



FORMWORK TREATMENTS

Concrete Formwork Treatments

FORMCOAT CLEAR & RED EDGE SEALER

Water Based Sealer System

Description

A new concept in polyurethane chemical engineering, this water based system is ideal for use on timber, metal and concrete surfaces, particularly in the formwork and concreting industry. No 'Harmful Label' necessary. A user friendly product within the normal constraints of emulsion paint usage. Formcoat products are chemically reactive and penetrative sealant coatings. To a large degree their use eliminates the damaging effects on solvented urethane coatings caused by high moisture levels within the timber substrate. Formcoat products do not create harmful solvent fumes or need solvent cleaner for equipment. Cleaning in water is sufficient to ensure extended life of brushes, rollers, airless sprayers, etc.

Advantages

- Extended mould and formwork usage, by deep sealing of wood fibres and providing a highly abrasive, chemically resistant coating.
- Promotes good quality concrete finishes ensuring uniformity of colour and density of concrete surfaces, with minimal plywood grain transfer.
- Greatly reduces the effect of hydration variation staining and the possibility of wood sugar attack with associated dusting effect.
- A single pack, ultra violet stable product with high resistance to alkaline concrete and chemical reaction to formwork surface retarders.
- Will achieve maximum penetration and bond to timber even in a damp state.
- After initial applications, re-treatment is generally not necessary, but with Formcoat, successful re-coating of damaged areas can be achieved.
- Formcoat can be used in conjunction with polystyrene block as an adhesive and coating system.
- Formcoat used in conjunction with the correct choice of chemical release agent, will not impair the bond of paints, plasters or other concrete surface coatings and has no deleterious effect on concrete. Easily applied by brush or roller, Formcoat has excellent 'water cleaning' properties.
- Formcoat Red Edge Sealer greatly extends the life of factory pre-sealed ply boards which have been cut or drilled.

Application

Formcoat Clear

Timber surfaces should be clean, previously untreated with paints, oils etc. Surface moisture levels should be kept to a minimum. However, Formcoat has excellent dewatering properties so test apply the material to determine satisfactory cure and adhesion if in doubt.

It is recommended that all fixing holes, knots and surface blemishes be filled with Formfix before coating. Protection against frost is necessary in storage and in use, so do not use products in these conditions without taking the necessary precautions to protect.

Apply a liberal, evenly spread coat to prepared timber. Apply on to a horizontal surface, if however a rough, sawn or profiled finish is required; only apply sufficient material to prevent runs or pooling.

Normally a single application will be sufficient to seal forms, but should extended wear and life of moulds be required, a second coating should be applied within 2-5 hours (depending on ambient climatic conditions). If the first coat has dried or the grain lifted, a light sanding between coats will be beneficial, but after a delay of 12 hours between coats, it is a necessity to ensure good inter coat adhesion.

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The cleaning of equipment, rollers, brushes, airless sprayers, etc. is easily achieved by washing with clean water. No solvents are necessary. Do not dilute Formcoat products as they are specifically formulated to be used directly onto timber and correctly prepared concrete surfaces. Protect coated forms from rain/frost/dust etc. for several hours after treatment and allow 24 hours before use. Re-coating of damaged areas can be successfully achieved by sanding the affected area/or the repair filler, ensuring the timber grain is exposed before applying Formcoat.

NB. Allow filler systems to fully cure before application ie; Formfix filler requires 20 to 30 minutes dependant on ambient temperature. For production of high quality finishes we recommend the use of Extracon XS, a BCA category 5 drying type chemical release agent. It is also suitable for use on potable water structures (WRAS certified) and it has been successfully tested with most subsequent treatments to concrete. If the formwork surface is particularly smooth and glossy after painting, always lightly sand to produce a semi matt finish. This applies to any type of concrete formwork, as it will assist in reducing the risk of 'concrete surface crazing' and the excessive movement of cement fines/water during the vibration compaction process, which can also cause 'hydration staining'.

Formcoat Red Edge Sealer

Always seal the edges of ply-form products. This is highly beneficial in extending the life of moulds by preventing the ingress of damaging alkali waters from the concrete mix. A single liberal coating of Formcoat or Formcoat Red Edge Sealer is all that is necessary to ensure water repellence. If using phenolic impregnated or medium dense overlay Ply-boards that are factory edge sealed, always re-seal cut edges, tie holes, etc. to minimise edge damage. Formcoat Red

Edge Sealer is specifically formulated to comply with the recommendations of the manufacturers so that site or factory engineers can see the coloured edges have been sealed in the correct manner. The Council of Forest Industries (COFI) and Finnish Plywood International, both recommend the proper sealing of cut edges in plywood to extend form life and minimise swelling and edge distortion.

