BUILDING TRUST

PRODUCT DATA SHEET

Sika® Plastiment® PH 993

(formerly MasterPolyheed® 993)

Retarding superplasticiser based on PCE for Concrete

DESCRIPTION

Sika® Plastiment® PH 993 is an economical admixture based on modified polycarboxylic ether. The product has been primarily developed for applications in ready mix and site-batched concrete. Sika® Plastiment® PH 993 is specially designed to allow considerable reduction of mixing water while maintaining control on extend of set retardation.
Sika® Plastiment® PH 993 is free of chloride & low alkali. It is compatible with all types of cements.

USES

- Ready mixed concrete
- Long-distance transporting
- Pumped concrete
- High workability without segregation or bleeding
- High performance concrete for durability
- Congested/complex reinforced sections
- Mixes requiring >20% water reductions

CHARACTERISTICS / ADVANTAGES

- 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

APPROVALS / STANDARDS

- ASTM C-494 Type A, D, and G
- BS 5075 Part 1

PRODUCT INFORMATION

Packaging	Sika® Plastiment® PH 993 is supplied in both in Schultz tank and 210 Liters drum.
Shelf Life	12 months from date of production if stored in unopened, undamaged and original sealed packaging.
Storage Conditions	Sika® Plastiment® PH 993 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.
Appearance / Colour	Light Yellow liquid
Specific gravity	1.08 ± 0.02 at 25°c
pH-Value	≥ 6

Total Chloride Ion Content	< 0.2%

APPLICATION INFORMATION

Recommended Dosage

Optimum dosage of Sika® Plastiment® PH 993 should be determined with trial mixes. As a guide, a dosage range of 600ml to 2000ml 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.

Effects of Over Dosage

A severe over-dosage of Sika® Plastiment® PH 993 can result in the following:

- Reduced permeability
- Long extension of initial and final set
- Increase in air entrainment
- Bleed/segregation of mix

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.

Compatibility

Sika® Plastiment® PH 993 is compatible with most of the products under the MasterPozzolith & MasterSet series (formerly known as POZZOLITH) including MasterSet RT 55. Use MasterMatrix 2 (formerly known as Glenium Stream 2) as viscosity modifying agent in self compacting concrete. Sika® Plastiment® PH 993 is not compatible with Melamine or Naphthalene based admixtures and should not be used in conjunction in the same mix. Sika® Plastiment® PH 993 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. Sika® Plastiment® PH 993 is also compatible with slag and pozzolans such as fly ash, metakaolin and silica fume.

BASIS OF PRODUCT DATA

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

FURTHER DOCUMENTS

Chemistry and Mechanism of Action

What differentiates Sika® Plastiment® PH 993 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.

Sika® Plastiment® PH 993 has a different chemical structure from the traditional superplasticisers. It consists of a car-boxylic ether polymer with long side chains. At the begin-ning of the mixing process it initiates the same electro-static dispersion mechanism as the traditional superplas-ticisers, but the side chains linked to the polymer back-bone generates a steric hindrance which greatly stabi-lises 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 wa-ter content is obtained.

CORROSIVITY – NON CHLORIDE, NON CORROSIVE

Sika® Plastiment® PH 993 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 Sika® Plastiment® PH 993 admixture. In all concrete application, Sika® Plastiment® PH 993 admixture will conform to the most stringent or minimum chloride ion limits currently suggested by construction industry standards and practices.

ECOLOGY HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

APPLICATION

Sika® Plastiment® PH 993 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 Sika® Plastiment® PH 993 to dry aggregate or cement is not recommended. Thorough mixing is essential and a minimum mixing cycle, after the addition of the Sika® Plastiment® PH 993, of 60 seconds for forced action mixers is recommended.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request. It may be necessary to adapt the above disclaimer to specific local laws and regulations. Any changes to this disclaimer may only be implemented with permission of Sika® Corporate Legal Department.

Sika Pakistan (Pvt.) Limited
141-CCA Phase IV, DHA
Lahore Punjab 54792
Pakistan
phone: +92 42 3569 4266 - 67
fax: +92 42 3569 4268
http://pak.sika.com/

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