

Technical and material data sheet

# ALPHA TEMPER



Reflexně izolační  
nátěry

Downloads



18L



5L

Číslo šarže: etiketa

Datum výroby: etiketa

Datum expirace: 12 / 24 měsíců / etiketa

Poslední revize: 15.11.2023

Verze: 01 Pouze pro profesionální použití

Thanks to its reflective and insulating properties, ALPHA TEMPER coating substance prevents heat leakage and reduces the energy consumption of buildings and equipment. The coating is very effective where it is important to reduce the surface temperature of objects and equipment in the context of occupational safety, as protection of workers from burns. Ideal for insulating hot water pipes, boilers, steam pipes and other product pipelines. Also provides insulation for roofs, building envelopes, halls and storage tanks for petroleum and other chemical products.

The coating substance is ecological, environmentally friendly and not harmful to health. The coating reflects 92% of TSR and up to 97% of visible light. The coating substance has high adhesion to metals. Application is possible both indoors and outdoors.

#### Main properties

- Application without stopping operation up to a surface temperature of +220 °C
- Reduces energy costs
- Space and weight saving
- Eliminates corrosion of structures
- Applications in hard-to-reach places

#### Application

ALPHA TEMPER is used as the main insulating coating on all steel structures.

#### Technical properties

Theoretical consumption <sup>1</sup>	1.2 litres/m <sup>2</sup> , one layer - 1 mm
Practical consumption <sup>2</sup>	Practical consumption depends on many factors such as porosity, surface roughness and material loss during application
Dilution	Not diluted. Only about 200 - 400 ml diluted 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. 150 rpm.
Stirring during prolonged application	Stir every 40 minutes

Packaging	18 litres / 9.7 kg
Density	0.53 g/cm <sup>3</sup>
Appearance	White, 96 % whiteness
Colour	Cannot be coloured
Gloss level	Matte
Odour	Odourless
Shelf life <sup>2</sup>	24 months, must not freeze
Flash point	Non-flammable

### Repeatability and maturation time <sup>3</sup>

#### Application on hot steel surfaces - no downtime, temperature range +60 °C to +220 °C

To the touch	2 hours
For handling	3 hours
For the next layer	* hours
Completely dried out	72 hours

\* Create an adhesion (diluted) layer, wait two hours for drying. Then apply the first undiluted layer. After four hours, apply a second undiluted layer. After seven hours, apply a third undiluted layer. The fourth and each subsequent undiluted coat is applied after twelve hours.

#### Application on cold steel surfaces

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**

1 Consumption depends on the surface

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

3 At +20 °C and 50 % PH

## **Preparation of the surface**

### **Purity**

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 mechanically cleaned by hand to St 2, depending on the degree of contamination.
- Apply ALPHA PRIMER primer or diluted ALPHA TEMPER

## **Resolution of the surface where the coating will be applied**

**Unpainted steel structure:** Steel surfaces that have not yet been coated 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 a 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. It should be determined whether the system will need to be completely removed or whether parts of the coating can be retained.

**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.

### Description of the surface after cleaning

Wa 1	<b>Light blasting with a high pressure beam:</b> 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.
Wa 2	<b>Thorough blasting with a high pressure beam:</b> 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 contain firmly adhering coatings, firmly adhering foreign matter and shadows of previously occurring rust.
Wa 2½	<b>Very thorough blasting with a high pressure beam:</b> 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

Sa 3	<b>Blasting to a visually clean surface:</b> When viewed without magnification, the surface shall be free from visible traces of oil, grease and dirt, scale, rust, paint and foreign matter. The surface shall have a uniform metallic appearance.
Sa 2 ½	<b>Very thorough blasting:</b> 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.
Sa 2	<b>Thorough blasting:</b> When viewed without magnification, the surface must be free of visible traces of oil, grease and dirt, and most scale, rust, paint and foreign matter must be removed. Any remaining dirt shall be firmly adhered.
Sa 1	<b>Light blasting:</b> 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.

### **Standard stages of basic surface preparation using manual and mechanised cleaning**

---

St 3	<b>Very thorough manual and mechanised cleaning:</b> As with St 2, but the surface has to be cleaned much more thoroughly to get the metallic tint given by the surface.
St 2	<b>Thorough manual and mechanised cleaning:</b> 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.

---

### **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 mixture 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 200 - 400 ml of clean water for better mixing of the coating. Use a spatula to make a groove where the coating meets the bucket wall. Pour 200 to 400 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 lower (stabilize) the temperature in layers until the surface is insulated to the temperature you require!

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.

When applied during plant shutdown, i.e. on "cold" surfaces, the surface to be painted must be cleaned as described above and ALPHA PRIMER primer applied. After the primer has cured, ALPHA TEMPER can be applied. Wait for the primer to dry completely between layers and the next layer can be applied after 12 hours at the earliest.

