

Technical and material data sheet

ALPHA FROZEN



soubory ke stažení

ALPHA FROZEN coating substance is very effective for insulating cold water pipes and air conditioning systems where surface temperature needs to be stabilized and where surfaces subsequently freeze.

The coating substance is ecological, environmentally friendly, non-toxic and health-safe. The coating is used on all steel structures (iron, steel, copper, aluminium, stainless steel, etc.).

Both indoor and outdoor applications are possible. Thanks to its reflective insulating properties, it prevents cold leakage and reduces the energy consumption of buildings. The coating reflects 92% of TSR and up to 97% of visible light.

Main properties

- Protects the substrate from surface condensation with subsequent freezing
- Eliminates corrosion of structures
- Extends the life of equipment and objects

Application

ALPHA FROZEN is used as the main reflective insulating coating on all steel structures where temperatures subsequently reach sub-zero values.

Technical properties

Theoretical consumption ¹	1.2 litres/m ² , one layer - 1 mm
Practical consumption	Practical consumption depends on many factors such as porosity, surface roughness and material loss during application.
Dilution	Not diluted. Diluted only 250 ml when first opened for better mixing.
Recommended wet film layer	700 µm (max. 1000 µm - not to be exceeded / 1st layer)
Mixing	Always the whole package after opening, with a construction mixer or screw mixer on a drill, at approx.
Stirring during prolonged application	Stir every 40 minutes

Packaging	18 litres / 9.7 kg
Density	0,53 g/cm ³
Vzhled	Bílá, bělost 96 %
Appearance	Cannot be coloured
Gloss level	Matte
Odour	Odourless
Shelf life ²	24 months, must not freeze
Flash point	Non-flammable

Repeatability and maturation time ³

Application

To the touch	3 hours
For handling	6 hours
For the next layer	12 hours
Completely dried out	72 hours

Safety instructions

Read the Technical and Safety Data Sheet

¹Consumption depends on the surface

²Stored in original and sealed containers at a temperature between +5 °C - +35 °C

³ At +20 °C and 50% PH

Preparation of the surface

Cleanliness of the surface

A quick summary of surface preparation:

- Remove oil, grease and other dirt with a suitable detergent.
- Remove salts, detergents and other impurities with high-pressure fresh water to Wa 2 or Wa 2½.
- Remove rust by blasting the surface with Sa 2 or ideally Sa 2 ½.
- Where blasting is not possible, the surface can be cleaned mechanically by hand to St 2, depending on the degree of contamination.
- The surface must be dry and free of dust
- Apply ALPHA PRIMER primer

Resolution of the surface where the coating will be applied

Unpainted steel structure: Steel surfaces that have not yet been painted with any protective coating may be covered to varying degrees with rust, scale or other contaminants (dust, grease, ionic contaminants/soluble salts, deposits, etc.). Prime the surface with ALPHA PRIMER waterborne anti-corrosion primer.

A steel surface with a coating system that needs to be repaired: The condition of the existing coating system should be assessed using degradation levels in accordance with ISO 4628 whenever coating maintenance is carried out. Determine if the system will need to be completely removed or if portions of the coating can be retained, then apply ALPHA PRIMER primer.

Aluminium, copper and stainless steel: In the case of aluminium and stainless steel, the surface should be cleaned with clean water and a cleaning agent and then thoroughly rinsed with high-pressure clean water. Better adhesion of the coating system can be achieved by abrasive blasting with a mineral abrasive or scrubbing with a brush to roughen the surface, then apply ALPHA PRIMER primer.

Description of the surface after cleaning

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- Wa 1 **Light blasting with a high pressure beam:** When viewed without magnification, the surface shall be free from visible traces of oil and grease, non-stick or damaged paint, non-stick rust or other foreign matter. Any residual soiling shall be randomly dispersed and shall adhere firmly.
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- Wa 2 **Thorough blasting with a high pressure beam:** When viewed without magnification, the surface shall be free of visible traces of oil, grease and dirt and most rust, previous coatings and other foreign matter. Any residual soiling shall be randomly dispersed and may include firmly adhering coatings, firmly adhering foreign matter and shadows of previously occurring rust.
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- Wa 2½ **Very thorough blasting with a high pressure beam:** When inspected without magnification, the surface must be free of all visible signs of corrosion, oil, grease, dirt, previous coatings and, except for light traces, free of all foreign substances. If the original coating was intact, the surface may show colour changes. Grey or brownish-black discolouration in areas of pitting or corroded steel cannot be removed by further blasting with water.

