

Delta Shield®

Flexible Protective & Waterproofing Emulsion Based on Bitumen

Description

DELTA SHIELD is a ready to use, cold applied bitumen emulsion modified with rubber latex to provide a tough durable and elastic coating.

Uses

- Waterproofing of roofs, block foundations, retaining walls, basements, concrete and bridge abutments.
- Damp proof membranes in sandwich constructions.
- Adhesive for bonding wooden flooring, insulation board, expanded polystyrene, PVC, & cork tiles etc.
- Curing membrane cum protective coating for sub-structures.

Typical Properties

Colour	Brown / Black
Specific Gravity	1.12 +/- .01
Solid Content	65.5 +/- .05
Latex content in dry film	15% (Min)
Flash Point	Non-flammable
Service Temp. Limits	-40°C to +120°C
Elongation ASTM C-836	1200%
Tensile Strength ASTM D-412	.318 N/mm ²

Roof waterproofing

1- Preparation of Support

• New Roofs

The flat roof shall have an appropriate slope to permit normal flow of water to drainage points. The surface of the slope shall be perfectly trowelled to a flat finish free of visible gravels. Remove all traces of dirt, dust and loose particles from the surface and thereafter flush with clean water.

If the surface is irregular and requires smoothing this can be obtained by applying an impregnation coat of DELTA SHIELD diluted with an equal parts of water by brush (0.25Kg./m²) and using mortar consisting of:-

- 1 volume of ordinary Portland cement.
- 4 volumes of sand.
- 2 volumes of DELTA SHIELD.

A small amount of water shall be added to the mixture

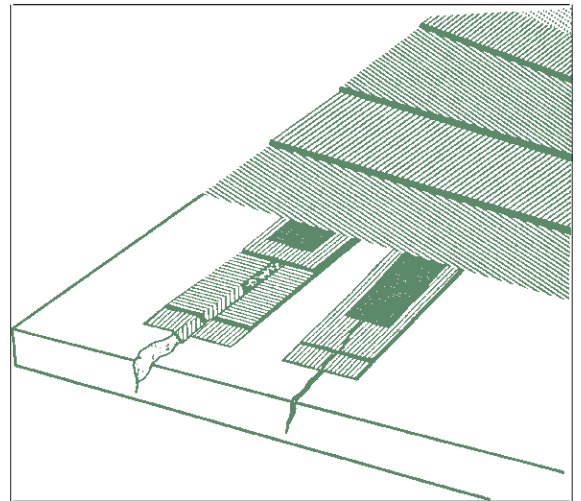
to obtain a mortar of required consistency.

Any remaining indentations in the form can be filled with the same mortar.

Angles shall be rounded. Do not use cement : sand mortar on the concrete for patch work/ smoothing.

• Old roofs

- 1) Carefully clean concrete surfaces and cracks to remove all traces of dirt, dust and loose and loose parts of the earlier waterproofing material. Open large cracks in a Vee shape,



Check slope and mark areas to be refilled. Flush with plenty of clean water.

2) Filling of cracks and depressions

Apply an impregnation coat of DELTA SHIELD diluted with an equal parts of water to all areas to be repaired (0.25 kg./m²) by brushing energetically to ensure it is well worked into the pores and fissures in the concrete. Fill all open cracks and depressions with a thick coat of DELTA SHIELD (0.5 kg./m²) and plug immediately using a mixture consisting of:-

- 1 volume of cement
- 4 volumes of clean fine sand
- 2 volumes of DELTA SHIELD

A small amount of water shall be added to the mixture to obtain a mortar of required consistency. Allow to dry.

3) Sealing cracks

Minor cracks and filled cracks shall be treated as follows :-

After the impregnation coat (and the filling. If applied) has dried, apply a very thick coat of DELTA SHIELD (1kg / m²) including an area of 10 to 15 cm on either side of the crack, at the same time incorporating non- woven Polyester, ensuring that it is completely embedded by forcing the DELTA SHIELD through the mesh. Allow to dry. Cracks in parapets, strips, cornices, partition walls etc, shall be similarly treated.

II-WATERPROOFING OPERATION

- Apply coats as indicated below to all surfaces, continuous strips, pipes, channels, cornices etc.

While surfaces are still damp, apply a primer coat of DELTA SHIELD diluted with an equal volume of water (0.25 kg./m²) using a stiff brush. Allow to dry.

Apply a coat of undiluted DELTA SHIELD (0.25 kg./ m) using a soft brush. Allow to dry.

