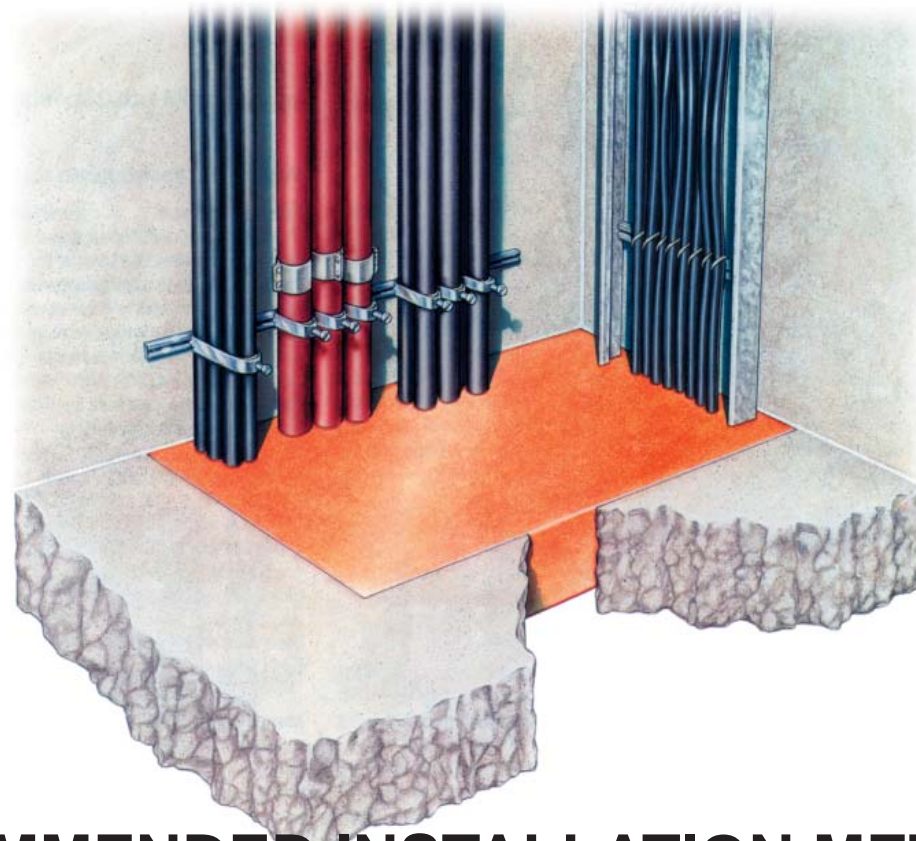
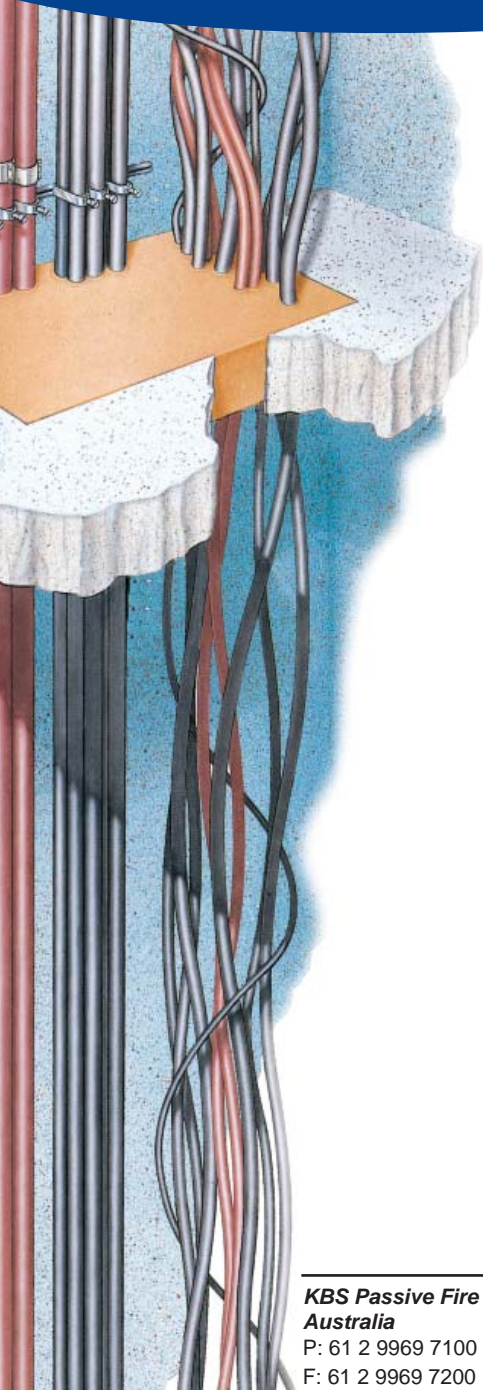