When applied to hot surfaces, the coating should ideally be applied at temperatures between +60 °C and +150 °C. For application temperatures on steel surfaces in the range +150 °C - +220 °C, two coats of a 1:1 diluted coating can be applied until a white film is formed on the surface. Subsequently, a first weak coat can be applied without dilution with water. Once this has dried completely, further layers of coating can be applied individually (maximum 1 mm thick when wet) until the surface is insulated to the required temperature.

### **Recommendations for application at temperatures above +150°C**

Application on a hot surface is more difficult and requires careful preparation of the adhesion (contact) layer for the application of the individual layers of coating, which will already be gradually reduced to your desired surface temperature by layering.

- when applying in service on hot surfaces, the adhesion (contact) layer should be formed with ALPHA TEMPER itself, diluted 1:1 with clean water until a white film is formed on the surface to be painted. Alternatively, apply these two weak coats after the previous coat has completely dried. Ideally this adhesive layer should be applied with a brush!
- apply the first coat of undiluted paint with a brush, although lumps will form on the painted surface, the paint will not be aesthetically perfect at this stage and will not look good, but the surface temperature of the surface should be reduced. You can already apply the next coats with an Airless device for a perfect aesthetic and uniform surface.
- each subsequent layer is applied without dilution
- each individual layer must be dry to the touch (glossy) for the next layer to be applied
- after the adhesion (contact layer) is formed, the surface temperature is reduced. The application of the next undiluted coating is no longer difficult.

In case of non-compliance with the coating application procedure, insufficient polymerization of the coating may occur, thus affecting the properties and functional characteristics of the coating or its burning (yellowing) and its subsequent cracking.

The coating will gradually cure after 72 hours. After about 4 hours, once the surface is dry to the touch - not glossy, 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 TEMPER cannot be painted over. We recommend using ALPHA TOP as a top coat, which can be tinted with a water-based pigment.

### **Important notices/restrictions**

When applying ALPHA TEMPER to hot pipes and surfaces, the first layer must be very thin. It must be visible through the coating - so you will create a very fine thin film. It is important to follow this rule as it will allow all subsequent layers to adhere properly. The second layer can be slightly thicker. If blisters start to form on the ALPHA TEMPER coating, it is too thick and the "gases" cannot escape through the microporous surfaces. Failure to follow the procedure for applying the first adhesion layers on a hot surface can cause yellowing - the coating burns, behaving like chewing gum. All subsequent layers can be 0.2 to 0.5 millimetres thick, taking care to keep ALPHA TEMPER dry between layers. If you apply this product thicker, it will not have time to "outgas" and blisters and cracks will form. When spraying multiple layers, always allow the product to shine (dry to a matte, non-glossy state) before applying the next layer.

ALPHA TEMPER will discolour or char at temperatures above +220 °C. If a sufficient layer of ALPHA TEMPER is not applied - not enough ALPHA TEMPER has been applied to cover the surface temperatures. If a sufficient amount is applied, the outer layer will remain intact and will hold the coating to the surface as a good insulation. When applying layers of ALPHA TEMPER, make sure the base adhesion layer(s) is only a "white mist". Sufficient drying time should be allowed between layers. If the layers do not dry, moisture trapped between layers will cause blistering and reduce the insulating ability. Cracking may occur to release pressure, gases and moisture.

Expansion and contraction. Surfaces expand and contract. The larger the surface, the greater the possibility of cracks. Again, the appropriate amount of coating will allow the inner layer of coating to harden and the outer layer to remain soft, expanding and contracting.



If the surface to which the coating is applied is expected to operate intermittently (major temperature changes, turning the system off and on) causing constant expansion and contraction, or if vibration is occurring, consideration may be given to wrapping with 1.4 mm mesh fiberglass mesh to prevent cracking of the coating. When fibreglass mesh is used, the mesh should be embedded in the penultimate layer of ALPHA TEMPER.

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 heated to more than +220 °C

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.

Due to the specific properties of the coating, standard measuring equipment such as a thermal camera cannot be used to measure its properties without a properly set emissivity value. For surface temperature measurements, we recommend the use of touch-trigger measuring instruments.

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: +20 °C min. +220 °C max.
- Ambient temperature: +20 °C min. +220 °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
220 °C	6
180 °C	5,5
150 °C	4,5
120 °C	3,5
80 °C	2,5
40 °C	1,5

### ***Drying conditions***

The coating does not require any special measures during drying (curing). Drying time depends on air temperature, humidity and surface temperature.

### ***Drying time***

Drying time depends on the surface temperature and humidity. The drying (curing) time of a 1.0 mm layer is at least 24 hours. Apply the next layer only 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 +30 °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. If inhaled, get out in the fresh air.

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**



**ALPHA CZECH s.r.o.**

Na Příkopě 854/14

110 00 Praha 1 – Nové Město

Czechia

[www.alphaczech.com](http://www.alphaczech.com)