



## nC® ProTherm FIRE-X Advanced Ceramics Extreme Heat Shield Coating

### Benefits

#### TECHNICAL

- ✓ Fire and heat resistant up to 1300° C
- ✓ Thermal insulating
- ✓ Not ignitable EN-11925-2
- ✓ Fire performance as per EN-13501-1: B-S1, D0
- ✓ Delta-T up to 1000°C depending on layer thickness
- ✓ DFT 4mm up to 15mm
- ✓ 1-coat application
- ✓ Low weight 0,7 kg/mm/m<sup>2</sup>
- ✓ 5 to 30 mins fast drying
- ✓ Bonds into and with surface chemically for extreme adhesion
- ✓ Provides anti-static layer
- ✓ Suitable for all surfaces
- ✓ Flexible
- ✓ Chemical resistant
- ✓ Can be painted over
- ✓ Low VOC

#### OPERATIONAL

- ✓ Easy-to-mix dry and wet component for long potlife
- ✓ Application possible on hot surfaces up to 90° Celsius
- ✓ Immediate protection
- ✓ Space saving solution
- ✓ Easy-Touch-Up ready: Fast adjustments or replacements in tubular system possible
- ✓ Application by sprayer, brush
- ✓ For indoor and outdoor use
- ✓ Monsoon proof
- ✓ +25 y of servicelife
- ✓ Compliant with nC Nano Corrosion Passivators
- ✓ Compliant with nC ProTherm thermal insulating coatings
- ✓ Compliant with nC ProTect sealants
- ✓ Compliant with nC Clean Coat self cleaning coatings

#### FINANCIAL

- ✓ Eliminates costs for cladding
- ✓ Protects your assets against wear in open fire or extreme heat
- ✓ Saves up to 25% - 50% energy cost
- ✓ 40% up to 60% less application/project cost
- ✓ Low cost per m<sup>2</sup>
- ✓ Fix-and-forget product, fast application, low impact, very long lifetime cycle
- ✓ Easy to repair, no cladding replacement cost during retrofit of assets
- ✓ Fast Return On Investment

### Description

Based on a covalent bonding mineral and ceramic technology, the nC ProTherm FIRE-X Advanced Ceramics coating system is designed for thermal insulation, IR-reflection and fire protection. As the ceramic particle structure provides a dense, slightly flexible layer it provides extra characteristics as non-scaling, non-fouling and chemical resistance. nC® ProTherm FIRE-X Advanced Ceramics is an exceptional versatile solution. FIRE-X Advanced Ceramics has a very long lasting tested lifetime cycle of more than 25 years in- and outdoors, making it not only versatile, but also very cost-effective.

OPTIONAL: nC® ProTherm FIRE-X Advanced Ceramics can be delivered in an anti-mold and anti-algae version.



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### Description

Because of the ability to create a barrier and insulate with just a thin layer of coating, nC® ProTherm FIRE-X Advanced Ceramics offers space saving and cost reducing protection at a high degree of insulation.

It provides Safe Touch and/or fireproof surfaces to panels, walls and all kinds of separators and is capable of reducing surface temperatures at Delta T-values varying between 80°C up to 1000°C, depending on DFT.

Tests show that a layer of 5mm of nC® ProTherm FIRE-X Advanced Ceramics can avoid the meltdown of several construction materials during an intense fire. It keeps heat out, thus not endangering the lives, assets or products at the other side of the fire or heat source.

In order to prevent CUI (Corrosion Under Insulation), you can order the nC® ProTherm FIRE-X coating with nC's corrosion passivating primer. The nC® Nano Corrosion Passivator Primer surpasses any corrosion protection coating available as it is based on surface bonding nanotechnology (sol-gel). The system will prevent metals from corroding. It will stop already present corrosion. It can be applied on corroded surfaces without the need for sandblasting or chipping. You can apply nC® ProTherm FIRE-X Advanced Ceramics on top of that immediately.

This makes it a very fast, cost-effective and environment friendly solution. Because of the chemical bonding, the primer can withstand welding temperatures up to 1300°C, shockloads and chemicals. This covalent bond offers a flexible protection. It will shrink and expand along with the substrate material during ambient temperature changes. This way the coating will not crack, as mechanically adhered coatings do.

Because both the nC® ProTherm FIRE-X Advanced Ceramics as well as the primer are resistant against welding temperatures, they will not get damaged.

Weight adjusted on each other, nC® ProTherm FIRE-X Advanced Ceramics is delivered together in separate containers carrying dry mineral ceramic powder and a wet component resin. It offers the look-and-feel of a hard-coat. All materials like metal, concrete, wood, polystyrene, polyester etc. including rockwool acting as a wall or panel or tube, will become immune for extreme heat, salt, water, chemicals, oxygen, biofouling and scaling.

nC® ProTherm FIRE-X Advanced Ceramics can be applied with an airless spray-system, a rotor-stator spray system. Touching-up or small repairs can be done by knife, brush or roller. nC® ProTherm FIRE-X Advanced Ceramics can be applied in one layer, between 4mm up to 15mm for most applications, and is a fast drying solution. nC® ProTherm FIRE-X is available in white and grey. It can be painted-over for aesthetic purposes.