KBS MORTAR SEAL



RECOMMENDED INSTALLATION METHODS

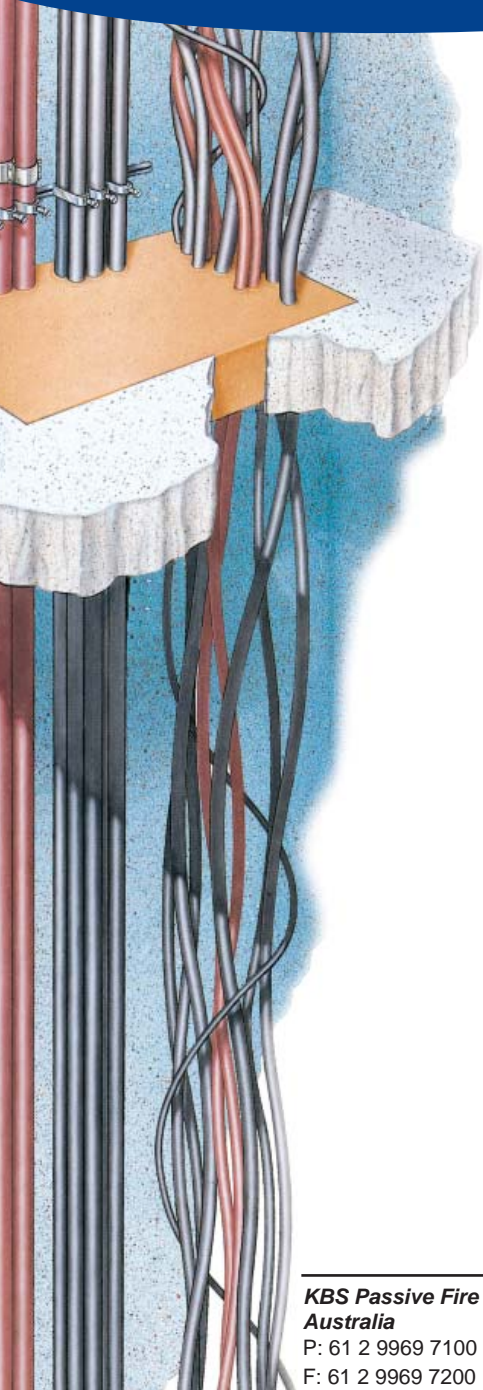
KBS Passive Fire Pty. Ltd.

