

# Expanplast\* Antifreeze

## Cold weather concrete admixture

### Uses

Expanplast\* Antifreeze is design to be used in concrete in cold weather working conditions such as:

- Light daytime frost
- Expected overnight frost
- Expected cold period

### Advantages

- Increase strength at early ages
- Increased frost resistance
- Chloride free – does not attack reinforcement, safe for use in pre-stressed and reinforced concrete.

### Standards compliance

Expanplast\* Antifreeze conforms to the requirements of ASTM C494-81 Type C

### Description

Expanplast\* Antifreeze is a chloride free yellowish liquid admixture base on special liquids and salts, for producing high quality concrete at moderate low temperature working conditions

### Dosage

The optimum dosage of Expanplast\* Antifreeze to meet specific requirements should always be determined by trials using the materials and conditions that will be experienced in use.

The normal dosage range is 1.00 % by weight of cement, and can be use up-to 2.50 % by weight of cement.

Dosage outside the above range can be used to meet the particular mix requirements, consult Expanchem Fospak for advice.

### Technical support

Expanchem Fospak provides a technical advisory service for on-site assistance and advice on admixture selection, evaluation trials and dispensing equipment.

### Properties

Appearance	: Yellowish liquid
Specific gravity	: Typically 1.20 – 1.28 at 20°C
pH value	: 7 – 10

### Compatibility

Expanplast\* Antifreeze is compatible with other Expanchem Fospak admixtures in the same concrete mix. All admixtures should be added to the concrete separately and must not be mixed together prior to addition. The trial mixes should assess the resultant properties of concrete containing more than one admixture.

## Frequently asked questions for cold weather concrete

### Q. What is cold weather?

A. As per ACI 306 defines it as: "A period when, for more than 3 consecutive days, the following conditions exist:

- 1) The average daily air temperature is less than 5 °C
- 2) The air temperature is not greater than 10 °C for more than one-half of any 24-hr period", basically, cold weather is any combination of weather conditions that causes the concrete temperature to dip to 5 °C or below

### Q. At what temperature does fresh concrete freeze?

A. As per USACE Engineer Research and Development Centre the laboratory tests shows that this temperature can vary, but, in admixture-free concrete, ice beings to form at temperatures ranging from -0.50°C to -1.50°C

### Q. When is it safe to expose concrete to subfreezing temperature?

A. According to ACI 306, once concrete has attained a compressive strength of 500 psi (3.40 MPa); it can resist one freezing event. At 3500 psi (24 MPa) concrete is able to resist multiple cycles of freezing and thawing.

## Dispensing

The correct quantity of Expanplast\* Antifreeze should be measured by means of a recommended dispenser. The admixture should then be added to the concrete with the mixing water as a last component of the concrete mix.

## Estimating - packaging

Expanplast\* Antifreeze is available in 250 Kg. drums and bulk supply.

## Storage

Expanplast\* Antifreeze has a minimum shelf life of 12 months provided if stored properly in its original unopened packing at temperature between - 5 °C to 35 °C, and must be protected from direct sunlight.

If material is freeze in drum, thaw gradually in heated environment, but material should not come into direct contact with flame.

**Freezing point:** Approximately: < -10°C

## Health and safety

Expanplast\* Antifreeze does not fall into the hazard classifications of current regulations. However, it should not be swallowed or allowed to come into contact with 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 eyes rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately do not induce vomiting.

For further information consult the Material Safety Data Sheet available for this product.

## Fire

Expanplast\* Antifreeze is water based and non-flammable.

## Limitation

Do not add Expanchem Antifreeze directly in a dry cement mix, and should be added with mixing water at the end of the mixing process.

Trials must be conducted to check the compatibility of Expanchem Antifreeze with material used in concrete mix.

Reinforcement and form work must be free from water snow or ice, where required pre-heat to 0 °C minimum.

It is suggested that wooded from work must be used instead of steel form work, and form work must be designed to act as thermal insulation.

Keep the fresh concrete temperature in between 5 °C to 15 °C; depend on ambient temperature and thickness of concrete.

Cover / insulate the freshly placed concrete to protect moisture and heat loss of concrete, until the concrete gets its initial strength 4 – 5 N/mm<sup>2</sup>.

## Cleaning and disposal

Spillages of Expanplast\* Antifreeze should be absorbed onto sand, earth or vermiculite and transferred to suitable containers. Remnants should be hosed down with large quantities of water.

The disposal of excess or waste material should be carried out in accordance with local legislation under the guidance of the local waste regulatory authority.

\* Denotes the trademark registered

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