

InsuCast 701

Polycarboxylic Ether Based High Range Water Reducing / New Generation Super Plasticizer Admixture.

DESCRIPTION OF PRODUCT

InsuCast 701 is a polycarboxylic ether based, high range water reducing new second generation super plasticizer concrete admixture developed for ready-mix concrete and precast industry that needs high early and final strengths and durability*.

Consistent With the TS EN 934-2 Table 3.1.3.2 and Table 7: High range water reducing/Super plasticizer Concrete Admixture and ASTM C 494 Type F: High range water reducing/Super plasticizer Concrete Admixture Standards.

Fields of Applicationn

- In the production of self consolidating and self compacting concrete.
- In the production of Rheodynamic** concrete that can easily set to densely reinforced concrete elements.
- In the production of 18 - 24 hours and 28 days high strength concrete.
- In the production of precast and prefabricated concrete.
- In the production of readymix concrete.

TECHNICAL DATA

Structure of the Material	Polycarboxylic ether based
Color	Amber
Density	1.082 - 1.142 kg/liter
Chlorine Content% (EN 480-10)	< 0.1
Alkaline Content% (EN 480-12)	< 3

Obtained in +20°C 50% relative humidity conditions.

ADVANTAGES

- Improves concrete’s early and final compressive and flexural strengths, adherence to steel, and impermeability compared to traditional super plasticizers (NSF or MSF**).
- Improves concrete’s mechanic properties like carbonation, resistance to chlorine ion attack, resistance to aggressive chemicals, shrinkage, and creeping.
- Enables the production of low water/cement ratio, low segregation and leaching risk Rheoplastic**** concrete.
- Enables production of high early strength concrete even in low temperatures.
- Minimizes stripping time.
- Improves wear resistance of concrete by reducing segregation and bleeding.
- Reduces application periods of resin based pavement systems on new concrete with its low water/cement ratio, high early strength, and bleed ing reduction properties.
- Increases Freezing - Thawing resistance of concrete.
- Reduces curing time and curing temperature in the production of precast elements.
- Can be used with all cement types. Shows less sensi tivity to material differentiation.
- InsuCast 701 does not contain.

THE CHEMICAL MECHANISM OF THE NEW GENERATION SUPER PLASTICIZERS

In traditional melamine and naphthalene sulphonate based superplasticizer polymers, cement particle surfaces are surrounded during the first stage of concrete mixing process. Suphonic groups of polymer chains increase negative charge of cement particle surfaces and electrostatic force pushes these particles. This electrostatic mechanism causes cement paste to disperse, and in turn enable concrete workability with less water mixture. Along with this, hydration process begins when cement particles contact with water. Rapidly growing hydra tion crystals change surface mechanics of the parti cles and prevent free dispersion of them.

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The difference of InsuCast 701 from traditional super-plasticizers (NSF or MSF based) is the new and unique affect mechanism that improves efficiency of cement dispersion. InsuCast 701 is made of long chain carboxylic ether polymers. At the start of mixing process, electrostatic pushing mechanism is started like in traditional superplasticizers. With this process, a fluid concrete with much lesser water need is obtained. However, chains bound on polymer backbone stabilizes cement particles' dispersion and spreading abilities mostly and form a steric obstacle. Thus, higher fluidity is obtained with less water.

APPLICATION PROCEDURE

Binder (cement-micro silica-fly ash) and aggregate must be mixed until a homogenous mixture is obtained. After adding 50%-70% of the water to be added to the mixture, InsuCast 701 must be added to the mixture along with the remaining water. InsuCast 701 must be mixed for 60 sec. or for the duration determined in laboratory experiments in the mixture for a homogenous diffusion.

DOSAGE

InsuCast 701 is suggested to be used as 0.5 - 1.5 kg for 100 kg binder (cement-micro silica-flyash). The dosage to be used must be determined beforehand by laboratory experiments. Technical Service must be consulted for detailed information.

COMPATIBILITY

InsuCast 701 can be used with the following materials:

1. InsuCast 701 is not compatible with other NSF based) series super plasticizers.
2. Can be used with all cement types.
3. Can be used with silica, flyash and slag where high binding material like Rheodynamic self-compacting concrete is needed to be used.
4. Used with micro silica (environment condition XA1-XA3 according to TS EN 206-1) to improve the performance of concrete and its strength in aggressive environments.

5. Used with Binder® 5 to prevent shrinkage by preventing rapid losing of the water in concrete mixture.
6. Used against fissures from plastic shrinkage with synthetic fibers and steel fibers.
7. In environments with high temperature and high air flow, must be used with a suitable cure material to prevent the water of the mixture inside the concrete from evaporating.

WATCHPOINTS

- Not suitable to use with (NSF based) admixtures.
- Concrete design and admixture dosage must be determined by prior laboratory trials according to concrete class and properties.
- The determined binder (cement-micro silica-fly ash), at the end of laboratory trials, thin and rough aggregate must be mixed until a homogenous and dry mixture is obtained. If admixture is added to the dry mixture before adding mixture water, then it will be absorbed by the mixture and uniform distribution will not be obtained. Even if all the mixture water is added on top of this, aimed concrete class and properties cannot be obtained. Since the mixture will need extra water, the water amount in design values will be exceeded and the concrete's mechanical properties will be below the aimed value. For this reason, concrete admixtures must not be added directly to the dry mixture.
- If InsuCast 701 is to be used under +15°C, then necessary precautions have to be taken in cure conditions (temperature and time) and cement doses.
- The performance of InsuCast 701 is reduced if it is mixed with other admixtures in other classes. So, the storing and mixing equipments have to be used after cleaning. Contact technical service for detailed information.

PACKAGING

In 30 kg drums
In 220 kg barrels
In 1000 kg tanks
Bulk

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STORAGE

Must be stored in original packing, in +5°C environment. If the material freezes because of storing in undesirable environments, it must be thawed by keeping it in room temperature without direct heating, and mixed by mechanical methods until it becomes homogenous. Pressured air must not be used when mixing.

SHELF

Life Under appropriate storing conditions opened packages can be used throughout the shelf life if the package cover is well closed.

HEALTH AND SAFETY PRECAUTIONS

Work cloth, protective gloves, goggles and masks concordant with Work and Worker Health rules must be used during the application. Avoid contact to skin and eyes during storing and application. If such a contact occurs, it must be washed by soap and plenty of water. Consult a physician urgently if swallowed.

Food and drink must be kept outside the application areas. Must be stored away from children. Please look at the Material Safety Data Sheet for detailed information.

(*) According to TS EN 206-1 environmental standard about concrete strength

(**) Rheoplastic Concrete: Although has the same water/cement ratio with the reference concrete of approximately 7 cm slump, easily flowable (20 - 22 cm slump), non-segrating concrete

(***) NSF (Naphthalene Sulphonate Based Products);
MSF (Melamine Sulphonate Based Products)
(****)*Rheodynamic Concrete: Self-leveling concrete without a need for vibration, with a low distribution (65 - 70 cm), and with low water/cement ratio.

NOTE

Field service, where provided, does not constitute supervisory responsibility. For additional information, contact Insumat's representative.

Insumat reserves the right to have the true cause of any difficulty determined by accepted test methods.

QUALITY STATEMENT

All products manufactured by Insumat Egypt, are manufactured to procedures certified to conform to the quality, environment, health & safety management systems described in the ISO 9001:2015, standard.

* Properties listed are based on laboratory controlled tests.

Actual measured data may vary due to circumstances beyond Insumat's control.

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