

## CapcoFreeze® Z1 Anti-Freezing Agent

CapcoFreeze Z1 is an Anti-Freezing Agent which is used to make and implement the cement mortars in cold weather. This admixture contains the Chloride ion and is not allowed in the mortars in direct contact to bars. Also, this admixture does not increase the setting time (Quick setting) and allows for working with mortar for a longer period of time.

The physical and chemical properties of CapcoFreeze Z1 are according to the following table.

(The previous name of this product was Plastit Z1)

Physical State	Liquid
Color	Light Green
Density	1/12 ± 0/02 g/cm <sup>3</sup>
Chloride Content	>10%
The equivalent Alkaline Substance (Na <sub>2</sub> O)	11%
pH	7 ± 1
Freezing Temperature	-5°C

### The usage and the effect of the admixture on the mortar

#### The usage of the admixture on concrete

- Production and implementation of the mortar in cold weather and at -5 to 5°C

#### The advantages of using the admixture in mortar

- It prevents freezing of cement mortars at -5 to 5 °C

#### The effect of the admixture on fresh mortar

- It does not change the first and secondary setting time of the standard mortar.
- The production of air bubbles in the fresh concrete is controlled in a way that the changes in the air percentage remain in the allowable standard range announced in the properties sheet.

#### The effect of the admixture on the hardened mortar

- It does not change the first and secondary strength of the mortar in the same water to cement ratio

### The instruction to use the admixture in the mortar

#### The allowable range of using the admixture in the mortar

The allowable range for using The CapcoFreeze Z1 is from 1% to 5% of the cement material weight (1000 to 5000 grams per 100 kg of cement material including cement, silica fume, slag, fly ash, and other similar pozzolans). Specifying the optimum amount of the admixture should be accomplished with respect to the properties of the mix design and the implementation and weather conditions, and finally making the test mixes.

#### The instructions to mix the admixture in the mortar

To use the admixture, it is necessary to dilute the admixture with water twice the volume of the admixture and add it to the concrete. It is also necessary to take the following notes into consideration:

- Mix the mortar for 2 to 5 minutes after adding the admixture and assure the uniform distribution of the admixture in the mortar.
- Avoid the direct contact of the admixture with the dry mortar
- Subtract the water used to dilute the admixture and the water as much as the admixture volume (Before adding to the mortar) from the mixing water of the mortar.

### **Safety tips while using the admixture**

This product is not categorized as a dangerous substance; however, it can be allergic to contact with skin. Therefore, it is necessary to use a suitable gown, goggles, and mask while working and take the following tips into consideration:

- Blink in water for at least 15 minutes in case of eye contact
- Wash your skin with clean water for 15 minutes in case of any contact with the skin
- The contaminated clothes must be washed with suitable detergents to be usable for further work.
- It is necessary to visit a doctor if the injured individual still feels uncomfortable

### **Other necessary notes in using the admixtures**

#### **Compatibility of admixture with other products**

The simultaneous use of this product with other admixtures of Capco Company is allowed. However, it is necessary to batch each admixture separately and then add it to the concrete mixture.

#### **Alkaline attack- aggregate**

It is necessary to take any required considerations and evaluations if the aggregates have alkaline reactivity.

#### **The corrosion of admixture**

This product contains Chloride ion and can start and extend corrosion in the buried bars in concrete, the pre-stressed steel, floor systems, and the roof made of galvanized steel.

### **Transportation and storage of the admixture substance**

#### **The conditions and maintenance temperature of transportation**

The allowable transportation and maintenance temperature of this product is between 5 and 35 °C. It is also necessary to consider the following tips:

- Avoid putting the container having the admixture in direct exposure to sunlight
- Keeping the product at low temperatures may result in sediment which can be remixed and usable again.

#### **The admixture lifetime**

If the containers of this product are conserved and stored in a standard condition, they will be usable for 12 months.

### **The admixture substance packaging**

This product is supplied in 20 Kg gallons, 220 Kg barrels, and 1100 Kg Pallets.

### **Complementary information**

Contact the technical section of Capco Company for complementary information. You can also refer to the performance form of (CapcoFreeze Z1 -PPI) Z1 for more information on the performance of this product and its efficiency in the characteristics of fresh and hardened concrete.