

# EPOCON PLUS 45

PCE Based High Range Hyper Plasticizer, Self-Compacting Concrete Admixture



## DESCRIPTION

**EPOCON PLUS 45** is high performance, high water reducing, self-compacting hyper plasticizer based on PCE technology, specially developed for applications in the ready mixed and precast concrete industries where the high strength durability and workability performance is required.

Super plasticizing action of **EPOCON PLUS 45** is different than conventional super plasticizers based on sulfonated melamine and naphthalene formaldehyde condensate, which create electrostatic repulsion of particles. **EPOCON PLUS 45** initially create the same electrostatic repulsion and further stabilizers the mixes due to static repulsion of long lateral chains linked to the polymer backbone.

## CHARACTERISTICS

**EPOCON PLUS 45** has been developed as a solution for applications in the premixed concrete industries where the highest performance and durability is required. It enables very low w/c ratios to be produced in the concrete without segregation or bleeding and slump retention is increased. It improves concrete surface finish and texture. **EPOCON PLUS 45** is a new generation hyper plasticizer concrete admixture, free of chlorides.

## APPLICATIONS

Due to its excellent dispersion properties, **EPOCON PLUS 45** allows the production of high early and high ultimate strength concrete, increasing slump retention especially important for the premixed concrete. It is used for bridges, viaducts, turbo generators, the raft foundation of structures such as harbors, industrial grounds, airports, on the structures that concrete exposed to the corrosive effects and bridge beams with narrow sections.

## USAGE

Mix cement (and pozzolanic materials), sand, fly ash, aggregate and 50-70 % of mixing water are mixed until a homogeneous consistency is obtained. **EPOCON PLUS 45** is added to the remaining mixing water and mixed until a homogeneous consistency and required workability are obtained.

## COMPATIBILITY

**EPOCON PLUS 45** can be used in all types of Portland cement, sulfate resisting cement and supplementary cementitious materials. **EPOCON PLUS 45** should be dispensed directly into the mixer and should not be pre-mixed with other admixtures. If other admixtures are to be used in concrete containing **EPOCON PLUS 45**, they must be dispensed separately.

## TECHNICAL SPECIFICATION

Test Name	Average Result
Chemical Composition	Polycarboxylic ether based
Form	Liquid
Colour	Light Brown
Specific Gravity @20°C	1.105 ± 0.01
pH	6 ± 2
Chloride content (%)	< 0.1
Freeze harm	Complete Stir or agitate the container before use
Freeze temperature	0°C
Boiling point	100°C
Odor	Mild odor
Toxicity	None
Flammability	None
Clean-up	Water
Fumes during treatment	Slight
Environmental Hazards	None
Air Entrainment	Up to 2.2% depending on dosage rate and concrete proportioning.



## FEATURES / BENEFITS

- When used to produce “flowing” concrete, significantly reduces concrete placement time and cost.

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- Reduces segregation and bleeding in the plastic concrete.
- Produces “flowing” concrete with controlled delay of slump loss and workability.
- Greatly reduces water requirements.
- Enables under water concreting and Anti wash-out properties.
- Reduces cracking permeability of hardened concrete.
- Enhance the freezing - thaw cycle of hardened concrete.
- Improve concrete’s durability, physical and mechanical properties.
- Improve concrete corrosion resistance against chlorides, sulfates and aggressive environment compounds.

## CONSUMPTION

**EPOCON PLUS 45** is used in a range of 0.80 Kg to 2.5 Kg/100Kg of the cementitious material weight (Dosage varies depending on climatic conditions, proportioning and other components of concrete)

## REMARKS

Use of dosages stated here under were obtained in laboratory conditions; they may change depending on the characteristics of other components, ambient conditions and water/cement ratio. Therefore, it is recommended that designs and tests should be conducted at sites using preliminary mixture ratios. **EPOCON PLUS 45** is not suitable to be used with any of the **EPOCON** series **SNF** based products.

## RELEVANT STANDARDS

**ASTM C 494 Type F/G and ASTM C 1017 Type II** Plasticizing and retarding.

## PACKING

Drums (200 Ltr), IBC (1000 Ltr), Bulk (storage tanks can be provided for Bulk use)

## SHELF LIFE

12 months indoors, without opening original package. The product should be stored in a cool, dry storage. Do not store at temperatures below 10°C or in direct sunlight.

## TECHNICAL INFORMATION

**Typical Engineering Data:** The following data using **EPOCON PLUS 45** was developed under laboratory conditions and according to ASTM C 494/10a limits Type F.

## Mix Design:

Cement content (OPC) 307 Kg/M<sup>3</sup>

Coarse aggregate 30 %

Fine aggregate 70 %

Admixture dosage: 1 %

Water/Cement Ratio: 0.47

Properties	Specification % of Control	EPOCON PLUS 45
<b>Compressive Strength vs. Control 100%</b>		
3 days	125 %	> 150 %
7 days	115 %	> 140 %
28 days	110 %	> 110 %
<b>Flexural Strength vs. Control 100%</b>		
7 days	100 %	> 102 %
28 days	100 %	> 100 %

Properties	Control Mix	EPOCON PLUS 45
<b>Setting Time</b>		
Initial Setting	240 min	430 min
Final Setting	495 min	562 min
<b>Length Change ASTM C 157 @28 days</b>	-0.019 %	-0.021% Pass

## SAFETY PRECAUTIONS

As with all construction chemical products, adequate precautions and care must be taken during usage and storage. Avoid direct contact with foodstuff, eyes, skin, and mouth. Keep away from children and animals. Any direct contact with skin, eyes, etc. should be washed thoroughly with clean running water and soap. Use proper safety wear, goggles, and mask, etc.

## TECHNICAL ASSISTANCE

**EPO GULF SPECIALITIES**; technical department with its highly trained and qualified Chemicals Marketing Advisory team provides a complete service in the field. Please consult your nearest service/sales department for assistance. Field services where provided, do not constitute any supervisory responsibilities.

## NOTICE

The information given in this publication is based on present state of our knowledge. Any recommendations and suggestions are made without guarantee since the conditions and procedures are beyond our control. Buyers and users should make their own assessment of our product under their own conditions and for their own requirements

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