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MasterPolyheed® 8321 (Formerly Rheoplus 71(ML))

Retarding superplasticiser based on PCE

DESCRIPTION

MasterPolyheed 8321 is an economical admixture based on modified polycarboxylic ether. The product has been primarily developed for applications in ready mix and site-batched concrete. **MasterPolyheed 8321** is specially designed to allow considerable reduction of mixing water while maintaining control on extend of set retardation.

MasterPolyheed 8321 is free of chloride & low alkali. It is compatible with all types of cements.

RECOMMENDED USES

- Ready mixed concrete
- Long-distance transporting
- Pumped concrete
- High workability without segregation or bleeding
- High performance concrete for durability
- Congested/complex reinforced sections

FEATURES AND BENEFITS

- Good dispersion even in mixes with high fines
- High workability for longer periods
- Lower pumping pressure
- Resistance to segregation even at high workability
- Extended setting with longer workability
- Reduced water content for a given workability
- Higher ultimate strengths
- Increased ease in finishing concrete

Chemistry and mechanism of action

What differentiates **MasterPolyheed 8321** from the traditional superplasticisers is a new, unique mechanism of action that greatly improves the effectiveness of cement dispersion. Traditional superplasticisers based on melamine and naphthalene sulphonates are polymers which are absorbed by the cement granules. They wrap around the granules' surface areas at the very early stage of the concrete mixing process. The sulphonic groups of the polymer chains increase the negative charge of the cement particle surface and disperse these particles by electrical repulsion. This electrostatic mechanism causes the cement paste to disperse and has the positive consequence of requiring less mixing water to obtain a given concrete workability.

MasterPolyheed 8321 has a different chemical structure from the traditional superplasticisers. It consists of a carboxylic ether polymer with long side chains. At the beginning of the mixing process it initiates the same electrostatic dispersion mechanism as the traditional superplasticisers, but the side chains linked to the polymer backbone generates a steric hindrance which greatly stabilises the cement particles' ability to separate and disperse. Steric hindrance provides a physical barrier (alongside the electrostatic barrier) between the cement grains. With this process, flowable concrete with greatly reduced water content is obtained.

PERFORMANCE TEST DATA

Aspect	Light brown liquid
Relative Density	1.05 ± 0.02 at 25°C
pH	≥6
Chloride ion content	< 0.2%

TEST CERTIFICATION/APPROVALS

- ASTM C494 Types A, D &G
- EN 934-2 T3.1/3.2
- IS 9103

DOSAGE

Optimum dosage of **MasterPolyheed 8321** should be determined with trial mixes. As a guide, a dosage range of 300 ml to 1800ml per 100kg of cementitious material is normally recommended. Because of variations in concrete materials, job site conditions, and/or applications, dosages outside of the recommended range may be required. In such cases, contact your local BASF representative.

For addition information on **MasterPolyheed 8321** admixture or on its use in developing concrete mixes with special performance characteristics, contact your local BASF representative.

Effects of over dosage

A severe over-dosage of **MasterPolyheed 8321** can result in the following:

- Reduced permeability
- Long extension of initial and final set
- Increase in air entrainment

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- Bleed/segregation of mix, quick loss of workability
- Increased plastic shrinkage

A slight overdosing may not adversely affect the ultimate strength of the concrete and can achieve higher strengths than normal concrete, provided it is properly compacted and cured. Due allowance should be made for the effect of fluid concrete pressure on form work, and stripping times should be monitored.

In the event of over dosage, consult your local BASF representative immediately.

APPLICATION

MasterPolyheed 8321 is a ready-to-use liquid which is dispensed into the concrete together with the mixing water. The plasticising effect and water reduction are higher if the admixture is added to the damp concrete after 50 to 70% of the mixing water has been added. The addition of **MasterPolyheed 8321** to dry aggregate or cement is not recommended. Automatic dispensers are available.

Thorough mixing is essential and a minimum mixing cycle, after the addition of the **MasterPolyheed 8321**, of 60 seconds for forced action mixers is recommended.

SUGGESTED SPECIFICATION

The Superplasticiser shall be **MasterPolyheed 8321**, high range water reducer based on polycarboxylic ether polymer. The product shall have minimum specific gravity of 1.05. The product shall comply with ASTM C494 Type G and shall be free of naphthalene and melamine when subjected to IR Spectra.

COMPATIBILITY

MasterPolyheed 8321 is compatible with most of the products under the MasterPozzolith & MasterSet series (formerly known as POZZOLITH) including MasterSet RT 55. **MasterPolyheed 8321** is not compatible with Melamine or Naphthalene based admixtures and should not be used in conjunction in the same mix. **MasterPolyheed 8321** is compatible with lingo-sulphonates and carboxylic acid based plasticiser and retarders and also with most type of air-entrainers, accelerators, retarders, extended set-control admixtures, corrosion inhibitors, and shrinkage reducers. **MasterPolyheed 8321** is also compatible with slag and pozzolans such as fly ash, metakaolin and silica fume

CORROSIVITY – NON CORROSIVE

MasterPolyheed 8321 admixture will neither initiate nor promote corrosion of reinforcing steel embedded in concrete, prestressed concrete or concrete placed on galvanized steel floor and roof systems. Neither calcium chloride nor any calcium chloride-based ingredients are used in the manufacture of **MasterPolyheed 8321** admixture. In all concrete application, **MasterPolyheed 8321** admixture will conform to the most stringent or minimum chloride ion limits currently suggested by construction industry standards and practices.

WORKABILITY

MasterPolyheed 8321 ensures that rheoplastic concrete remains workable in excess of 90 minutes at +25°C. Workability loss is dependent on temperature, and on the type of cement, the nature of aggregates, the method of transport and initial workability.
It is strongly recommended that concrete should be properly cured particularly in hot, windy and dry climates.

PACKAGING

MasterPolyheed 8321 is supplied in 235 kg drums or in bulk on request.

STORAGE /SHELF LIFE

MasterPolyheed 8321 must be stored where temperatures do not drop below +5°C. If product has frozen, thaw at +5°C or above and completely reconstitute using mild mechanical agitation. Do not use pressurized air for agitation. Store under cover, out of direct sunlight and protect from extremes of temperature.

Shelf life is 12 months when stored as above.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult your local BASF representative.

PRECAUTIONS

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs (which can also be tainted with vapour until product fully cured or dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek immediate medical attention. Keep away from

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children and animals. Reseal containers after use. Do not reuse containers for storage of consumable item. For further information refer to the material safety data sheet. MSDS available on demand or on BASF construction chemicals web site.

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