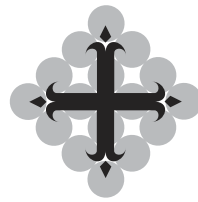


# KA Tanking Slurry

## Technical Data Sheet



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### 1. KA Tanking Slurry

#### a. What is KA Tanking Slurry?

KA Tanking Slurry is a grey or white cementitious compound containing Portland cement, graded quartz sands, aggregates and chemical additives. It is supplied in powder form contained in plastic buckets. In certain instances, it may be necessary to use KA Super Plug (a cement based quick-setting hydraulic compound used to staunch running water or seepage through concrete) prior to the application of KA Tanking Slurry.

#### b. How it works

On site, KA Tanking Slurry is mixed with water to form a homogenous paste. The paste is applied directly to pre-wetted concrete or masonry structures and, as well as coating the surface, will penetrate a short distance

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## 1. KA Tanking Slurry

### a. What is KA Tanking Slurry?

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### b. How it works

On site, KA Tanking Slurry is mixed with water to form a homogenous paste. The paste is applied directly to pre-wetted concrete or masonry structures and, as well as coating the surface, will penetrate a short distance into capillary cracks, fissures and pores in the surface of the substrate. The presence of water and free lime causes the tanking slurry to form insoluble crystals which block the pores and prevent the passage of water. This effectively makes the substrate water-tight for the lifetime of the structure.

### c. Where it can be used

KA Tanking Slurry can be applied by brush or spray to new or old structurally sound stone, concrete, block, brick or masonry surfaces, in most cases without a bonding coat, either to the internal or external side. It can be applied to both horizontal and vertical surfaces. Surfaces should be prepared to have a capillary open structure.

The waterproofing barrier should run continuously around the whole structure.

Concerning the water table, controls may need to be implemented regarding timing of application or management of surrounding water during application and curing.

KA Tanking Slurry has passed the tests of WRAS Water Regulations Advisory Scheme, BS6920 and is approved for potable drinking water structures such as reservoirs and concrete drinking water tanks. It can also be used in ponds, swimming pools, retaining walls, tunnels and lift shafts.

### d. Coverage

KA Tanking Slurry should be applied in two coats, one vertical and one horizontal where possible, each at a thickness of 2-3mm. The second coat must be applied within 24 hours of the first.

25kg of KA Tanking Slurry will provide 2 coats, each at 8m<sup>2</sup>. 12.5kg of KA Tanking Slurry will provide 2 coats, each at 4m<sup>2</sup>. This coverage will depend, however on the roughness of the substrate.

### e. Packaging

KA Tanking Slurry is supplied in powder form in 25kg and 12.5kg sealed plastic tubs.

### f. Storage

Store in a dry place and protect from frost. The shelf life of KA Tanking Slurry is up to 3 years when stored in unopened containers.

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## 2. Compliance with Building Regulations and British Standards

The relevant Building Regulations that apply to tanking systems for waterproofing are in:

- Approved Document Part C2 Resistance to Moisture
- Approved Documents Basements for Dwellings
- Regulation 7, Materials and Workmanship

The British Standard is

- BS8102:2009 Code of practice for protection of below ground structures against water from the ground

In addition, British Standard BS6920:2000 Suitability of non-metallic products for use in contact with water intended for human consumption gives test requirements for potable water contact.

### 2.1 Approved Document Part C2 Resistance to Moisture

The floors, wall and roof of the building shall adequately protect the building and people who use the building from harmful effects caused by:

- a. Ground moisture
- b. Precipitations and wind-driven spray
- c. Interstitial and surface condensation
- d. Spillage of water from or associated with sanitary fittings or fixed appliances.

Section 4.2: Floors next to the ground should:

- a. Resist the passage of ground moisture to the upper surface of the floor
- b. Not be damaged by moisture from the ground
- c. Not be damaged by groundwater
- d. Resist the passage of ground gases. Remedial measures will include a gas resistant barrier.

KA Tanking Slurry used in a basement floor would protect against ground moisture.

Similarly Section 5.2: Walls states that walls should:

- a. Resist the passage of moisture from the ground to the inside of the building
- b. Not be damaged by moisture from the ground and not carry moisture from the ground to any part which would be damaged by it.

