REC POLYPLAST P004

EXCEPTIONAL HIGH WORKABILITY RETENTION ADMIXTURES

DESCRIPTION

REC POLYPLAST P004 is a highly effective superplasticizer based on modified synthetic carboxylated polymers specifically designed to produce ready-mix concrete with low water-to- binder ratio (w/ b) and excellent workability. It can help the ready- mixed concrete industry, where more than normal slump retention and durability are required. The ability to work over a wide range of w/b, including low w/ b, and still obtain extended slump retention allows for the manufacturing of high-quality concrete.

WORKING MECHANISM

Sulphonated naphthalene or melamine-based superplasticizer is adsorbed onto the surface of cement particles at a very early stage of the cement hydration process. These polymers chains adsorbed to increase the negative charge on the surface of cement particles, and dispersion is obtained by electrostatic repulsion. While third generation super plasticizers such as **REC POLYPLAST P004** are specially designed with multi–Carboxylate Ether with long lateral chains that improve greatly the dispersion of cement particles. Therefore, in addition to the electrostatic repulsion which occurs at the start of the mixing process, the presence of these lateral chains generates a steric hindrance which greatly enhances the capacity of cement particles to separate and disperse. This property enables the production of concrete with extended workability retention.

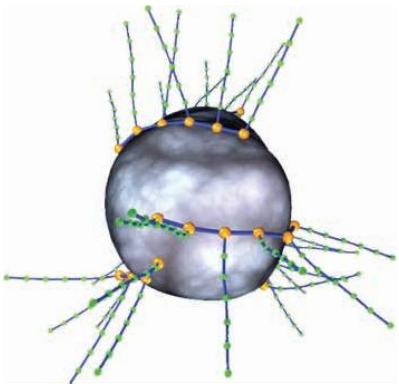

Figure 1 Schematic image of working mechanism

PROPERTIES

REC POLYPLAST P004 provides the following properties:

- Reduces water demand, enabling lower water–cement ratios while maintaining the required workability.
- Provides superior slump retention, facilitating transportation and placement of concrete over extended periods.
- Improves workability, allowing easy placing and compaction without segregation.
- Enhances pumpability, enabling smooth and efficient pumping of concrete.
- Minimizes bleeding and segregation, resulting in a dense, homogeneous concrete mix.
- Produces an excellent surface finish with reduced surface defects.
- Reduces the risk of plastic shrinkage and settlement cracking through improved cohesiveness.
- Increases compressive strength and elastic modulus by permitting lower water–cement ratios.
- Improves the durability of hardened concrete by reducing permeability and producing a denser microstructure.
- Suitable for producing high-performance, high-strength, and self-compacting concrete (where applicable).

SCOPE OF USE

REC POLYPLAST P004 is recommended for all areas of use of high-performance concrete in the ready-mix industry:

- Super slump retaining concrete with equal or less water content than conventional admixtures.
- Concrete mixtures containing silica fume, GGBS, or PFA.
- Concrete with high resistance against aggressive media.
- Long distance transport.
- Hot weather concreting.
- Highly durable concrete.
- Mass concrete.
- Pumped concrete.

TECHNICAL INFORMATION

Appearance	Liquid
Color	Pale Yellow
Specific gravity at 25°C	1.045 ± 0.02
Chloride content	Nil (BS 5075)
Air Entrainment	Less than 2.0% depending on dosage rate and concrete proportioning.

APPLICABLE STANDARDS:

REC POLYPLAST P004 complies with ASTM C 494 Type D, F & G, BS EN 934, & BS 5075.

INSTRUCTIONS FOR USE

REC POLYPLAST P004 should be dispensed after all concrete constituents are charged in the central mixer preferably after approximately 60% of water addition.

DOSAGE

Trials should be conducted to determine the optimum dosage of **REC POLYPLAST P004** for a particular mixture. A dosage of 0.4-2.5% per 100 kg of cementitious material is recommended. Further the required dosage for a specific site with controlled delay in setting and workability should be determined by in-situ trials. In addition, admixture demand varies with w/b of the concrete, cement type, pozzolanic materials and ambient temperature. Trials are to be conducted prior to use in order to determine required performance, including workability retention, setting, and strength development.

EFFECTS OF OVER DOSE

Severe over dose of **REC POLYPLAST P004** will result in the following:

- Delay in initial setting time.
- Increase in air content
- Higher workability
- Impair Consistency and Cohesion.

Dependent upon the level of overdose, concrete mixture details and conditions involved.

COMPATIBILITY

REC POLYPLAST P004 can be used in mixtures containing:

- Silica fume
- Fly Ash
- GGBFS
- Pozzolanic Binders

REC POLYPLAST P004 is not compatible with naphthalene sulfonate- and melamine sulfonate-based superplasticizers. The compatibility tests should be performed before mixing with other admixtures. Further, please consult technical department of Reckon Chemicals for advice.

DISPENSING

It is preferable that liquid admixtures for concrete should be introduced into a mixer by means of automatic dispensing equipment.

PACKAGING

REC POLYPLAST P004 can be supplied in pails, drums and tanks.

STORAGE

Up to 2 years when stored in accordance with manufacturer's instructions.

HEALTH & SAFETY

In case of frost, the product recovers its properties after progressive thawing and homogenizing by agitation. In case of contact with skin or eyes, rinse thoroughly with water. If irritation persists, seek medical attention. If swallowed, do not induce vomiting and seek medical attention.

QUALITY STATEMENT

All our products are manufactured to comply with our internal QA/QC program and quality management system to ensure consistency and quality.

DISCLAIMER

While the company guarantees its products against defective materials, the use and application of these products are made without guarantee since the conditions of their application are beyond its control. It is recommended to verify with the company that the product is suitable for the intended use. This Data Sheet version is the latest one. The company may modify it without any prior notice. Technical characteristics are listed for guidance only. For more information, please contact the company's head office located in Lahore.

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