## nC® ProTherm FIRE-X Advanced Ceramics Extreme Heat Shield Coating

### Application instructions

- Suitable for indoor and outdoor surfaces.
- Only apply to metal, brick, concrete, wood, roof tiles, plaster, plastic and textile.
- Suitable for lively and light flexible surfaces.
  
- nC® ProTherm FIRE-X Advanced Ceramics can withstand surface temperatures up to 1300 ° C
- The ambient temperature during application must be between 4 ° C and 35 ° C.
- DO NOT apply if the humidity is higher than 90%.
- Apply the coating on surfaces that do not exceed 50% to prevent thermal bridging.
- Use safety goggles during preparation and application of nC® ProTherm FIRE-X Advanced Ceramics.
- Protect hands and skin from exposure with gloves and appropriate clothing.
- Although solvent-free, ensure adequate ventilation, especially when spraying.
  
- The surface of host material must be free from grease, dirt or dust.
- The surface of host material must be free from loose rust and / or loose paint.
- In case of corroded parts, remove loose rust and apply nC® Nano Corrosion Passivator Primer to the corroded area. Sandblasting, sanding or chipping is then not necessary.
  
- Mix wet component B for 5 minutes before adding dry component A. Use (industrial) mixer with at least 7 cm wide mixing blades.
- Add dry component A 12% weight gradually (in a timespan of 10 minutes) to resin component B 88% weight. Mix for at least 3 minutes after dry mix is completely added.
- In case a premix is delivered, add 3% to 5% water and mix the premix to a fluffy homogeneous mix. This can take up to 10 minutes.
- ONLY use tap water (max. 5% of total weight) to dilute if necessary, do NOT use any other type of thinner.
- In case mixture appears too thin, adjust mixing ratio to 15% dry and 85% wet.
- Apply DIRECTLY after mixing. Mix regularly to maintain a fluffy mixture.
  
- nC® ProTherm FIRE-X Advanced Ceramics can be applied with spray equipment or with roller. Brushes can be used to update and finish work or situations that are not practical for spray applications.
- nC® ProTherm FIRE-X Advanced Ceramics has been applied using many different brands, types and sizes of airless or conventional spray equipment. Rotor/Stator pumps are best suited for large projects. Use a pump with a minimum output of 4 liters per minute. REMOVE in-line filter screens.
- Nozzle 3 to 4mm gives a finer spray pattern, use max. 5mm.
- TIP: nC uses Euromair Compact Pro 15 or 35 with 2½mm, 3mm or 5mm nozzle to apply
- It is best to spray at the lowest pressure that completely atomizes the coating. The pressure control should be set to a low pressure and slowly increased until the coating is atomized. If the spray pattern has fingers or tails, increase the pressure.



## nC® ProTherm FIRE-X Advanced Ceramics Extreme Heat Shield Coating

### Application instructions

- If the maximum pressure of the syringe is not sufficient to achieve a good spray pattern, use a spray tip with a smaller opening. To test the quality of the spray pattern, test patterns should be sprayed onto pieces of cardboard or other waste material.
- The spray gun should be held approximately 30 cm from the surface and aimed straight (both horizontally and vertically) at the surface. For extremely large tips, you need to go further to get a good spray pattern.
- The spray gun should move across the surface with the wrist bent to keep the gun straight on the surface. "Blowing" the gun to tilt the beam at an angle causes an uneven finish.
- The spray gun must be activated after the start of the stroke (also known as the run-in line) and released before the stroke ends (also known as the bearing stroke). The gun must move during both trigger squeeze and trigger release. This technique prevents stains at the beginning and at the end of each thick-coated stroke.
- Cross-layer application is recommended wet-on-wet. This technique ensures that an even amount of coating is sprayed on the surface. The spray gun should be oriented so that the tip points to the edge of the previous stroke and overlaps each stroke by 50%. To maximize efficiency when spraying on wide, open surfaces, such as ceilings and bare walls, spray the outer edges of walls first. The center can then be sprayed quickly, requiring less accurate strokes.
- The key to good coverage is controlling the layer thickness. Here are some useful tips to ensure good coverage and a high-quality finish: Do not adjust the pressure to make the coat thicker or thinner. The pressure should be set to the lowest pressure with a good spray pattern.
- If the coating is too thick or runs on the surface, one or more of the following will help:
  - Move the spray gun faster
  - Choose a smaller tip opening; Make sure the syringe is suitable for the size tip being used
  - Choose a tip with a wider range
  - Make sure the spray gun is far enough away from the surface (about 30 cm)
- If the finish does not cover the surface, one or more of the following will help:
  - Move the spray gun more slowly
  - Choose a bigger tip
  - Choose a tip with a smaller fan width
  - Make sure the spray gun is close enough to the surface (about 30 cm)
- Single layer WFT can be varied from 4mm to 15mm. In warm, humid areas, single-layer WFT should not exceed 8 mm.
- Use 650 to 750 grams WFT of nC® ProTherm per m<sup>2</sup> for a layer of 1 mm.
- nC® ProTherm FIRE-X Advanced Ceramics provides an adequate 5 mm WFT thick layer with 3.5 kg per m<sup>2</sup>. At least 1 kg weight loss will occur due to the drying process.
- Measure WFT during application. Product does not swell or shrink during application.
- nC ProTherm FIRE-X Advanced Ceramics shrinks by 5% during the curing time.



