit-Filler HW	1.890	877	25.000	19.500
Total	2.150	998	28.450	

Volume per batch	≈ 13.2 l Mortar mass
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Mortar required for full-length installation (bedding joint 5 mm, butt joint 8 mm)

Split tiles 240 x 115 x 20 mm	≈ 7.5 l	16.3 kg/m ²
Split tiles 240 x 115 x 40 mm	≈ 9.5 l	20.5 kg/m ²
Bricks 240 x 115 x 65 mm	≈ 11.5 l	24.8 kg/m ²
Bricks 240 x 115 x 80 mm	≈ 13.0 l	28.0 kg/m ²
Bed joint thickness	5 – 8 mm	
Joint width	5 – 8 mm	
Joints depth	min. 15 mm	

INJECTION AND JOINTING COMPOUND

DOLIT HWF JOINTING COMPOUND

Component	kg/litre	Part by weight	kg/batch	Litres/batch
Dolit-HW-Solution 1	0.273	100	3.750	2.600
Dolit-HW-Solution 2	0.037	14	0.500	0.500
Dolit-Filler HW	1.820	667	25.000	19.500
Total	2.130	781	29.250	

Volume per batch	≈ 13.7 litre
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MIXING / APPLICATION

Processing may only be started when the application requirements are met and can be maintained during the entire processing and curing.

MIXING SEQUENCE

- Liquid components are measured or weighed and transferred to a mixing vessel.

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NOTE!

Do not stir the liquid components yet!

- Dolit-Filler HW add in portions.
- Mix the components with a dual mixer (300 - 500 rpm) to form a homogeneous mixture. Move the stirrer past the vessel wall and bottom.
- Stir intensively for a total of ≈ 5 minutes until the initially crumbly mixture has turned into a homogeneous mortar mass.
- Then let the mortar rest for 2 minutes.
- Then mix thoroughly again for ≈ 3 minutes.
- Smaller quantities can be mixed by hand.
- Do not use mixed material after the processing time has expired.

APPLICATION

Dolit HWF Mortar mass

NOTE!

The mortar must not come into contact with water during processing and curing. Do not use water as a smoothing agent. Do not re-work the mortar with water or additional solution during application. If the mortar rolls off surfaces during application, it should not be used any further.

- The mortar mass can be used for the full-joint or hollow-joint installation of tiles or bricks.
- Bedding joint is applied to the substrate in a thickness of 5 - 8 mm.
- For full-joint application, apply the mortar mass to two side edges of the tiles or bricks. Then place the tile or brick in position.
- To achieve optimum adhesion, the mortar mass must be applied to both the surface of the substrate and the tile or brick in such a way that intensive contact is made. The brick or tile is then rubbed into the intended position.
- Remove the mortar bead with the trowel and smooth out the joint.
- With hollow joint installation, the butt joint remains free and is filled later.
- Special care should be taken to ensure that the work is free of voids.
- Subsequent jointing can be carried out using a jointing injector or jointing iron.
- To compact the joint, excess material is pressed into the joint with the joint iron. Remaining material is removed with the trowel.

Injection and jointing compound

NOTE!

The casting compound must not come into contact with water during processing and curing. Do not use water as a smoothing agent. Do not adjust the casting compound during processing with water or additional solution to make it workable again.

- Inject Dolit HWF Jointing compound into cavities or behind masonry with a grout gun or pour in with a measuring cup.

POT LIFE

- At 20 °C, the working time is $\approx 30 - 60$ minutes.
- The pot life depends on the temperature.
- Higher temperatures shorten it, lower temperatures prolong it.

WAIT- / CURING TIME

- Waiting time until walkability (at 20 °C) at least 24 hours.
- Curing time until complete chemical and mechanical resistance (at 20 °C) at least 8 days.

POST-TREATMENT AND PRESERVATION

Acidification of the joints is necessary

- if there is a risk of neutral stress, e.g. from rainwater, between completion of the lining and commissioning.
- if no acidic load is applied during the start-up phase.

At 20 °C, acidification in vessels takes place after 3 days at the earliest.

In the case of other components, low temperatures and high levels of humidity, the acidification must be agreed with our application technology department prior to application.

Dolit Acidifying agent can be used for acidification.

During the execution of the aforementioned work and for the period up to the actual commissioning, adequate weather protection must be ensured by means of suitable measures. Manholes and nozzles that have not yet been piped must be sealed weatherproof.

The formation of condensation on the inside of the vessel and on the surface of the lining must be avoided mandatory. A relative humidity of < 40 % must be ensured.

All units must be protected from direct sunlight when exposed to intense sunlight. If there are considerable temperature differences between day and night, air conditioning measures may be necessary to maintain the required application conditions.

If there is a risk of frost, the required application conditions must be ensured by adapting the measures for weather protection (e.g. external tent, fan heater, etc.). In order to avoid frost effects on the mortar material, a temperature of at least 10 °C must be maintained on the steel or on the brick lining surface.

CLEANING

Tools that are soiled with uncured materials can be cleaned with Water.

SAFETY / DISPOSAL

- Ensure sufficient ventilation, especially when working in closed rooms, pits or containers.
- Observe fire and smoking ban.
- Observe safety data sheets, hazard statements and safety advice on the containers.
- Wear prescribed personal protective equipment. Avoid skin contact with the materials.
- Clean and care for hands with skin protection soap and ointment. Do not use solvents.
- Wear a dust mask during grinding work, e.g. repairs.
- Follow operating instructions according to §14 GefahrstoffV and Technical Rules for Hazardous Substances TRGS 507.
- Comply with the accident prevention regulations of the employers' liability insurance associations.
- Avoid direct contact of the materials with the flame, especially when welding, watch out for welding beads.
- Preferably consume residual quantities.
- Do not pour residues down the sink or into the dustbin.
- Collect residues for disposal separately in durable, sealable and labelled containers.

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