

## VETROFLUID CONCRETE PROTECTION

Ecobeton have been manufacturing Vetrolfluid for use within the construction industry for over 40 years. It has been used across Europe on many major projects throughout this period. This has allowed Ecobeton, as a respected manufacturer, to accumulate a vast amount of data on the most effective way to apply and monitor the application of Vetrolfluid. The statements/procedures made by Ecobeton in the attached document are based on this long accumulation of knowledge which is respected amongst its many clients.

A type of “water glass” Vetrolfluid is odourless, colourless and non-toxic. When it is sprayed on concrete products it makes contact with all surfaces, moving into the body of the concrete through the voids and fissures to a depth of about 40mm reacting with the calcites in the concrete creating a vitreous type product providing total concrete protection. Vetrolfluid properties include:-

- Protection against water penetration, most acids and alkali’s including strong hydrochloric acid (as used in concrete etching).
- Prevention of concrete dusting, deterioration of concrete due to freeze thaw as the water cannot enter the concrete and carbonisation of steel reinforcement and by aiding the curing process can reduce cracks.
- It has a 40 year guarantee (although as it does not degrade and is within the body of the concrete it is basically lifetime) and will not need to be re-applied. It does not alter the look of the concrete or leave a physical coat on the surface of the concrete unlike most of the current products available.
- It is completely Solvent and VOC FREE.

### Application of Vetrolfluid

Vetrolfluid can be applied to a new or existing concrete surface.

#### Surface Preparation

On new concrete the surface to be coated must be clean and free from laitance, dust, etc. On existing concrete the surface should be cleaned thoroughly to remove all surface coatings. Ecobeton suggest cleaning the surfaces to be coated the day before application. Vetrolfluid should be applied to a dampened surface, the cleaning of from the previous day will be sufficient for this.

#### Temperature and Weather Conditions

The surface temperature of the concrete should be 5°C and rising during application and should not be exposed to lower temperatures within the first 4 hours application. Vetrolfluid should be applied during dry conditions where no rain is forecast for the day of application. It can be applied on all elevations.

#### Method

Vetrolfluid can be applied by brush, roller or spray to saturation of the concrete. Standard application for horizontal or vertical surfaces is two coats, overhead application may require three. If possible the two coats should be applied at 90° to each other. Exposure to very aggressive environments may require three coats. Prevent any running or pooling of Vetrolfluid at both application phases. Any excess Vetrolfluid should be washed off after 4 hours.

#### Coverage

The coverage rate of Vetrolfluid is dependent on the quality and finish of the concrete. Guidelines are between 4-6m<sup>2</sup>/litre of Vetrolfluid [0.25-0.167 litre/m<sup>2</sup>]. A minimum of a two coat application equates the coverage rate to 2-3m<sup>2</sup>/litre [0.5-0.34litre/m<sup>2</sup>]. Vetrolfluid is supplied in 5 litre containers or 20 litre drums.

#### Training and Guarantees

Vetrolfluid is quick, efficient and easy to apply. On-site training can be given if required. If very large areas are to be sprayed it may be sensible in the first instance to divide the area to be covered into sections with each section requiring the application of a 20 litre drum. Ecobeton offer a 40 year guarantee on correct application of Vetrolfluid.

## Frequently Asked Questions

Question	Answer
What is the minimum number of coats to achieve total concrete protection?	Generally two coats are required, it may be necessary to apply three if environment is very aggressive or product is being applied overhead.
How do you know when each application is complete?	Stop spraying when the Vetrofluid is seen to pool or run down the concrete.
What is the maximum crack width Vetrofluid will fill?	There is no maximum or minimum crack width, Vetrofluid moves into the concrete and does not sit in surface cracks
Does repeated application of Vetrofluid fill all voids?	No, Vetrofluid is in the concrete, repeated applications does not get more to “stick”.
Is a warranty offered?	Minimum of 40 years, but basically the life of the concrete structure as once it is applied it cannot be removed, other than by taking away the concrete.
Does the condition of the concrete affect performance?	Poor concrete will have more voids and cracks and will therefore absorb more Vetrofluid, so a sufficient quantity of Vetrofluid will need to be applied.
Can Vetrofluid be used with a vapour retarder?	Yes, but not always necessary.
Does Vetrofluid stop concrete curing?	No, if Vetrofluid is used during the curing process it stops evaporation therefore increasing hydration improving the strength and durability of the concrete and therefore reduces cracking.
How is effervescence stopped?	Vetrofluid prevents water entering and leaving the concrete, therefore salts cannot cross the barrier so no effervescence.
Can coatings be applied on top of Vetrofluid?	All types of surface finishes can be applied on top of Vetrofluid, as the Vetrofluid penetrates into the concrete and does not sit on the top surface.
Is training required?	Vetrofluid is simple to apply by spray roller or brush and an initial training can be given. However there are approved contractors available in the UK if required.
How does Vetrofluid work with joints?	Vetrofluid only reacts with concrete therefore joints have to be dealt with separately.
What is the curing time?	Full curing 36 days, traffic after two hours of final coat.
On new concrete with high water content does Vetrofluid hold the water in?	Yes, but this is generally a good thing as the application of Vetrofluid improves hydration thus increasing strength, durability and performance of concrete. If however the water content is too great it may be worth rejecting the mix (check slump test).