Surface preparation grades according to ISO 8501-1

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- Sa 3 **Blasting to a visually clean surface:** When viewed without magnification, the surface must be free from visible traces of oil, grease, dirt and scale, rust, paint and foreign matter. The surface shall have a uniform metallic appearance.
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- Sa 2 ½ **Very thorough blasting:** When viewed without magnification, the surface shall be free from visible traces of oil, grease and dirt, scale, rust, paint and foreign matter. Any remaining traces of dirt shall show only slight discolouration in the form of spots or streaks.
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- Sa 2 **Thorough blasting:** When viewed without magnification, the surface shall be free from visible traces of oil, grease and dirt and shall most scale, rust, paint and foreign matter must also be removed. Any remaining dirt must be firmly adhered.
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- Sa 1 **Light blasting:** When viewed without magnification, the surface must be free of visible traces of oil, grease and dirt, little adhering scale, rust, paint and foreign matter.

Standard stages of basic surface preparation using manual and mechanised cleaning

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- St 3 **Very thorough manual and mechanised cleaning:** As with St 2, but the surface has to be cleaned much more thoroughly to get the metallic tint given by the surface.
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- St 2 **Thorough manual and mechanised cleaning:** When viewed without magnification, the surface shall be free from visible traces of oil, grease and dirt, low adhering scale, rust, paint and foreign matter.

Procedure and application / tools

The coating must be thoroughly mixed before use! Always mix the entire contents of the package! Before application, mix the coating preferably with a rotary mixer at a maximum speed of 150 rpm until the coating substance is homogeneous.

When the bucket is opened, a crust of 80% microspheres is formed on the surface, which must be mixed with the dispersion at the bottom of the bucket. Break the crust with a stirrer and stir from the bottom up.

After first opening the bucket, add 250 ml of clean water to mix the coating better. Use a spatula to make a groove where the coating meets the bucket wall. Pour 250 ml of water into the trough and let the bucket stand for a few minutes to allow the water to absorb. Start stirring from the bottom up to form a liquid homogeneous mass. Finish mixing until smooth, the total mixing time may be a few minutes.

It is recommended to apply the coating preferably with a professional spraying device (airless type with a minimum flow rate of 4.3 litres/minute) to achieve a perfect aesthetic appearance. In spraying equipment it is necessary to remove all filters before application! The pressure at the spray gun nozzle during application must not exceed 200 bar.

The coating can be applied to surfaces where you need to raise the surface temperature in layers until the surface is insulated to ambient temperature to prevent frost from forming on the surface.

The coating can also be applied with a synthetic fibre brush or a roller with medium-length hair. When applying with a brush, it is not recommended to go back for minor imperfections. Partial overpainting of already painted layers will cause the coating to be inconsistent with significant aesthetic flaws. It is recommended to apply the coating generally in a cross pattern. Apply coating only in continuous areas.

The material consumption is influenced by the surface texture and the application method. Apply the coating in individual layers as required and always in accordance with the application instructions. The coating must be stirred during prolonged application. In case of higher ambient temperatures (e.g. direct sunlight), mix the coating more frequently. The coating should not be handled in damp environments.

Surfaces where water condensation has occurred, i.e. where the surface has subsequently frozen, must be dried, decommissioned and de-iced. The coating must be applied to a completely dry surface where frost and condensation do not form and the surface temperature is +20 °C. Individual layers must be applied at ambient temperatures of +20 °C, ideally +23 °C to +35 °C, when uniform drying of the coating is achieved. The coating (individual layers) must be sufficiently dry (cured) to prevent tearing after start-up.