Australia

Canada

P: 61 2 9969 7100 P: 1 604 941 1001 E: mail@KBSpassivefire.com

F: 61 2 9969 7200 F: 1 604 941 1029 W: www.KBSpassivefire.com

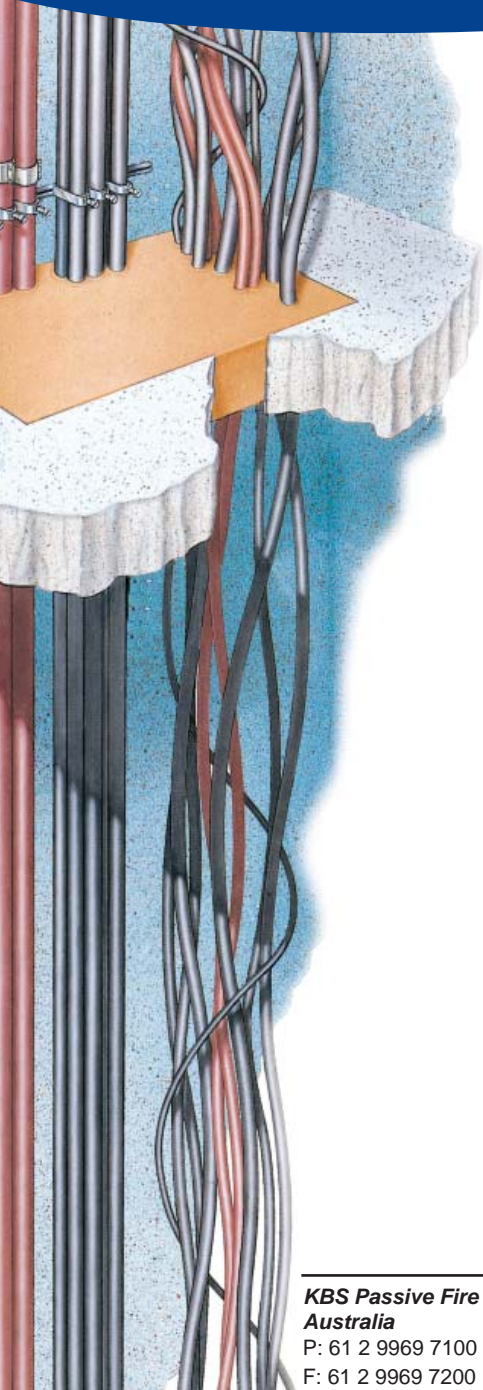


1. Introduction

KBS Mortar Seal is a special light-weight mortar with low compressive strength, which easily allows drilling holes for additional cables. KBS Mortar Seal, contrary to other mortar based cable penetration seals, does not shrink during the curing process. The normal shrinking effect is overcompensated by a swelling effect of about 3-5% thus avoiding shrinkage or adhesion cracks. KBS Mortar Seal installations are suitable for penetrations where many cables pass at random (477 max. cables - UL1479 through 1 penetration). The standard thickness of the sealing is normally 200mm, but in several countries it could be reduced further due to less severe testing requirements.

2. Surface Preparation

A thorough cleaning of cables is not required, however cables in the area of the penetration seal shall be free from oil and dust. Oil and grease should be removed with dry rags (no solvent!). Using a broom or vacuum to remove heavy layers of dust is sufficient. All masonry surfaces coming in touch with the KBS Mortar Seal must be free of loose dust, dirt or oil and should be wetted prior to the application of KBS Mortar Seal.



