

**CRACK HEALING AND INTEGRAL CRYSTALLINE WATERPROOFING ADMIXTURE FOR CONCRETE & MORTAR**

**Description**

NOROPROOF CRYSTALLINE, an integral crystalline waterproofing compound, is added to the concrete or mortar mix at the time of batching. It consists of Portland cement and various active, proprietary chemicals. These active chemicals react with the moisture in fresh concrete and with the by-products of cement hydration to cause a catalytic reaction, which generates a non-soluble crystalline formation throughout the pores and capillary tracts of the concrete. Thus, NOROPROOF CRYSTALLINE reduces water permeability of concrete structures which can allow it to be used in place of various surface applied waterproofing membranes systems. This product also has a self-healing property under presence of moisture and can heal cracks up to 0.5 mm.

NOROPROOF CRYSTALLINE can be used as an applied coating, mixed to a slurry consistency with potable water. It is applied directly to concrete, blockwork or cement renders in areas where general waterproofing is required.

**Uses**

- Water tanks, Reservoirs
- Building Basements & foundations
- Swimming pools and water parks
- Sewage and Water treatment plants
- Dams, canals, Tunnels, Harbours
- Retaining walls & sea defence walls
- Concrete pipes

**Advantages**

- Easy to use, require only mixing with concrete.
- Integral waterproofing system.
- Resists positive and negative side hydrostatic pressure
- Can seal hairline cracks up to 0.5 mm
- Exhibits good resistance to hydrostatic water pressure both surfaces.
- Compatible with our full range of water reducing admixture.
- More effective due to formation of crystalline in tiny capillaries.
- Reduce Shrinkage and Creep
- Increase Durability

**Characteristics**

Appearance : Grey powder  
Bulk density : 1400 – 1500 Kg/m<sup>3</sup>  
Workability Retention : To be adjusted using water reducing and retarding admixture as required.

Water Penetration depth - Below 15mm  
(DIN1048 Part 5) : 7 mm  
Chloride ion content : Nil (As per BS 5075 Part I)

**Performance characteristics**

**Setting time:**

NOROPROOF CRYSTALLINE admixture has little to no effect on concrete setting time within the recommended dosage range. However, it is recommended to test this in case any additives or blended cementitious combinations are used in concrete.

**Permeability:**

NOROPROOF CRYSTALLINE waterproofing admixture is a portland cement-based crystalline cementitious material that reacts in concrete to form insoluble crystalline hydration products in the capillary pores/capillary tracts of the concrete. These crystalline hydration products are deposited and fill the pores and hairline cracks, effectively reduce the permeability of concrete, its capillary absorption and penetration of water and other liquids into the concrete.

**Dosage**

As a guide, a dosage of 1Kg per 100kg of cementitious content is recommended. Dosage up to 2 Kg per 100kg of cementitious content can be used in special requirements. For addition to ready mix concrete, a typical dosage of 5kg per cubic meter of concrete is best recommended.

For addition information on NOROPROOF CRYSTALLINE or on its use in developing concrete mixes with special performance characteristics, contact your local NCL representative.

**Note:**

- Ensure water / cement ratio is less than 0.5
- Addition of good superplasticiser from the NIROCRETE / NIROCRETE ULTIMA range is advised to achieve minimum water/cement ratio.
- Place concrete quickly and compact it well.
- Ensure complete curing with a NIROCURE range curing compound.

**Application as waterproofing coating system**

**Surface Preparation**

Surfaces to be treated must be free from dust, oil, grease, paint, residual curing compound, mould oil or any previous surface treatment that will impair adhesion of the NOROPROOF CRYSTALLINE treatment.

Remove any laitance and provide an open pored, slightly rough surface sufficient to act as a mechanical key, essential for adequate adhesion of the NOROPROOF CRYSTALLINE treatment. Light sand / grit blasting of the concrete surface is the preferred method of surface preparation.

Areas of weak or honeycombed concrete must be repaired. Hollow, debonding renders must be removed and made good.

Surfaces to be treated if not already wet, should be saturated for a period of 24 hours before first applications. NOROPROOF CRYSTALLINE system technology requires the presence of water for the active chemicals to migrate into the concrete.

Crystalline development will usually extend to the depth of water penetration.

#### Mixing for coating application :

Always add water to NOROPROOF CRYSTALLINE – not in reverse order. Mix 1 part of water to 2.25 – 2.5 parts of NOROPROOF CRYSTALLINE powder by volume. Mix only sufficient NOROPROOF CRYSTALLINE that can be used in 20 minutes

#### Application as integral crystalline waterproofing

NOROPROOF CRYSTALLINE admixture is batched at the concrete production plant in a manner similar to that for cement or other cementitious materials. It may be batched in either a central or truck mixer.

Follow the procedures outlined in ASTM C94 / C94M, Standard Specification for Ready-Mixed Concrete, for general batching and mixing instructions for concrete if adding to a truck mixer.

Provide at least 5 minutes of mixing after the addition of NOROPROOF CRYSTALLINE admixture to ensure thorough and uniform distribution of the admixture in the concrete mixture.

#### Technical support

NIRMAN CHEMICALS provides technical advisory services for on-site assistance and guidance on mix design, optimum dosage evaluation of trials.

#### Compatibility

NOROPROOF CRYSTALLINE can be used with all types of cements except high alumina cement.

It is compatible with all Naphthalene, Melamine, ligno-sulphonates and carboxylic acid base Admixture and retarders and also with most type of air entrainers, accelerators, viscosity modifying agent, extended set-

control admixtures, corrosion inhibitors, and shrinkage reducers. Site trials should be carried out to optimize dosages.

NOROPROOF CRYSTALLINE is also compatible with slag and pozzolans such as fly ash, GGBS and silica fume.

#### Durability

Produces impermeable concrete, thus enhancing durability of concrete.

#### Corrosion

NOROPROOF CRYSTALLINE neither initiates nor promotes corrosion as it does not contain any harmful chemicals. Rather it reduces the risk of corrosion of reinforcement or other embedment, as it produces impermeable concrete.

#### Packaging

NOROPROOF CRYSTALLINE is available in 5 kg and 25 kg pack.

#### Storage and Shelf life

Store in dry conditions at temperatures between +10°C and +40°C. Protect from direct sunlight and frost.

12 months from date of production if stored properly in undamaged unopened, original sealed packaging.

For specific storage advice consult our local NIRMAN CHEMICALS representative.

#### Safety precautions

NOROPROOF CRYSTALLINE does not fall into the hazard classifications. However, it should not be swallowed or allowed to come into contact with the skin and eyes.

Suitable protective gloves and goggles should be worn. Splashes on the skin should be removed with water. In case of contact with the eyes it shall be rinsed immediately with plenty of water and medical advice sought immediately. If swallowed, medical attention shall be sought immediately - Vomiting should not be induced.

#### Fire

NOROPROOF CRYSTALLINE is non-flammable.

#### Disclaimer

Whilst any information contained herein is true, accurate and represents our best knowledge and experience, no warranty is given or implied with any recommendations made by us, our representatives or distributors, as the conditions of use and the competence of any labor involved in the application are beyond our control.



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