Properties

Viscosity:	Brushing consistency
Flash Point:	Not applicable
Type:	Polyurethane Emulsion
Polymer Stability:	1yr stored in sealed can @ 5°C+
Toxicity:	Not applicable
Coverage:	7-9m ² /litre depending upon surface porosity

Packaging

20 litre 5 litre and 1litre containers

Storage and Handling

Store in accordance with Health & Safety regulations for water borne emulsions. Protect from frost.

Re-seal after use. If surface skin has formed in an open can, remove skin and use residual material as normal.

Health & Safety

Formcoat products are extremely safe to use being water based, non flammable and non toxic. Therefore the normal precautions apply.

Avoid splashes to skin and eyes. Wash with copious amounts of clean water and seek medical advice if any adverse symptoms persist.

See separate product specific Health & Safety Data sheet.

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Application Recommendations

Timber Hemicellulose & Chemical Attack of Concrete

A number of 'general' timber types now used in the construction industry have caused retardation and staining to concrete cast against site or factory manufactured formwork. The main causes are: the origin of the timber, ie. Tropical forests; the effect of sunlight on the form during storage or in use; the type of timber and, in a very few cases, the incorrect treatment of the plywood/paper overlay in manufacture. The effect of casting concrete against plywood or timber faces which are 'contaminated' is to cause lack of carbonation of the cement to a possible depth of several millimetres. This is often referred to as 'heavy dusting' which can also be the term used for a number of other causes. This retarding effect caused by timber 'sugar' or phenol attack can be identified by a darkening or discolouring of the dusty concrete surface usually matched by a corresponding stain on the formwork timber face. It can also be associated with a whole individual sheet of ply or in the case of sunlight (ultra violet) attack, an area which has been exposed for several days (this problem can be minimised by storing 'shutters' face down or covering when not in use. The use of different types of release agent will not solve this problem once identified. Unfortunately there is no way of knowing if 'form timber' is affected until the first cast has been completed. An immediate remedial action is to use hessian sheeting in contact with the surface concrete and constantly wet down for a period of 12-24 hours; the retarded matrix will then cure.

The use of resin membrane or silicate curing products is not recommended as they will prevent this water curing process. Once curing is completed, however, silicate curing compounds can be used if required.

If a particular consignment of ply timber or site conditions of hot weather cause concern and the problem is positively identified, it is possible to alleviate further damage by either of the two following methods:

Give the forms a cement or lime water wash, i.e. First coat with release agent – chemical type preferred – then apply the wash solution. This will react with the wood sugars and extract them, NB. It may be necessary to give 2 or more wash applications if the contamination is heavy. Allow 24 hours to elapse before removing the hardened slurry.

Seal the remainder of new shutters with Formcoat Clear; being water based it will not extract the 'sugars'/resins from the timber into the polymer; this can occur with solvent systems. It is important to ensure a completely sealed surface so 2 coats of Formcoat are recommended.

Bush Hammered, Sandblasted & Formwork Retarder Finishes

Formcoat applied as a sealer ensures an even surface porosity of the ply form and eliminates the movement of surface water content from the cement matrix. This helps to ensure a uniform concrete surface hardness which is an important factor when bush hammering or sand blasting to produce a decorative finish. In the case of formwork surface retarders it is important to maintain a constant water/cement ratio at the interface of the retarder and concrete, thus ensuring an even aggregate exposure. A sealing coat of Formcoat will prevent variations in the timber absorbency, causing problems and give extended life to the mould.

Production of Featured Plywood Shutters, Profiled & Rough Sawn Board Finishes

The use of profiles or features on plywood has caused problems for a number of contractors on site. The correct choice of coating system and timber types ensures good reuse of the formwork and excellent finishes can be achieved.

It is important to consider the type of timber used in the backing sheet and the profile. Some hardwoods for example are totally unsuitable. The use of unsealed materials can cause problems of swelling and warping during the casting process. Wood sugars and other retarding chemicals inherent in some woods can also cause retardation and adhesion of concrete to forms.

The ideal preventative measure is to seal all surfaces with Formcoat as well as using it as an adhesive for the profiles and edges of the rough sawn panels. This will prevent swelling, warping and the alkaline cement waters from drying out the timber.

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Coating of Moulds Other Than Timber

The use of Formcoat, being a water based emulsion system, on other mould surfaces such as polystyrene, latex, cement based, metal or fibre board products would have to be tested with recommendations by our Technical Department before use.

In the case of polystyrene blocks and liners, tests have proved very successful. The solvent free Formcoat having been used as a coating and an adhesive without any adverse reaction with the polystyrene bead matrix.

With all the characteristics of existing polyurethanes; high abrasive and chemical resistance, Formcoat is ideally suited to these applications as well as being user and, to a degree, environmentally friendly.

For advice on any of the applications above, associated remedial work or choice of correct release agent, please contact our Technical Department.

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