If the wall is an external wall it should:

- c. Not be damaged by groundwater
- d. Resist the passage of ground gas. Remedial measures will include a gas resistant barrier.

KA Tanking Slurry used in walls protects buildings against ground moisture.

The other sections of Part C are not applicable to this type of product, since the majority of Approved Document C is aimed at new buildings. A more relevant Approved Document is Basements for Dwellings.

### 2.2 Approved Document "Basements for Dwellings"

Approved Document "Basements for Dwellings" forms part of the Building Regulations 2000. This publication supplements the basic level of guidance on the design and construction of basements for dwellings. It describes the means of meeting relevant performance requirements of the Building Regulations.

Where resistance to moisture is concerned, this Approved Document is closely linked with BS8102:2009 Code of practice for protection of below ground structures against water from the ground.

#### 2.2.1 Section 2.4 Exclusion of Moisture

Walls and floors below external ground level and the junctions between them should:

- a. Provide resistance to ground moisture reaching the internal surface of the wall or upper surface of the floor so that the environmental conditions within the basement are appropriate to the intended use.
- b. Not be damaged by moisture from the ground.

BS8102:2009 gives 3 grades of waterproofing protection

(TABLE 1)

Grade	Example of use of structure	Performance level
1	Car parking, plant rooms (excluding electrical equipment), workshops	Some seepage and damp areas tolerable, dependent on the intended use.
2	Plant rooms and workshops requiring a drier environment (than Grade 1); storage areas	No water penetration acceptable. Damp areas tolerable, ventilation might be required.
3	Ventilated residential and commercial areas, including offices, restaurants etc.; leisure centres	No water penetration acceptable. Ventilation, dehumidification or air conditioning necessary appropriate to the intended use.

Table 1. Grades of waterproofing protection described in BS8102:2009 and Approved Document Basements for Dwellings

### 2.2.2 Selecting and Constructing a Waterproofing System

The Approved Document provides an appendix (2A) with a flow chart containing the following steps:

1. Determine the position of the water table
2. Determine the drainage characteristics of the soil
3. Determine whether the waterproofing system should be made continuous or whether discontinuity may be acceptable
4. Select an acceptable construction type
5. Determine the type of foundation and its suitability for providing continuity of waterproofing
6. Confirm that the selected foundation type and waterproofing can achieve the required water resistance
7. Assess the range of suitable primary waterproofing systems. Select and confirm the suitability of the waterproofing system
8. Ensure adequate waterproofing details are provided for the system
9. The solution is likely to meet the requirements of the Building Regulations if:
  - a. Each item has been considered and adequate account has been taken of the associated factors.
  - b. The waterproofing systems meet the conditions of its Technical Approval where relevant.
  - c. The design proposals are in accordance with the suppliers' recommendations.

### 2.2.3 How KA Tanking Slurry meets the requirements of the Building Regulations.

This section goes through the steps 1-9 above, and shows where KA Tanking Slurry can (and can't) satisfy the requirements of the Approved Documents and BS 8102:2009.

Step 1. Determine the position of the water table

Steps 2 and 3. Determine the drainage characteristics of the soil and hence the need for continuity of waterproofing.

(TABLE 2)

Position of water table	Drainage characteristics of soil	Can site be drained effectively?	Requirement for waterproofing in soils without gases	Requirement for waterproofing in soils if gases present
Low	Excellent	Yes	Discontinuity might be possible	Needs to be continuous
	Good			
	Fair to poor			
Variable	Any	No	Needs to be continuous	
		High		

Table 2. Requirement for continuity of waterproofing.

Tanking is a barrier method of waterproofing and is described as a type A protection system, which can be used to give both continuous and discontinuous protection.

Diagram 1 shows how KA Tanking Slurry can give continuous waterproofing when applied either internally or externally.