- Apply a thick coat of undiluted DELTA SHIELD up to a height of minimum 15 cm. on flashings executing sections with care (0.5 kg./ m²). Allow to dry.
- Apply a thick coat of DELTA SHIELD undiluted (0.5 kg. / m²) crossed over the previous coat. Blind with clean sharp sand and allowed to dry. Brush off excessive sand.

Over all consumption of DELTA SHIELD : 1.5 kgs./ m².

N.B.

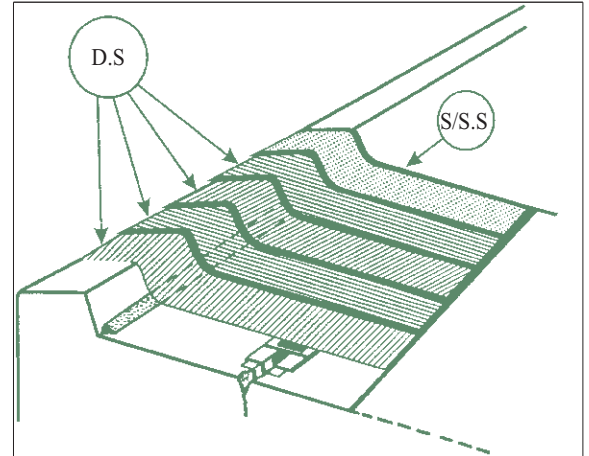
Do not use the sand if heat insulation coatings are required.

III-PROTECTION OF AREAS

It is advisable to protect waterproofing of flat roofs from damaging or puncturing, even when only very occasional and very light traffic is involved. The screed or render shall be applied after the final coat is completely dry.

IV-HEAT - INSULATION

When the heat insulation is required for the Roof, apply two coats of SUN-SHIELD after 24 hours of the completion of waterproofing works, @ 1kg/10m² in one coat.



D.S :- Delta Shield
S/S.S:- SAND/ SUN-SHIELD

PROTECTION OF FOUNDATIONS AND BURIED CONSTRUCTION WORKS

This type of protection is essential in most cases, either to safeguard building structures from damages caused by underground water, or to prevent infiltration and the upward flow of water by capillary action. As applications differ, they have been listed in the following two broad categories according to degree of protection sought :-

I- Simple Protection and Waterproofing

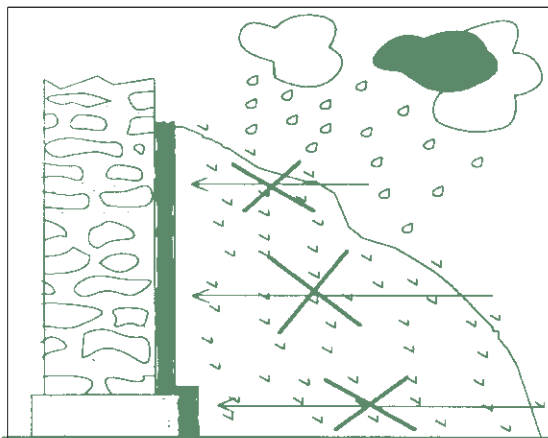
- A) Brush and clean thoroughly surfaces to be treated in order to remove all loose material (dirt, dust, etc).
- B) Dampen the surface with water after superficial smoothing if necessary.
- C) Apply to surface while still damp a priming coat of DELTA SHIELD, diluted with water according to the porosity of surface conditions with brush or roller (0.25 kg./ m²).
- D) Apply 2 crossed coats of undiluted DELTA SHIELD, in succession, using

0.5 kg./m² for each coat, i.e a total of 1.25 kg./m² including the primer coat.

2- Reinforced protection and sealing :

This form of application is recommended in cases where either the type of fill is liable to produce extensive shock or stress (hardcore or gravel projected to a great depth, or waterproofing under waterproofing under foundation raft) or when there is a risk of structural movement (construction jointing, etc).

- Apply by brush a primer coat of DELTA SHIELD, diluted with 50% water.(0.25 kg./m²). Allow to dry .
- Apply a thick coat of undiluted DELTA SHIELD. (0.5 kg./m²). Allow to dry.
- Apply a second thick coat of DELTA SHIELD, undiluted (0.5 kg./m²) gradually incorporating Non-woven polyester fabric, working the bituminous emulsion well into the mesh. Ensure that the fibres lies flat, with no creases or folds. Allow a 10 cm overlap when joining, the strips. Allow to dry.
- Apply by trowel 2 cross coats of DELTA SHIELD. undiluted(0.5 kg./m² per coat) i.e. an overall consumption of 2.25 kg./m² including the primer coat.