Failure to comply with the coating application procedure may result in insufficient polymerization of the coating and thus affect the properties and functional characteristics of the coating or its tearing. The coating is always applied on top of the ALPHA PRIMER primer. The coating is always applied in single layers with a maximum thickness of 0.5 mm to ensure uniform drying.

The coating will gradually cure after 24 hours. After about 16 hours, once the surface is dry to the touch, continue with another layer of coating. Avoid applying excessive amounts of coating. Applying excessive amounts of coating will cause run-off or other optical defects.

ALPHA FROZEN cannot be coloured. We recommend using ALPHA TOP as a top coat, which can be tinted with a waterborne pigment.

ALPHA FROZEN coating adheres to the surface where icing has subsequently occurred, eliminating air space and preventing corrosion damage to the pipe. Should icing continue to occur in the protected area for any reason, then the icing will lie on the surface of the coating and not on the pipe surface, the next layer of coating will eliminate the formation of icing.

Apply only to disconnected, dry system piping. After descaling and degreasing and cleaning of rust and old non-cohesive coatings, apply the coating directly to the piping where ALPHA PRIMER primer was applied.

In areas with higher humidity, the drying time of one layer can take up to 24 hours. Thorough drying between layers is essential to ensure that condensation on cold surfaces is blocked.

Different thicknesses are required in different circumstances and amounts of frost. If the customer wishes to deviate from the recommended thickness, the thickness used may be insufficient and more layers of coating may need to be applied in the future.

In high traffic areas or areas that expose the pipe to abrasion or harsh conditions, apply small mesh fiberglass mesh (approx. 1.4 mm mesh size). It is important to note that all fiberglass fibers must be completely covered, otherwise the fiberglass fabric will absorb moisture.

The application of the mesh takes place in the fourth to fifth wet layer, when the pipe is wrapped with one layer of glass mesh. Then, after the mesh coating has cured, another layer of coating is applied to completely cover the glass mesh.

Failure to follow the coating application procedure may result in insufficient polymerisation of the coating and thus affect the properties and functional characteristics of the coating.

ALPHA FROZEN cannot be coloured. We recommend to use ALPHA TOP as a top coat, which can be painted with a water-based pigment.

Important notices/restrictions

If blisters start to form on the ALPHA FROZEN coating, it is too thick and "gases" cannot escape through the microporous surfaces - cracking can occur to release pressure, gases and moisture. Care must be taken to keep ALPHA FROZEN dry between layers. If you apply this product thicker, it will not have time to "outgas" and blisters, cracks will form. When spraying multiple layers, always allow the product to shine (dry to a matt, non-glossy state) before applying the next layer.

Thinning this product beyond the first adhesion layer is not recommended and may significantly reduce the effectiveness of the product. Do not apply too thick a layer. Apply with a brush, roller or Airless device. Apply only one layer of coating at a time. Applying thicker layers will result in insufficient polymerization of the coating, blistering and prevent adhesion to the surface. Application in thick layers that cause blistering will result in loss of warranty and functionality of the coating.

If you stop applying the coating with the Airless device for more than 10 minutes, submerge the gun in a bucket of water and cover the hose, coating and Airless device to prevent excessive drying of the coating inside the hoses.

When setting up the Airless device, start at approximately 80 bar. If the gun does not spray smoothly, increase the pressure slightly. The aim is for the gun to spray continuously but for the pump to stop when the trigger is released. If the pump continues after the spray gun is released, the pressure is too high. The ideal setting is between 110 and 145 bar.

The product is filled with microspheres with very high compressive strength, allowing the product to be used on walking surfaces and in other very demanding conditions without damage.

Do not apply coating unless

- rain and frost are expected when applied outdoors
- the coating must not be exposed to direct rain for at least 6 hours after application
- relative humidity > 80%
- the surface is icy
- the surface is wet

After opening the original packaging, we recommend that the contents be used as soon as possible, keeping unused coating in a sealed container with as little air above the surface as possible. The applied coating must not be exposed to direct steam, water or other liquids for long periods of time.