(DIAGRAM 1)

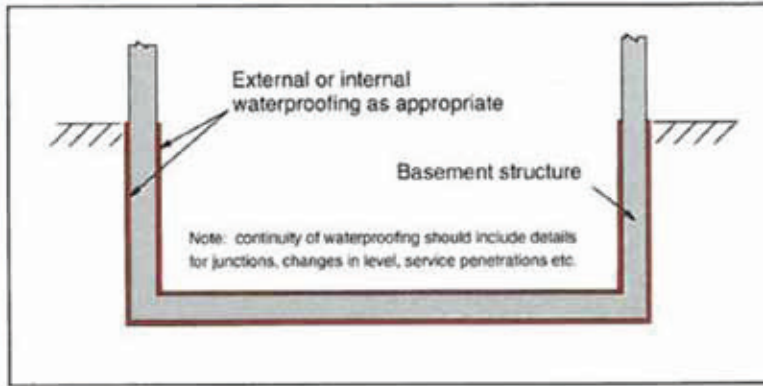


Diagram 1. Continuous waterproofing to basement with KA Tanking Slurry within Type A Protection, cementitious crystallisation active systems are in category 6.

(TABLE 3)

Position of waterproofing system	Type A
External	Yes
Sandwich	Yes
Internal	Yes
Integral	N/A

The suitability of tanking slurry depending on the position of the waterproofing system.

Diagram 2 illustrates the different positions of waterproofing.

(DIAGRAM 2)

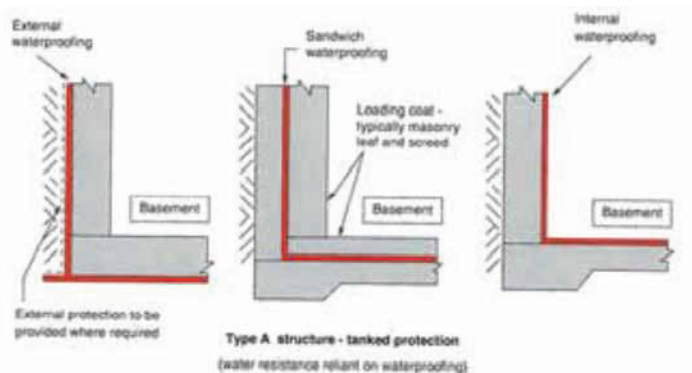


Diagram 2. External, sandwiched and internal waterproofing

Step 4. Select an acceptable construction type



The acceptability of a type A Barrier Protection with KA Tanking Slurry depends on the position of the water table as shown in Table 4.

(TABLE 4)

Water Table	Waterproofing	Plus drainage
Low	Yes	Yes
Variable	Maybe acceptable when variability is due to surface water or other infrequent occurrences and not due to an actual rise in the water table.	Maybe acceptable when variability is due to surface water or other infrequent occurrences and not due to an actual rise in the water table.
High	Not recommended	Not recommended

Table 4. Suitability of Type A Barrier Protection with KA Tanking Slurry according to water table

Steps 5, 6 Determine proposed form of foundation, depending on whether continuity of waterproofing is required.

Step 7. Select suitable waterproofing system

Tanking Slurry is an acceptable waterproofing system provided steps 1 – 6 are satisfied.

Step 8. Ensure adequate details are provided.

Examples of details of the application of KA Tanking Slurry are given in diagrams 2 – 5.

(DIAGRAM 3)

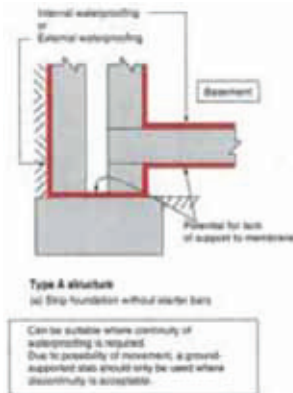


Diagram 3. Strip foundation without starter bars.

(DIAGRAM 4)

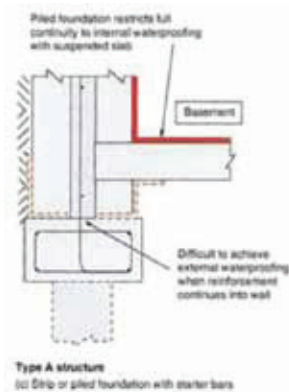


Diagram 4. Strip or piled foundation with starter bars

(DIAGRAM 5)

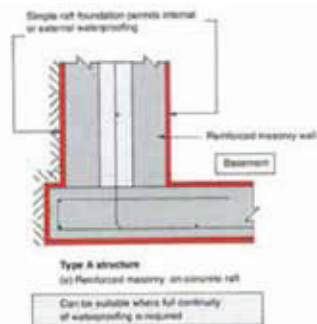


Diagram 5. Reinforced masonry on concrete raft

Step 9. The solution is likely to meet the requirements of the regulations if:

- a. Each item has been constructed and adequate account has been taken of the associated factors.
- b. The waterproofing system meets the conditions of its Technical Approval where relevant.
- c. The design proposals are in accordance with the suppliers' recommendations.