**DELTA SHIELD
VS**

OTHER BITUMINOUS PRODUCTS

1)- BITUMINOUS PRODUCTS APPLIED HOT

Advantage

- Rapid setting time by simple cooling action.

Disadvantages

These products can only be applied hot, specialized equipment and Personnel are required, and very strict precautions must be taken because of the danger of serious burns.

- Sensitive to temperature changes: flows from 60°C, becomes brittle below 0°C.
- Sensitive to oxidization which produces crumbling of the coating.
- Application impossible on synthetic insulating materials which must be protected from heat.

2- BITUMINOUS SOLUTIONS

Bitumens mixed with solvents to provide for cold application.

Advantage

Direct application on metals, excellent adherence on all perfectly dry materials.

Disadvantages

- High prices because of the price of the petroleum solvents.
- Dangerous products to stock because of the inflammability of the solvents at relatively low temperatures.
- Dangerous products to apply because of the evaporation which is frequently harmful.
- Generally create suffocation in enclosed areas.
- Application is impossible on insulating materials which can not support solvent.
- Affected by temperature variations.
- Flammable even after application.

3) BITUMINOUS EMULSIONS

Suspension of bitumen in water is made possible by an emulsifier to permit cold application. Only so bituminous products can be used to emulsify at temperatures below 100°C.

A- Road asphalts, used for public works :

Advantage

- Immediate separation of bitumen on mixing with road aggregates.

Disadvantages

- Storage limited to few hours.

- Impossible to mix with cement to form a mortar.
- Sensitive to temperature variations (oxidization and creep).
- Impossible for use in the building industry.

B)-Overstabilized emulsions, identical to road emulsions but separation of bitumen and water is by water evaporation and not by chemical process.

C)-Industrial emulsion and fiberated sealing compounds, over stabilized emulsion plus inert filler designed to increase the emulsion viscosity.

Example: clay, limestone filler, mineral fibers (asbestos), vegetable or synthetic fibers (nylon).

Advantage

- Application is possible by trowel on all materials.

Disadvantages

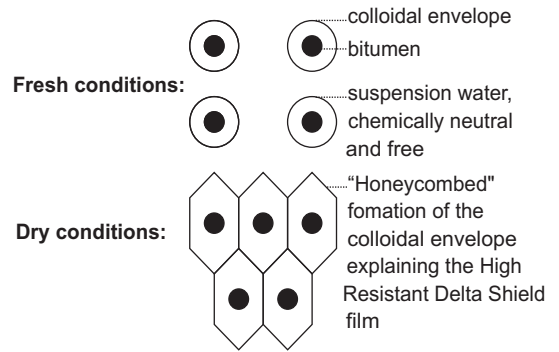
- Limited storage because of the mineral fillers.
- Poor miscibility with cement and granulates.
- Doubtful waterproofing because of the presence of mineral fillers.
- Affected by temperature variations and oxidization.
- Poor behavior when immersed in water in the presence of fillers.
- Risk of cancer in the presence of asbestos (forbidden in certain countries)

DELTA SHIELD - - a comparison

DELTA SHIELD, is a "honeycombed structure emulsion".

DELTA SHIELD is a highly complex compound, the hard bituminous particles which can only attain the necessary viscosity for emulsifying at temperatures higher than 150° C, are immersed in a special colloidal resin which does not act as a " filler material". This emulsion has a soft, creamy appearance (like a mayonnaise). Its

physical structure is as follows:



Advantages

- Unlimited storage life
- Anti-frost protection possible
- Creamy consistency easy to stir and apply
- Unaffected by transport
- Perfect miscibility with cement and granulates
- Can be applied by trowel, brush or spray gun
- Perfect adherence on all clean supports
- "Multi-purpose" use in a wide range of applications
- Completely non-inflammable (no flash-point)
- Absence of all risk of creep due to heat or mechanical stress and oxidization.
- Completely watertight even when immersed
- High resistance to temperature changes
- Uniform and flexible film
- Imparts no taste, smell or color to products which come in contact with it.
- Insensitive to aging
- High stretch and tear resistance

Disadvantages

- Higher production costs because of the more highly developed formulation and sophisticated production methods.

Supplied as

Delta Shield	(>200%Elongation)
Delta Shield Special	(>300%Elongation)
Delta Shield Super	(>400%Elongation)