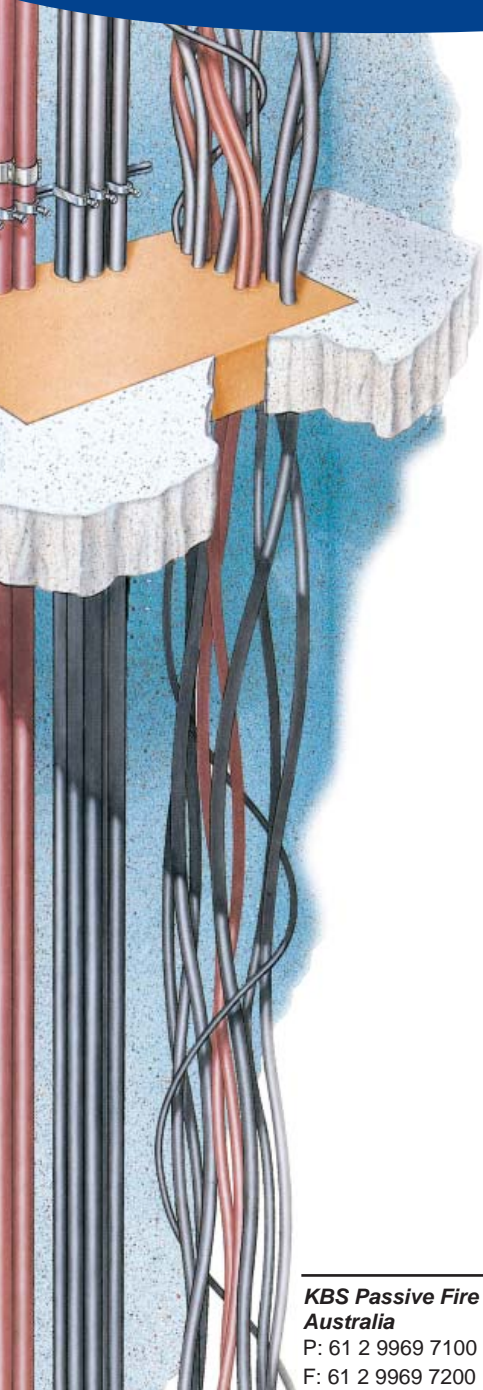
3. Wall and Floor Installations

Required equipment for the installation of KBS Mortar Seal

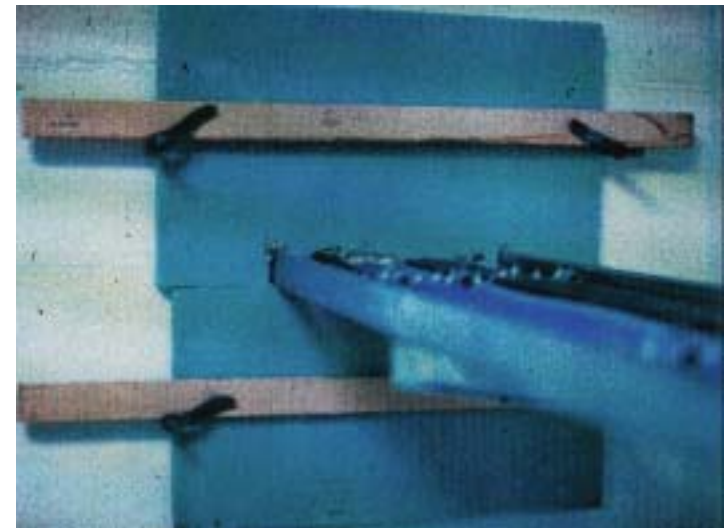
- KBS Mortar seal
- Water
- Mixing and pumping equipment: Putzmeister spray boy or similar
- Wall hooks
- Trowel
- Hand mixer or drilling machine (sata or similar)
- 1 bucket
- 1 brush
- One side has to be formed temporarily with suitable materials such as FC sheet or Ply..



Putzmeister spray boy



Attaching formwork to one side with hooks or nails



Completed formwork

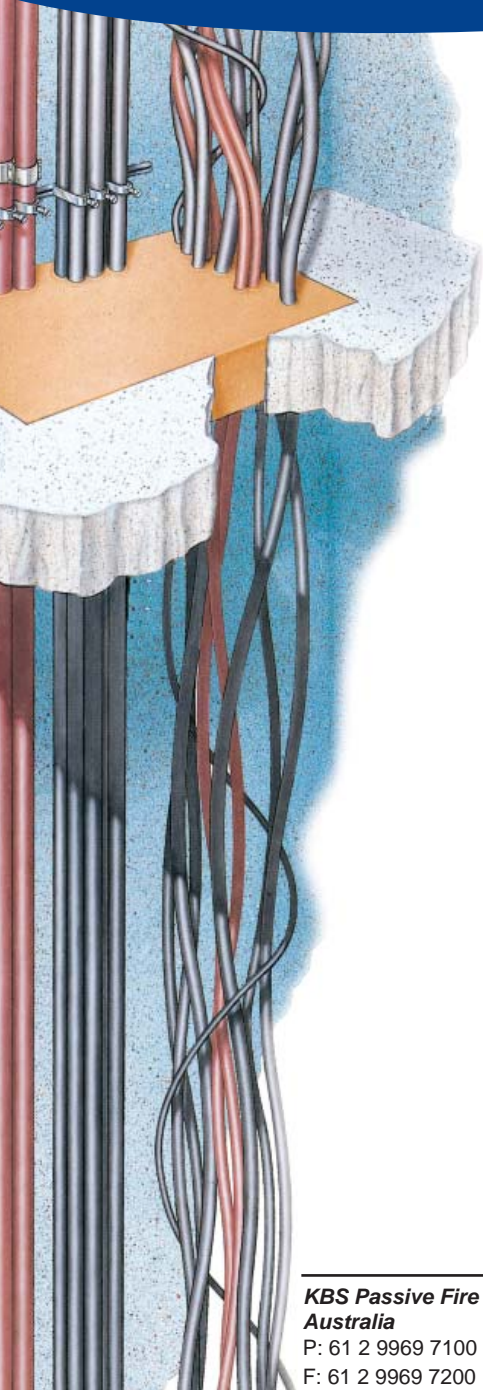
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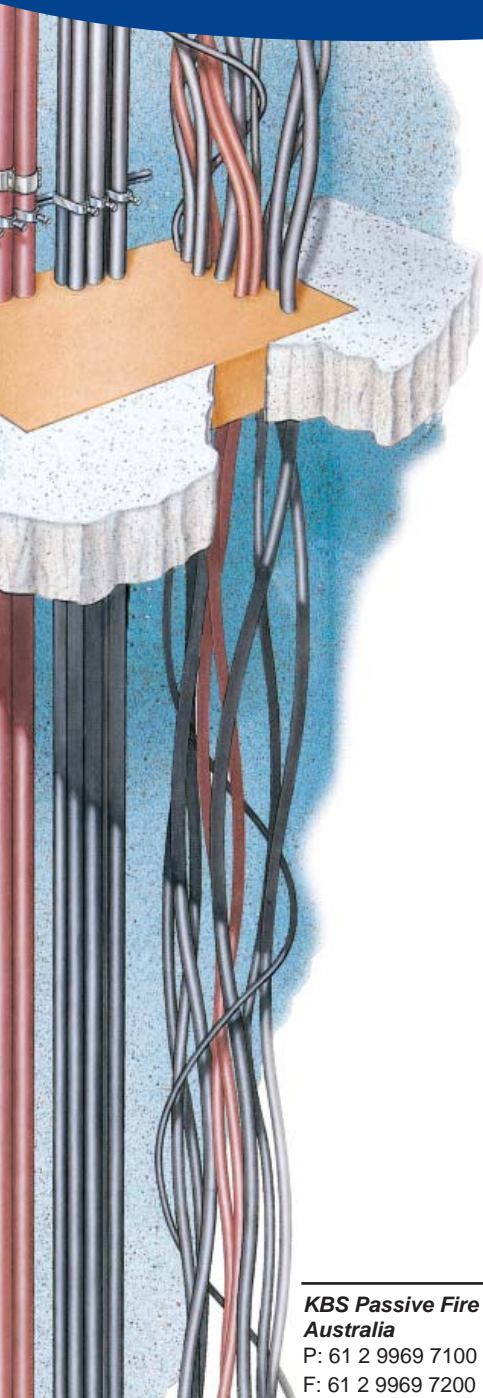
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Before starting the installation a calculation is required on the quantity of KBS Mortar for the respective opening. Mixing of the KBS Mortar with the needed quantity of water is done by hand or by using a mixer (SATA or similar) or a pump type mortar mixer/appliator (Putzmeister or similar).