## nC® ProTherm FIRE-X Advanced Ceramics Extreme Heat Shield Coating

### Application instructions

- Surface curing time:
  - Sandstone, brick, plaster, natural wood 24 hours
  - Concrete, pressed wood, plastic, glass 24 hours up to 48 hours depending on surface temperature
  - Product can be exposed to full rain after 24 hours

Above applies at an ambient temperature of 20 ° C and an air humidity of 60%.

- A rough surface will appear when rolling. If a smooth surface is required, wet the finished surface with a low volume water spray nozzle (no garden hose) and move a wet straight profile over the surface to make it smooth or use a radius shaped scraper on tubes and pipes.
- If any surface contamination, sand, or contamination is observed on the surface coated with nC® ProTherm FIRE-X Advanced Ceramics, this material should be removed before applying an additional coat or before painting.
- When a thicker layer than 8 mm nC® ProTherm FIRE-X Advanced Ceramics is required, first apply a layer of 3 mm WFT as a grip layer. After 30 to 60 minutes, check that the coating has dried in and then apply the second layer of the same batch as required or to a maximum WFT of 17 mm for this second layer, i.e. a total of a maximum of 20 mm. Then finish with a smooth stucco if a smooth surface is desired.
- Allow the surface to dry for at least 6 hours before start exterior forced drying with a blower or heater at 55 ° C max.
- After 24 hours of drying nC® ProTherm FIRE-X Advanced Ceramics Surface can be painted over.
- Clean brushes, rollers, nozzles with water immediately after each stop.
- Wash your hands and face after each stop.

### Limitations

- ✓ In case of long-term submersion of the FIRE-X Advanced Ceramics coated items, only install item in combination with a nC ProTect or nC® NCP finish, as only these series of coatings comply with the temperature resistance of nC® ProTherm FIRE-X Advanced Ceramics .
- ✓ Do not install over poor surfaces, such as those with flaking paint, grease or other contaminants.
- ✓ Do not allow application during freezing temperatures below -0° C.
- ✓ Do not rely on visual measurement for coating thickness. Always use a wet film thickness (WFT) and/or dry film thickness (DFT) gauge on different spots to ensure proper and required application thickness.



## nC® ProTherm FIRE-X Advanced Ceramics Extreme Heat Shield Coating

### Logistic info

- ✓ Never use pressure to empty drums.
- ✓ Dispose of contents/container in accordance with local/regional/national/international regulations.
- ✓ nC ProTherm FIRE-X Advanced Ceramics components have a shelf life of 12 months.
- ✓ Store nC ProTherm FIRE-X Advanced Ceramics between temperatures of 5° Celsius and 30° Celsius.
- ✓ nC ProTherm FIRE-X Advanced Ceramics is available in 20 kg, 40 kg or 160 kg packaging.
- ✓ Delivery time 1 to 3 weeks
- ✓ UN number: None assigned.
- ✓ UN proper shipping name: None assigned.
- ✓ Transport hazard class(es): None assigned. Product is suitable for air transport.
- ✓ Packing group: None assigned.
- ✓ Environmental hazards: No known environmental hazards.
- ✓ Special precautions for user(s): No known precautions for transport.
- ✓ **It is advised to avoid freezing product.**
- ✓ Guidance on transport in bulk: Transport in bulk according to Annex II of MARPOL 73/78 and the International Bulk Chemical Code (IBC code).

### Typical properties

- ✓ Appearance after mixing: White yoghurt, thixotropic
- ✓ Odour: Acrylic
- ✓ % Solids: 69%
- ✓ Solvents: None
- ✓ Density 0,7 g/cm<sup>3</sup>
- ✓ pH-Value 8
- ✓ Shore Hardness A = 100
- ✓ Boilingpoint 120° Celsius
- ✓ Flashpoint not known
- ✓ Vapour pressure at 20° Celsius: 22 hPa
- ✓ VOC IE 2010/75 EU: 0%