### 2.3 Approved Document to support Regulation 7

Regulation 7 requires that building work is carried out:

- a. With adequate and proper materials which:
  - I) Are appropriate for the circumstances in which they are used
  - II) Are adequately mixed or prepared, and:
  - III) Are applied, used or fixed so as adequately to perform the functions for which they are designed, and:
- b. In a workmanlike manner

The suitability of a material for use can be assessed by several means, including:

- I) British Standards

The British Standards which applied to tanking is BS 8102:2009 Code of practice for protection of below ground structures against water from the ground. This is discussed below.

- II) Tests and calculations

The resistance to water pressure of KA Tanking Slurry has been measured by Elotex GmbH, Frankfurt according to BS EN 196: The treated concrete resisted positive water pressure up to 7 bars of pressure.

- III) Past experience

The material can be shown by experience, such as in building use, to be capable of performing the function for which it is intended.

KA Tanking Slurry has been in use for over 10 years and has been applied to many buildings at that time.

### 2.4 Compliance with standard BS 8102:2009 Code of practice for protection of below ground structures against water from the ground

BS 8102:2009 is very similar in structure and content to Approved Document "Basements for Dwellings". Cementitious crystallisation barriers are described as Type A barrier protections, and details are in Section 8.2.6.

- Cementitious crystallisation barriers should be applied to either internal or external surfaces of the concrete structure by brush or spray. They are suitable for use on new and existing structures and do not require a loading coat.
- Horizontal Applications – cementitious crystallisation barriers can be applied as a single coat slurry to hardened concrete or dry sprinkle and trowel-applied fresh concrete. They can also be applied to concrete blinding immediately prior to the placing of overlaying concrete.
- Vertical Applications – the barrier should be applied in a two-coat application to all vertical surfaces. Provided the guidelines are followed, then KA Tanking Slurry satisfied the requirements of BS 8102:2009.

### 3. Instructions for Use

#### 3.a. Preparation

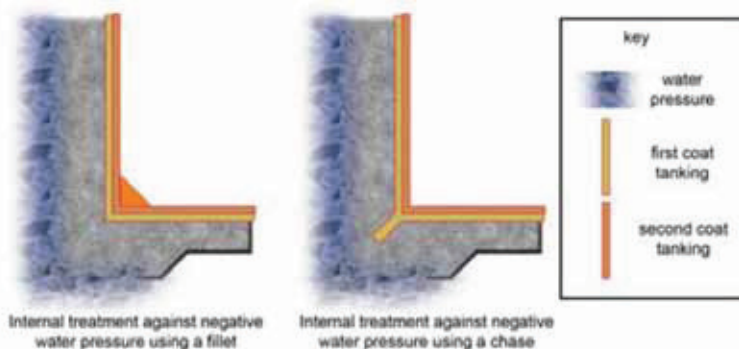
As with most coating treatments, surface preparation is critical and although this can be time consuming it is essential that it is carried out thoroughly. KA Tanking Slurry is only fully effective if the capillaries in the brickwork, concrete or mortar are sufficiently absorbent to allow penetration of the crystalline chemicals. All surfaces should be clean and free from paint systems, oil, loose dust, shutter treatments, curing compounds, surface hardeners, bitumen and other contaminants. Before application of KA Tanking Slurry, the surface will need to be saturated with clean water to assist silica growth within the substrate.

Surface preparation can be best carried out using high pressure water jetting, grit blasting or mechanical scrubbing. Water jetting has the advantage that complete saturation of the substrate is achieved, but lack of drainage facilities may in some cases preclude its use. Large cracks and other defects can be repaired using a 3:1 sand : cement mortar gauged with KA-Bond SBR. Repaired areas can be coated with KA Tanking Slurry after 24 hours, but large areas of new brickwork, poured concrete or cement renders should be allowed to cure for 3 days before application of KA Tanking Slurry is considered.