KBS Mortar under mix



KBS Mortar Seal - METRIC (FM and UL Rated):

- Bag Size = 25kg
- Weight per M³ = 700kg
- Bags per M³ = 28 bags (1 bag)
- Approx. yield = 36 Litres per bag

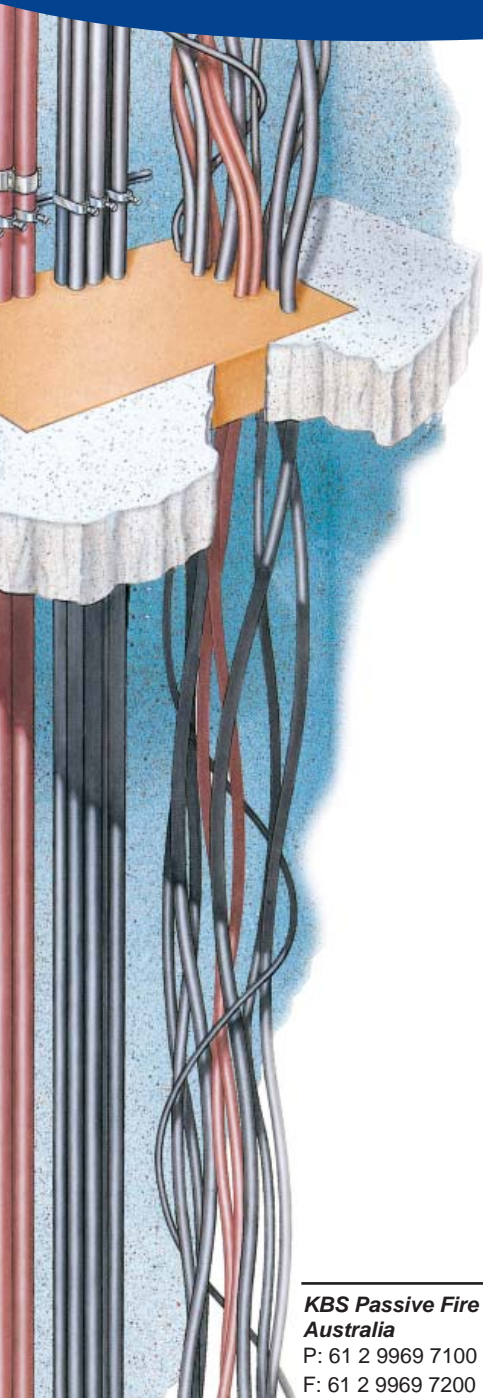
Using KBS Mortar Seal at the correct consistency will not run or sag, thus allowing easy build-up of the fire seal.



