



Mortar

For sealing cable
and utility penetrations

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Installation

Wall penetration

Pump application

Shutter one side of the opening and start applying Grünau KBS Mortar from the open side using a pump type mortar mixer/ applicator (such as Putzmeister "Sprayboy"). This equipment must have a shut-off valve for intermittent application. If Grünau KBS Mortar is used at the correct consistency (see box), it will not run or sag, allowing for easy build-up. When sealing large penetrations (more than 30 cm in height), it is advisable to support the applied material on the front side with panels as filling progresses. When there is no front-shuttering (smaller openings), the mortar may be levelled out with a trowel after one hour of setting. Shuttering can be removed, depending on temperature and opening size, after a minimum of 24 hours.

Manual Application

For smaller installations or repairs (retrofitting), Grünau KBS Mortar may also be mixed manually, adhering to the above rules. For wall installations, use a heavier consistency to achieve a stiff, non-sagging material, which can be applied by trowel. For floors use more water.

Retrofitting

New cables or other utilities may be easily installed in a Grünau KBS Mortar seal. The material is of low compressive strength, which facilitates easy drilling (by hand or motor drill) for an adequate opening. After cables have been passed through, some hand-mixed Grünau KBS Mortar is used for resealing. A bulk loading caulking gun can be used for this.

General Information

Grünau KBS Mortar is a dry mortar mix with a controlled swelling effect, which provides a non-shrinking, homogenous and smoke gas-tight fire seal for cable penetrations. Most mortars shrink during drying or curing. Grünau KBS Mortar expands while it sets (up to 3%), ensuring a tight and crack-free seal. When mixed to pumping consistency, Grünau KBS Mortar will not run or sag, allowing easy build-up of material inside a wall opening. For smaller openings, shuttering is only necessary on one side.

Grünau KBS Mortar has been rated for 120 minutes fire resistance at various thicknesses as per all important standards. (See list of international test results and approvals on back page.)

Grünau KBS Mortar is a blend of inorganic binders, fillers and lightweight aggregates, interlaced with special additives and agents.

Grünau KBS mortar may be used wherever a fire resistance of 120 minutes for cable penetrations is specified. Grünau KBS Mortar is preferably used for floor penetrations but, because of its non-sagging properties, is also easily installed in wall penetrations.



Technical Data/ Mixing

Floor Penetrations

Shuttering

The underside of the floor opening is to be shuttered with suitable materials (such as hard-foam panels, held in place with a wood lath). Please note, exact cutting around penetrating utilities is not necessary.

Preparing

For closing gaps of the shutter, mix Grünau KBS Mortar to a heavy consistency by using less water (see box). Apply this heavy mix by trowel over all the remaining openings and allow to set for at least one hour. All masonry surfaces coming in touch with the mortar must be free from loose dust, dirt or oil and should be wetted prior to application of mortar. **This also applies to wall penetrations.**

Pouring

Mix Grünau KBS Mortar to pouring consistency (see box), using conventional mortar mixing equipment (cement mixer). Pour Grünau KBS Mortar into the opening up to the level of the floor. It will flow between all utilities and level out to a perfect finish. Allow to dry and cure for at least one week (longer for very large openings) before removing shuttering. If access to the floor penetration is necessary, apply a suitable cover.



Technical Data

Colour: Red

Bulk density: Approx. 600 g/l

PH-value at working consistency: 12.3

Toxicity: Non-toxic

Shelf life: In original, unopened bags at least one year

Storage Temperature: -20°C/ +40°C

Combustibility: Non-combustible

Packaging: 25 kg multi-layer bags with polyethylene lining

Density of cured material: Approx. 0.6 g/ cm³

Compressive strength: Approx. 0.6-0.7N/mm²

Expansion:

Approx. 3 Vol.% / 20°C / 24 hours

Workability: Max. 60 minutes

Complete hardening: Approx. 30 days

Minimum temperature for application of Grünau KBS Mortar: +5°C

Cleaning of equipment: Water immediately after use.

Mixing dry KBS Mortar

Water / mortar ratio for various types of application

Pour about half of the indicated amount of water into a mixing container and start mixing. Add the rest of the water slowly.

	Manual application (walls and floors)	Pump application (walls and floors)	Pouring application (floors)
25kg dry mortar	16 L water	17 L water	18 L water
Approx. yield	35-36 L	36 L	36 L
1kg dry mortar	0.65 L water	0.70 L water	0.72 L water
Approx. yield	1.4 - 1.5 L	1.5 L	1.5 L



Mortar Seal

Selection of International Test Results and Approvals

Country	testing institute / Approval body	Ceiling or wall test	Mortar seal thickness (mm)	No. of Cables	official fire resistance rating F/T**	Standard	Ref. No.
Australia	CSIRO	floor	120	25	30-12 T 120 F	AS1530 p.4	3101
Belgium	Universite de liege	wall	190	15	120 F/T	NBN 713.020	315
France	C.S.T.B.	wall	200	9	120 F/T	Arrete Ministeriel	624
Germany	Dibt, Belin	wall	200	60% fill	90 F/T*	DIN4102	125
		floor	200	60% fill	90 F/T*	DIN4102	
Germany	Dibt, Belin	wall	200	60% fill	120 F/T*	DIN4102	126
		floor	200	60% fill	120 F/T*	DIN4102	
Italy	CSI Institute Giordano	wall	250	-	180 F/T	Circulare n. 91	1011
		floor	250	42	180 F/T	Circulare n. 91	1012
Malaysia	Inst. Penyelidikan Perhutanan	wall	150	10	120 F/T	UL1479	3301
South Africa	SA Bureau of Standards	wall	225	22	120 F/T	SABS 017 p.11	4005
Switzerland	VKF	wall	200	11	90 F/T*	VKF, AEAI	506
		floor	180	11	90 F/T*		
UK	LPC/BRE	wall	100	-	240 F/T	BS 476, p. 20	941
		floor	100	-	240 F/T	BS 476, p. 20	946
UK	LPC/BRE	floor	200	cable bundle	120 F/T	UL1479 /	912
		floor	200	477	30-60 T	BS 476	
		floor	200	-	180 F/T		
USA	UL	floor	200	477	180 F	UL1479	2016
				-	0-120 T		
USA	FM Global	wall	114	various /	60-120 F/T	FM4990	2021
		floor	114	cable/pipe	60-120 F/T		
USA	FM Global	wall	114	various /	60-120 F/T	ASTM E 814	2021
		floor	114	cable/pipe	60-120 F/T	ASTM E 814	

* in Germany and Switzerland only 90 minutes are required

**F=fire rating / T=temperature rating on cables

The above data, particularly the recommendations for the application and use of our products are based on our knowledge and experience. Due to different materials and conditions of application, which are beyond our control, we recommend in any case to carry out sufficient tests in order to ensure that our products are suitable for the intended processes and applications. Therefore, any liability for such recommendations or any oral advice is expressly excluded unless we have acted wilfully or by gross negligence.