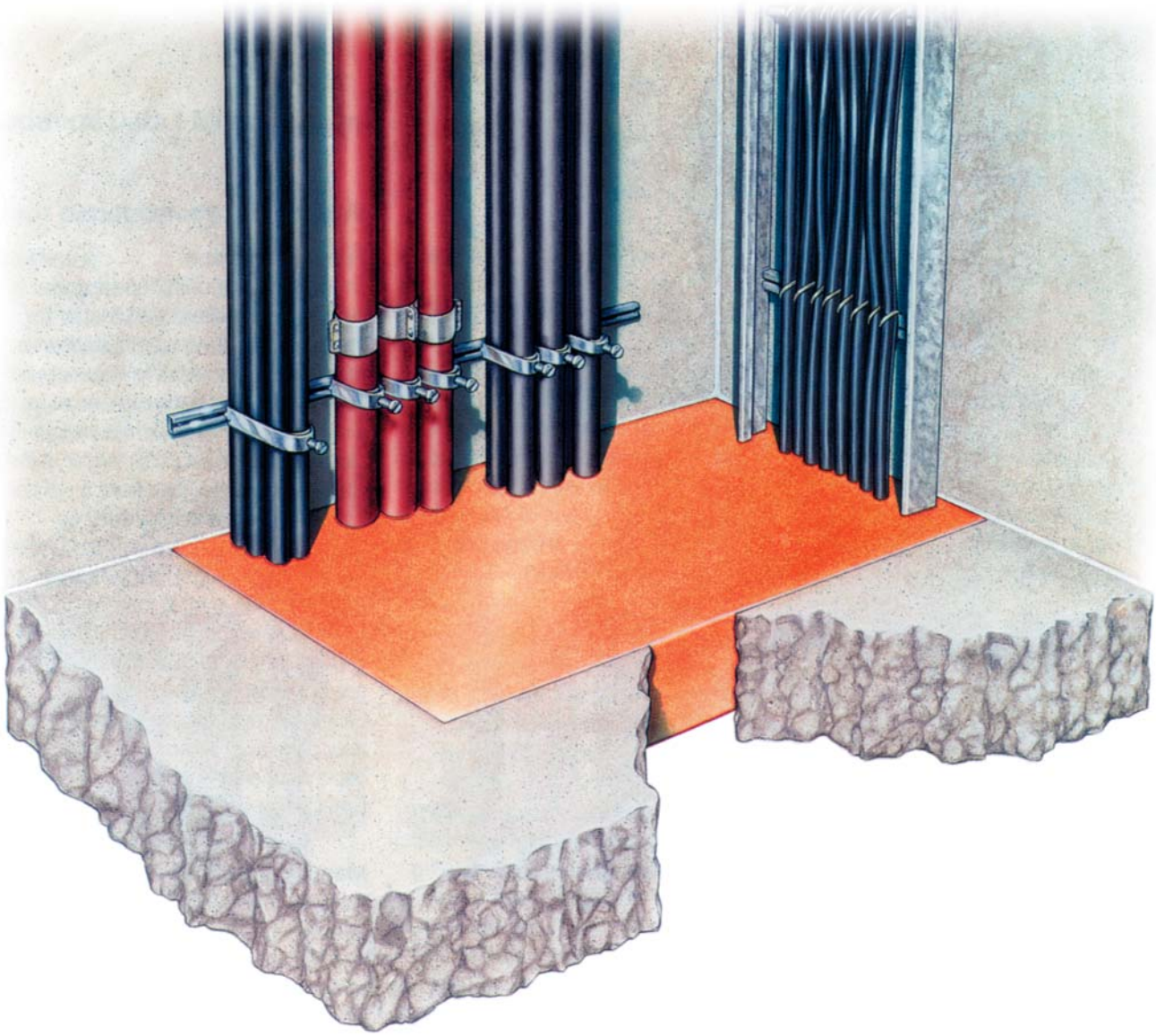
The Proven Solution



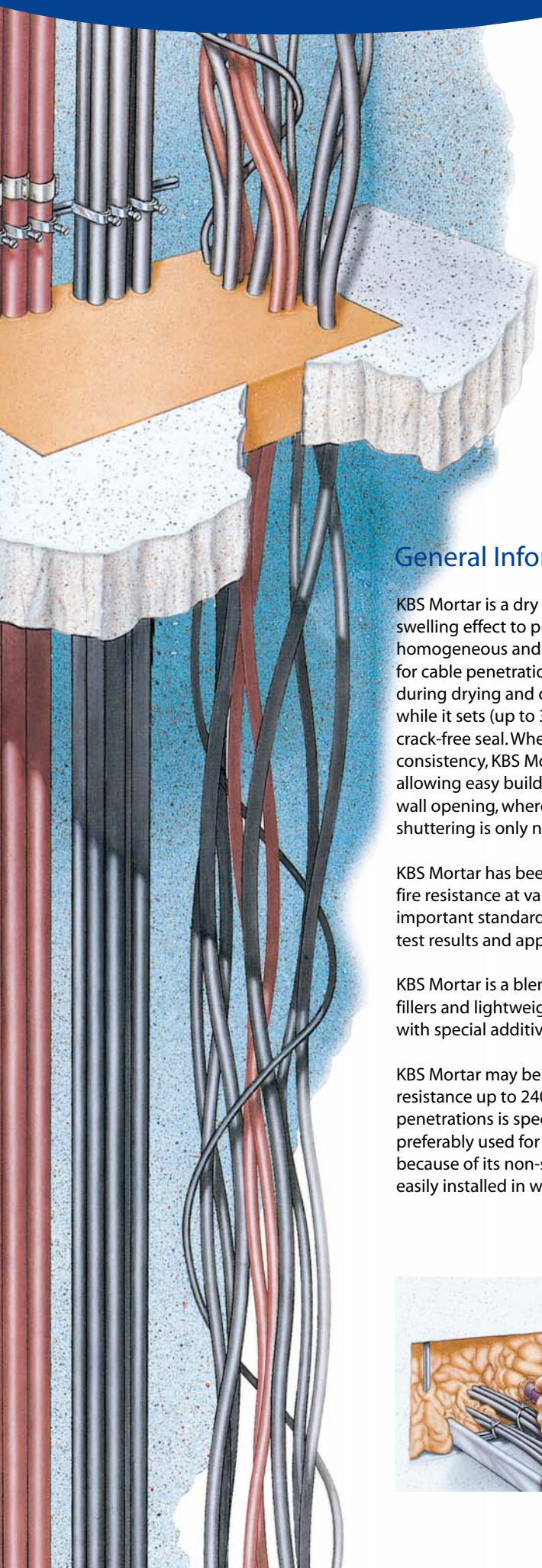
KBS FIRE PROTECTION SYSTEM

Mortar Seal

For sealing cable
and utility penetrations

www.KBSpassivefire.com

The Proven Solution



General Information

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

KBS Mortar has been rated up to 240 minutes fire resistance at various thicknesses as per all important standards. (See list of international test results and approvals on back page.)

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

KBS Mortar may be used wherever a fire resistance up to 240 minutes for cable penetrations is specified. KBS Mortar is preferably used for floor penetrations but, because of its non-sagging properties, is also easily installed in wall penetrations.

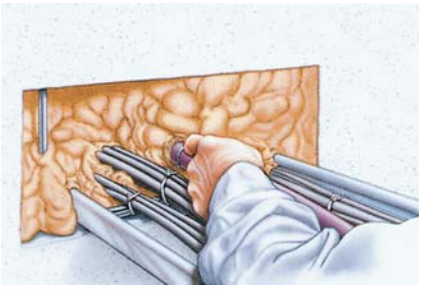
Installation

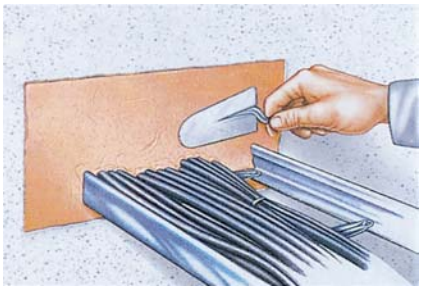
Wall penetrations

Pump application
Shutter one side of the opening and start applying 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. Using KBS Mortar at the correct consistency (see box), it will not run or sag, allowing 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. Where no front-shuttering was used (smaller openings) the mortar may be levelled out with a trowel after 1 hour of setting. Removal of shuttering, depending on temperature and opening size, after at least 24 hours.

Manual application
For smaller installations or repairs (retrofitting), KBS Mortar may also be mixed manually whereby the same rules apply as per above. For wall installations use 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 installed in a KBS Mortar seal with ease. The material is of low compressive strength and allows easy drilling (by hand or motor drill) for an adequate opening. After cables have been passed through, some hand-mixed KBS Mortar is used for resealing. A bulk loading caulking gun can be used for this.