Mixing KBS Mortar to the required consistency

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



KBS Mortar Seal - IMPERIAL (FM and UL Rated):

- Bag Size = 55lbs
- Weight per ft³ = 44lbs
- Bags per ft³ = 0.88 bags (1 bag)
- Approx. yield = 9.5 gallons per bag

Using KBS Mortar Seal at the correct consistency will not run or sag, thus allowing easy build-up of the fire seal.

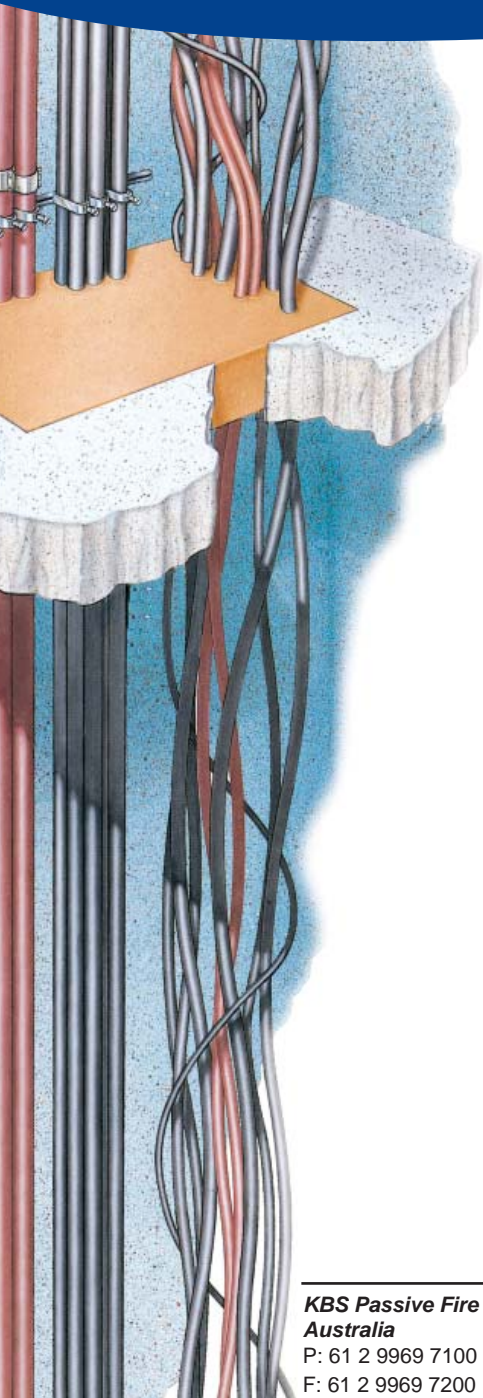


Mixing KBS Mortar to the required consistency

	Manual application (small openings)	Pump application (walls and floors)	Pouring application (floors)
55lbs dry mortar	4.2 gallons water	4.5 gallons water	4.8 gallons water
Approx. yield	9.2 – 9.5 gallons	9.5 gallons	9.5 gallons

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Start to apply KBS Mortar from the unformed side of the opening:

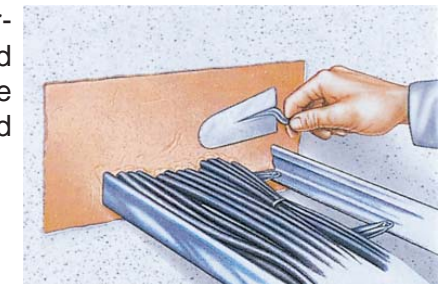
- a) by hand using a trowel
- b) by pump application with a hose