How can I tell if the Vetrofluid has been applied appropriately?	Vetrofluid is applied in two coats perpendicular to each other. As it is applied it darkens concrete before drying so it is easy to identify the application area.
If the concrete is damaged what affect does this have on the Vetrofluid protection provided?	As Vetrofluid penetrates up to 40mm a lot of concrete would need to be removed to destroy its properties. However it can be reapplied at a later date if necessary. All old concrete must be cleaned (de-greased) and washed before re-application.
Is there a minimum thickness of wall required?	No, Vetrofluid can be applied to any thickness of concrete, penetrating up to 40mm.
Can concrete that has been sprayed with Vetrofluid be crushed.	Vetrofluid, although known sometimes referred to as “Water Glass” is basically a form of sodium silicate which is a non-hazardous product and therefore poses no problems if the concrete is crushed.
Does Vetrofluid prevent staining?	It can reduce staining by 60-70%, and does allow the easy removal of any staining that may occur.
Does it stop dusting?	Yes, Vetrofluid is a permanent and certified dust proof system. Dusting is caused by the lighter components of concrete plus water being pushed to the top of the mixture, which is weaker and subject to wear.
How long for the anti-dusting to be effective?	Vetrofluid starts acting immediately but for maximum performance need to wait full curing time 36 days.
Environmental Credentials	Solvent Free NON-VOC Certified in mainland Europe for use with drinking water and most food products
How long is it active?	24 months if stored correctly (frost free) and unopened.
Can it be sprayed on wet concrete?	If it is to be used as a curing aid it can be sprayed immediately after pouring. If it is sprayed on cured or new concrete the surface needs to damp. If sprayed on old concrete the surface must be first cleaned (degreased) then washed and left for 24 hours then applied to a damp surface.
Can Vetrofluid be used on concrete block walls?	Vetrofluid can be used on both, but its effectiveness is dependent on the cement content in each.
Can concrete that has been sprayed with Vetrofluid be repaired on site?	The application of Vetrofluid provides a neutral surface so repairs can be carried out to damaged concrete on site or in the yard without effecting adhesion.
Does the floor finish determine whether Vetrofluid or Pavishield should be used?	Yes, brush finished, polished, acid etched or trowelled create different porosity of surface. Pavishield good for very fine finishes.

## Other Products

In addition to Vetrofluid RFA-Tech are pleased to offer the complete range of Ecobeton protection products which include;

**Ercole:** is a unique and versatile product used in the restoration and re-surfacing of concrete surfaces internally and externally. Ercole is a single component ready mixed copolymer, which when applied to concrete which is damaged or has deteriorated avoids the need to replace or remove the existing concrete.

**Microbond:** is a cementitious ready-mix product, single component which is mixed with water for a smooth and uniform trowelled finish. It can be applied internally and externally and combined with a dye to achieve any colour.

Microbond is the perfect concrete overlay for producing decorative concrete stamping, interesting concrete aesthetics and smooth trowelled finishes. It can be applied on horizontal and vertical surfaces such as ceilings, floors, walls and concrete furniture as used in landscaping.

**Brickcover:** is a special waterproofing agent that protects bricks and stones from deterioration. Thanks to its special catalyst it penetrates deep into all absorbent materials and leaves the surface and appearance of the stone natural and unchanged. It is non-toxic, completely breathable and does not leave any surface film. The formulation based on potassium salt makes Brickcover an extremely long-life treatment which is effective on both horizontal and vertical surfaces.

Brickcover is the ultimate protection against mildew, bacteria, nitrates, efflorescence and maintains a healthy environment. The treatment is colourless, odourless, non-toxic and environmentally friendly. Brickcover penetrates into the structure and allows the material to breathe normally and leaves no surface film. Brickcover protects paving from deterioration and renders it resistant to freezing / thawing cycles. When applied correctly, the treatment is guaranteed for 8-10 years.

**Everwood:** is an agent for protecting all types of wood from deterioration. It consists of a waterglass based mixture modified with a special catalyst. The product penetrates in depth into the natural porosity and binds to the wood fibres to form a permanent barrier. It is particularly effective for reducing the flammability of wood. It protects against termites and from the absorption of water and moisture.

Everwood is a permanent barrier that is particularly effective for preventing and reducing the percentage moisture entering the timber (by at least 50%) and prevents the formation of mildew, fungi, bacteria, termites and flames which are the main causes of deterioration. It reduces the penetration of oils, grease and pollutants. Everwood does not produce any surface film but penetrates into the structure and allows the timber to breathe normally. It does not alter the texture or natural colour of the timber and is odourless and colourless. It increases hardness and therefore the resistance of timber to wear and freezing / thawing cycles over time. Everwood does not alter the texture or natural colour of the wood. It enhances the adhesiveness of varnishes, colorants, paints and putties in a uniform manner and extends the lifetime by 300%. Everwood is non-toxic and environmentally friendly. It is therefore suitable for use in "green buildings". If applied correctly, the duration of treatment is guaranteed for 8-10 years.