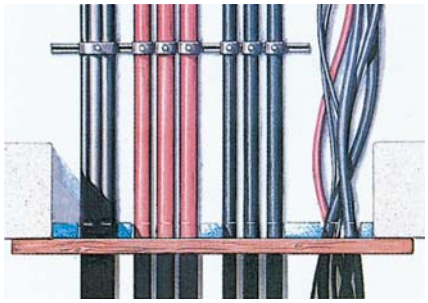
Technical Data / Mixing

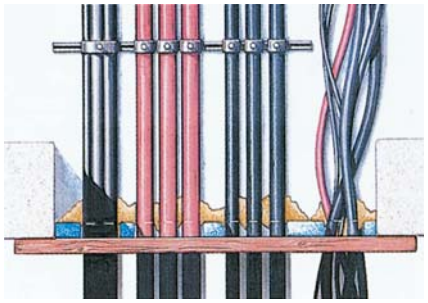
Floor penetrations

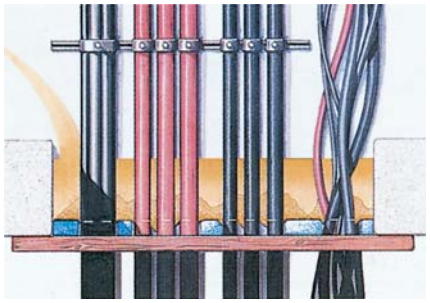
Shuttering
The underside of the floor opening is to be shuttered with suitable materials (such as hard-foam panels, held in place with wood lath). Please note, exact cutting around penetrating utilities is not necessary.

Preparing
For closing gaps of the shutter, mix KBS Mortar to heavy consistency, using less water (see box). Apply this heavy mix by trowel over all remaining openings and allow to set for at least 1 hour. All masonry surfaces coming in touch with the mortar must be free of loose dust, dirt or oil and should be wetted prior to application of mortar.
This also applies to wall penetrations.

Pouring
Mix KBS Mortar to pouring consistency (see box), using conventional mortar mixing equipment (cement mixer). Pour 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 at least 1 week (longer for very large openings) before removing shuttering. If access to the floor penetration is necessary, use any suitable







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 / cm^3

Compressive strength:
Approx. 0.6 – 0.7 N / mm^2

Expansion:
Approx. 3 Vol.% (20 °C / 24 h)

Workability: Max. 60 minutes

Complete hardening:
Approx. 30 days

Minimum temperature for application of 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 mixing container and start mixing.
Add rest of water slowly.

	Manual application (small openings)	Pump application (walls and floors)	Pouring application (floors)
25 kg dry mortar	16 l water	17 l water	18 l water
Approx. yield	35 – 36 l	36 l	36 l
1 kg 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

List of International Test Results and Approvals of KBS Mortar

Country	Testing Institute/ Approval Body	Ceiling or wall test	Mortar seal thickness [mm]	Official fire resistance rating F/T** [minutes]	Standard	Ref. No.
Australia	Nat. Building Techn. Center	floor	120	30 – 120 T 120 F	AS 1530 p.4	3101
Belgium	Université de Liège	wall	190	120 F/T	NBN 713.020	315
France	C.S.T.B.	wall	200	120 F/T	Arrêté Ministériel	624
Germany	DIBt, Berlin	wall floor	200 200	90 F/T* 90 F/T*	DIN 4102	125
Italy	CSI	wall	250	180 F/T	Circulare n. 91	1011
	Instituto Giordano	floor	250	180 F/T	Circulare n. 91	1012
Malaysia	Inst. Penyelidikan Perhutanan	wall	150	120 F/T	UL 1479	3301
South Africa	South African Bureau of Standards	wall	225	120 F/T	SABS 017 p. II	4005
Switzerland	VKF	wall floor	200 180	90 F/T* 90 F/T*	VKF, AEAI	506
UK	LPC/BRE	wall	100	240 F/T	BS 476, p. 20	941
	BRE	floor	100	240 F/T	BS 476, p. 20	946
USA	UL	floor	200	180 F 0 – 120 T	UL 1479	2016

* in Germany and Switzerland only 90 minutes are required

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

All test reports on request.

Disclaimer: The above data, particularly the recommendations for the application and use of KBS products are based on the manufacturer's 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 KBS 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. It is always the responsibility of the Installer / purchaser to guarantee correct preparation, DFT (KBS Coatings) and thickness (KBS Penetration Seals) of all KBS Materials. KBS Passive Fire Pty. Ltd. is not laible for installation or faulty installation. It is always the responsibility of the installer / purchaser to guarantee and certify the installation of materials.

KBS FIRE PROTECTION SYSTEM

KBS Passive Fire Pty. Ltd.
PO Box 1502
Crows Nest NSW 1585, Australia
P: 61 2 9969 7100
F: 61 2 9969 7200
E: mail@kbspassivefire.com
W: www.kbspassivefire.com

Project Office:
PO Box 21096
Coquitlam BC V3E 3P9, Canada
P: 1 604 941 1001
F: 1 604 941 1029