



WATER
SOLUBLE BAG

Antifreeze S

**Chloride-free antifreeze
for concrete and
cementitious mortar**



WHERE TO USE

- For preparing and placing normal or reinforced concrete in temperatures as low as -10°C .
- For preparing and placing cementitious mortars in cold weather.

TECHNICAL CHARACTERISTICS

Antifreeze S is a powder admixture based on hardening accelerators made from a formula developed in the MAPEI research laboratories.

When added to the mix, **Antifreeze S** enhances the hydration reactions of cement without substantially affecting normal setting times if used in the correct dosages.

Antifreeze S features the following advantages:

- an outstanding increase, even at low temperatures, of early mechanical strength (after 24 hours) compared to concrete without admixture;
- no reduction in ultimate mechanical strength;
- early and safe form release;
- elimination of freezing damage to concrete.

RECOMMENDATIONS

- Do not add **Antifreeze S** to the mix water.
- Do not add **Antifreeze S** at dosages higher than indicated, this might accelerate setting.
- Do not use **Antifreeze S** if the packaging is damaged.

APPLICATION PROCEDURE

Preparing the mixture

Add 1-2 kg of **Antifreeze S** to every 100 kg of cement

along with the other ingredients: cement, aggregates and water.

Mix for a few minutes until a homogeneous mix is obtained.

Procedure to be followed in preparation of cement mixes

Using **Antifreeze S** does not mean that the usual procedures for placing concrete in cold weather should not be followed.

- Mix ingredients (cement, sand, gravel) must be brought to a temperature a few degrees above 0°C .
- Store the cement in a sheltered area at a temperature not lower than $+5^{\circ}\text{C}$.
- Cast in the morning, if possible, to take advantage of the rising temperature during the daytime.
- Do not cast if forecast temperature is likely to drop below -10°C following casting.
- Do not use slow-setting cements, if possible, use CEM I 42.5R in a proportion not lower than 300 kg/m^3 .
- Use the lowest water/cement ratio possible.
- Protect castings, especially small sections, with burlap or paper sacks to retain the heat of hydration inside the mass.

Cleaning

Tools used for mixing and placing concrete and mortar admixed with **Antifreeze S** can be cleaned with water before setting begins.

DOSAGE

1-2 kg per every 100 kg of cement.

Antifreeze S



TECHNICAL DATA (typical values)	
In compliance with standard: UNI 7109/72	
PRODUCT IDENTIFICATION:	
Consistency:	powder
Colour:	white
Apparent specific gravity:	0.85 kg/l
Dry solids content:	100%
Storage:	24 months in a dry place in original sealed packaging
Hazard classification according to EEC 88/379:	yes. Antifreeze S contains caustic substances. During application, avoid contact with skin and eyes, and avoid breathing in powder. In case of contact with skin, wash with soap and plenty of water. In case of contact with eyes, wash with running water and consult a doctor.
Customs class:	3824 40 00
APPLICATION DATA	
Mix ratio:	1-2 kg of Antifreeze S per every 100 kg of cement
FINAL PERFORMANCES	
Compressive strength and flexural strength tests were carried out at +5°C on plastic mortar made and cured according to specifications of Italian Ministerial Degree of June 3, 1968. Cements, aggregates and water were conditioned at +5°C before tests began. Tests were conducted at the same consistency levels as the mix without Antifreeze S .	
PLASTIC MORTAR WITH CEM I 42.5R TYPE CEMENT: Compressive strength: mix with Antifreeze S mix ratio 1% in weight of cement:	
- after 3 days:	12 N/mm ²
- after 7 days:	22 N/mm ²
- after 28 days:	32 N/mm ²
- after 60 days:	43 N/mm ²
Flexural strength: mix with Antifreeze S mix ratio 1% in weight of cement:	
- after 3 days:	2.5 N/mm ²
- after 7 days:	4 N/mm ²
- after 28 days:	7 N/mm ²
- after 60 days:	8.5 N/mm ²
PLASTIC MORTAR WITH CEM II/A - L 32.5R: compressive strength: mix with Antifreeze S mix ratio 1% in weight of cement:	
- after 3 days:	7 N/mm ²
- after 7 days:	16 N/mm ²
- after 28 days:	23 N/mm ²
- after 60 days:	34 N/mm ²
Flexural strength: mix with Antifreeze S mix ratio 1% in weight of cement:	
- after 3 days:	2 N/mm ²
- after 7 days:	3 N/mm ²
- after 28 days:	5.5 N/mm ²
- after 60 days:	6.5 N/mm ²

PACKAGING

Antifreeze S is available in boxes containing 24 - 1 kg bags.

Also available in boxes containing 24 - 1 kg water soluble bags or in boxes containing 48 - 0.5 kg water soluble bags.

FOR PROFESSIONALS.

WARNING

N.B. Although the technical details and

recommendations contained in this report correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application. For this reason, anyone intending to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from use of the product.