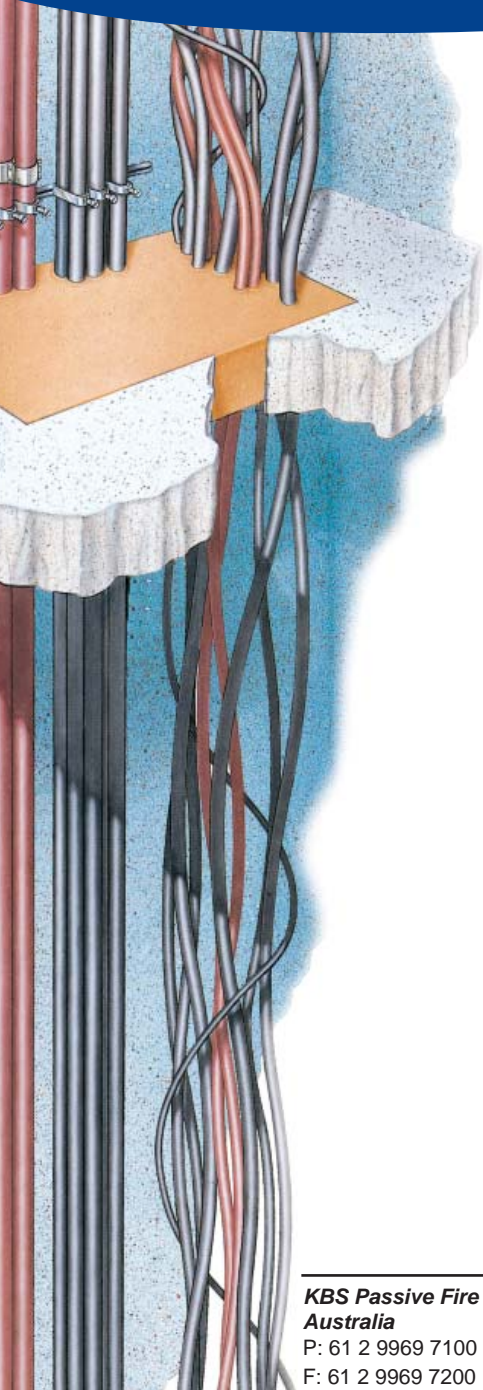


Where no additional formwork in front of the opening is used (for instance in smaller openings), the KBS Mortar may be leveled out with a trowel after one hour of curing. However the curing time depends on the room temperature and the water/dry mortar ratio used for preparing the mortar. Otherwise formwork may be removed after 72 hours.



If voids appear on the KBS Mortar surface after having removed the formwork, the surface can be smoothed with freshly prepared KBS Mortar.

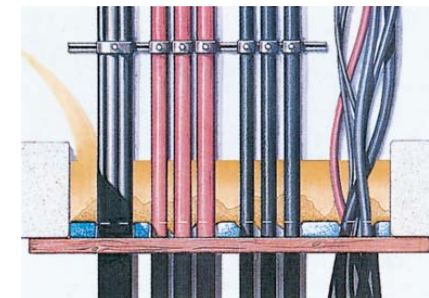
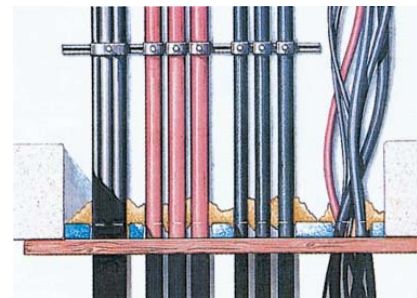
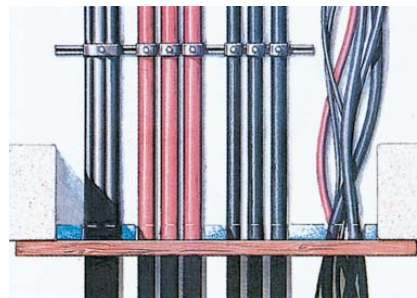