Cover the places where the coating will not be applied with material for protection against contamination of unpainted surfaces: covering foils, non-woven fabrics, tapes, etc.

Application conditions

- Surface temperature: min +20 °C min +35 °C max.
- Ambient temperature: min +20 °C min +35 °C max.
- Relative humidity: < 80%

Recommended layers

1 layer max. 1 mm wet, unless otherwise stated. A single application of the coating in a layer thicker than 1.0 mm is not permitted. Recommended total height of layers in dry condition.

Surface temperature	Recommended layer in mm
0 °C	5
-40 °C	6
-80 °C	8

Drying conditions

The coating does not require any special measures during drying (curing). Drying time depends on air temperature, humidity and surface temperature. The average drying time for one layer is up to a maximum of 24 hours.

Drying time

Drying time depends on the surface temperature and humidity. Apply the next layer after the previous layer has completely dried. The ambient temperature during drying must be at least +20 °C, ideally +23 °C.

Cleaning tools

Water - as soon as possible after use.

Storage / transport / shelf life

This product retains its useful properties for at least 24 months from the date of manufacture when stored in the prescribed manner in the sealed, intact original packaging. Store at a temperature of +5 °C to +35 °C, humidity up to 80 %. The temperature during transport of the material should not fall below +5 °C and rise above +35 °C. Protect the product from direct sunlight, frost and high temperatures during transport and storage.

Notice

The products can be applied when the surface temperature is above +20 °C and the air temperature is between +23 °C and +35 °C. Avoid application if adverse weather conditions are expected during the curing period (wind, increased dust, rain, frost).

Read the Technical and Material Data Sheet, Safety Data Sheet and Application Manual before use.

Note

The information contained in the Technical data sheet corresponds to our current knowledge of the manufacturer. Products are of the highest quality and uniform within manufacturing tolerances. The values and data given in this datasheet are based on the results of laboratory tests and manufacturer's testing. The information given, especially the advice for the processing and use of the coating, is based on experience with practical applications under standard conditions and proper storage and use.

These values may vary when applied in practice. Due to different processing conditions and other external influences, the varying nature and modification of the materials, a procedure based on the information given, or other written or oral recommendations, may not always guarantee a satisfactory working result. All recommendations made by the manufacturer or distributor of the coating are general. The applicator must verify that the coatings are suitable for the intended purpose of application. The latest edition of the application instructions and product data sheet should always be followed. These, together with other information, are available on request from the manufacturer. Purchasers and users are encouraged to perform a self-test on a sample of the area to be coated prior to application.

The manufacturer is not liable for defects resulting from failure to follow the instructions for use in the Technical and Material Data Sheet, Safety Data Sheet and Application Manual.

Precautions for handling products

The coating does not contain harmful substances, is not labelled or classified as hazardous to health.

Protective measures

When working with the coating, observe the safety instructions, the applicable regulations of the relevant authorities on occupational health and basic hygiene rules. Use protective equipment such as goggles, gloves, protective clothing, etc. to protect your eyes and skin. Protect the respiratory tract with a suitable respirator in confined spaces and during spray application. Provide ventilation in case of application in enclosed rooms. More detailed information on hygiene, occupational safety and environmental protection is given in the safety data sheet.

Wash the affected skin with soap and water. If swallowed, rinse mouth with water. If the eyes are affected, flush them with a stream of water. Exit to fresh air if inhaled.

The material is non-flammable. In case of fire in structures, equipment or buildings on which the coating has been applied, we recommend using water, foam, dry chemical extinguishing agents or carbon dioxide to extinguish the fire. In the event of a coating leak or spill, use any absorbent material such as sand, etc.

Disposal of packaging/product

The material is not classified as an environmentally hazardous substance (Act No. 185 of 2001 Coll. on Waste). Dispose of unused material or packaging in accordance with applicable regulations. Clean packaging: category 'O' 15 01 02 - Plastic packaging; Product residues: category 'O' 08 02 99. Keep out of reach of children. Packaging is fully recyclable.

Date of last revision

1.2.2023

Version

01 For professional use only

Producer



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