#### 3.b. Fillets

In order to reduce the concentration of negative water pressure at wall and floor joints it is recommended that KA Fillet Seal be used at internal transitions between floors and walls (see fig 1). If it is impractical to provide a fillet between the wall and floor then a saw cut should be made in the floor slab as close to the wall as possible and the subsequent application of KA Tanking Slurry allowed to flow into the saw cut (see Diagram 6).

(DIAGRAM 6)



It must be re-stressed that KA Tanking Slurry performs better on thoroughly dampened surfaces. Only then is maximum penetration achieved. Dry surfaces should be saturated with clean water, preferably 24 hours before the application of the KA Tanking Slurry and then re-wetted just before the application.

#### 3.c Plugging

In locations where running water is evident, this would suggest some degree of hydrostatic pressure that must be dispersed to present a satisfactory damp substrate onto which the KA Tanking Slurry can be applied. KA Super Plug is mixed 4:1 with water with a gloved hand into a pall and then placed directly onto the leaking substrate. Hold for 30 seconds or until the KA Super Plug is firm to the touch.

(DIAGRAM 7)





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### 3.d. Mixing

It is important not to mix more material than can be applied within 30 minutes at around 20°C. The recommended mixing ratio is approximately 3 parts KA Tanking Slurry to 1 part clean water (by volume). It is recommended that the powder is added slowly to the water and mixed to a smooth, lump free "custard-like" consistency.

N.B. If after 30 minutes the mixed material becomes too stiff, do not re-mix with water, but discard and mix fresh material.

Normal problems of damp and water ingress can usually be addressed by the application of two coats of KA Tanking Slurry over the whole area. The second coat should be applied at right angles to the first coat to ensure complete coverage is achieved. The second coat may be applied as soon as the first coat becomes 'touch-dry'.

In all cases the second coat must be applied within 24 hours of the first.

In hot, dry climates a fine water mist should be sprayed over the surface of the first coat before application of the second.

When applying by brush use a medium hard short bristle type.

Trowelling of the second coat can be carried out to provide a dense, polished finish.

### 3.e. Application

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### 3.f. Ventilation and Curing

De-humidifiers should not be used immediately after the application of KA Tanking Slurry as this would arrest the curing system – moist conditions are desirable for a period of at least 3 days, after which time heaters and de-humidifiers may be used to control condensation.

It is recommended that wherever possible ventilation is provided, as lack of it may cause condensation (clear water beads or dark patches) to form on the surface of KA Tanking Slurry.

Uniform hardening and water tightness can be assured if the product is not allowed to dry out too rapidly.

Protect the coating against excessively fast evaporation in hot conditions or drying winds. If these conditions prevail, mist spray the surfaces regularly.

### 3.g. Plastering / Rendering

Remedial plaster systems may be used over KA Tanking Slurry provided an intermediate bonding compound is employed. Dilute KA-Bond SBR with an equal volume of water and apply to the cured KA Tanking Slurry and allow to become tacky, but not dry! Plaster may then be applied as normal.

Where cement rendering is required use an intermediate bonding slurry mixed at two parts sand : one part cement gauged with a 1:1 KA-Bond SBR : water mix.

Coat the tanked surface with the bonding slurry and then apply the first render coat before the slurry dries!

A period of at least 6 months should be allowed before permanent decoration. During this period only use permeable emulsion paints.

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### 3.h. Clean-up and Spillages

Spillages should be cleaned promptly. Non hardened material may be removed from surfaces or tools with water.

### 3.i. Health and Safety

#### INHALATION

Remove victim immediately from source of exposure.

Move into fresh air and keep at rest. Get medical attention.

#### INGESTION

Rinse mouth thoroughly. DO NOT induce vomiting.

Get medical attention immediately.

#### SKIN CONTACT

Wash off promptly and flush contaminated skin with cold water. Promptly remove clothing if soaked through and flush skin with water.

Get medical attention promptly if symptoms occur after washing.

#### EYE CONTACT

May cause permanent damage if eye is not immediately irrigated.

Get medical attention immediately. Continue to rinse.

A full material safety data sheet is available on request.

### 4. Technical Information

Water resistance test – Elotex – 7 bar positive pressure to EN196. BS12390-8-2009 and BS3921 ESG Ukas Accredited.