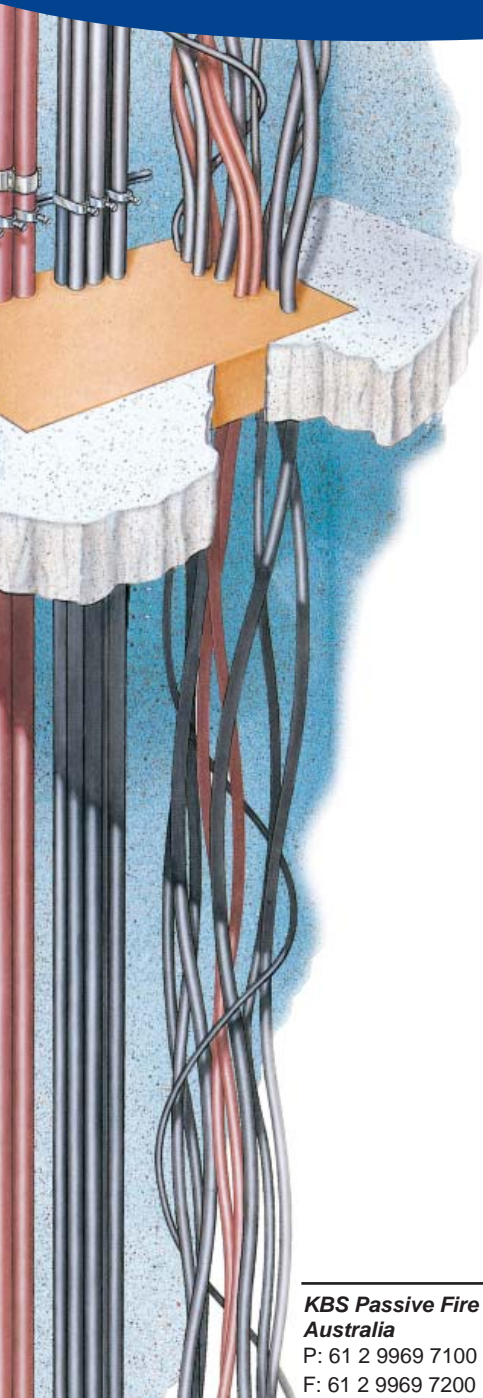


Only the underside of the floor opening has to be formed with the same material as we learned before for the wall installation. For closing remaining gaps in the formwork mix KBS Mortar to a heavy consistency using less water. Apply this heavy mix by trowel over all remaining openings and allow to set for at least one hour. Start applying KBS Mortar from above or to the side:

- a) by hand using a trowel.
- b) by pump application with a hose having a nozzle with a dia. of 20mm.

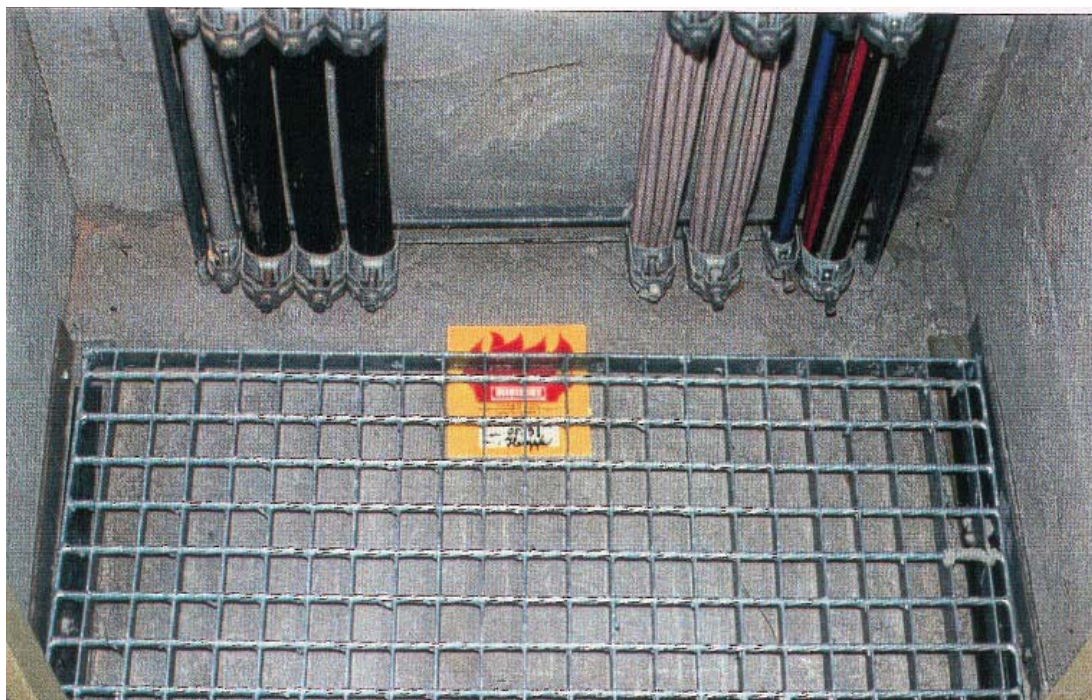
Level the KBS Mortar out to a perfect finish (by brush or trowel).





Allow to dry and to cure for at least one week (or longer for very large openings) before removing the formwork.

NOTE: Do not walk on the floor installations of KBS Mortar! If walking on the floor penetration seal becomes necessary, use any suitable cover, for instance a steel plate.



The data contained in this document, 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 responsible for installation or faulty installation. It is always the responsibility of the installer / purchaser to guarantee and certify the installation of materials.

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