



The Chemical Company

GLENIUM® SKY 551

Total Performance Control

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



1305-CPD-0097

Description of Product

GLENIUM® SKY 551 is a polycarboxylic ether based high range water reducing early and final strength increasing workability maintaining new second generation super plasticizer concrete admixture developed for readymix concrete industry and suitable for Total Performance Control concept

Consistent With the TS EN 934-2 Table 3.1.3.2: 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 Application

- In the production of pumpable and non-pumpable high quality readymix concrete,
- In the production of Rheodynamic concrete with **Glenium® Stream** that can easily set to densely reinforced concrete elements.
- In the production of non-segrating, flowable Rheoplastic** concrete.

Technical Data

Structure of the Material	Polycarboxylic ether based
Color	Brown
Density	1.047 - 1.087 kg/liter
Chlorine Content% (EN 480-10)	< 0.1
Alkaline Content % (EN 480-12)	< 3

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

Features and Benefits

For Readymix Concrete Producers:

- Enables the supply of high quality concrete to construction sites whenever needed.
- Enables flowable, low water/cement ratio concrete consistent with TS EN 206-1 criteria.
- Enables the use of a single product for many applications.

For Contractors;

- Guarantees the delivery of the concrete ordered in readymix concrete plant to the construction site as "desired and defined in the construction site".
- Levels more easily and reduces demolding time.
- Gives perfectly smooth surface finishing in concrete placed in molds.
- Enables various concrete designs with a single admixture.

For Engineers:

- Guarantees the concrete's compatibility to the standards.
- Enables more durable concrete production.



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Total Performance Control concept includes the obtaining, transportation, placement, processing, and strength gaining criteria of the high quality concrete defined by readymix concrete producers, contractors and engineers at the project stage. In Rheodynamic concrete, appeared with the development of self-leveling concrete technology, the key to enabling Total Performance Control, improving processing properties, giving the concrete early high strength by accelerated cement hydration, and producing more durable concrete is **GLENIUM® SKY**.

The Chemical Mechanism of the New Second Generation Super Plasticizers

Nanotechnology aims to produce high performance materials with advanced properties by rearranging the atomic structures-formations of nano sized (10⁻⁹ meters) materials. This technology enables **BASF Yapı Kimyasalları San. A.S.** to arrange polymers' chemical and physical behaviors, and the admixture's relation with cement particles.

The distribution effect of the super plasticizers is realized by the electrostatic pushing force of the negatively charged particles as a result of cement particles' absorption by admixture molecules. The chemical admixture molecules absorbed by the cement are wrapped by etringit products. This way, admixture molecules become ineffective. With the special configuration of **GLENIUM® SKY** molecules, the absorption time of cement particles is delayed and cement particles are kept away from each other during the time of desired workability.

The molecular structure of **GLENIUM® SKY** is effective in early strength development. Conventional super plasticizers completely wrap cement particles and prevent them from joining with water by forming a barrier. By this way, the

hydration process becomes slower. Differently from this mechanism, **GLENIUM® SKY** molecules leave gaps on cement particles that allow sudden hydration. These gaps enable early high strength development.

Application Procedure

Binder (cement-micro silica-fly ash) and aggregate must be mixed until a homogenous mixture is obtained. After adding 80%-90% of the water to be added to the mixture, **GLENIUM® SKY 551** must be added to the mixture along with the remaining water. **GLENIUM® SKY 551** must be mixed for 100 sec. or for the duration determined in laboratory experiments in the mixture for a homogenous diffusion.

Dosage

GLENIUM® SKY 551 is suggested to be used as 0.8 - 1.5 kg for 100 kg binder (cement-micro silica-flyash). The dosage to be used must be determined beforehand by laboratory experiments according to concrete class and properties. The suggested dosage ratio for producing rheodynamic concrete is 0.7 - 1.2 kg for every 100 kg binding and thin material that passes from a 0.125 mm sieve. **BASF Yapı Kimyasalları San. A.S.** Technical Service must be consulted for detailed information.

Compatibility

GLENIUM® SKY 551 can be used with the following materials:

1. **GLENIUM® SKY 551** is not compatible with other **Rheobuild®** (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.

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4. Used with **Glenium® Stream** viscosity agent in the production of Rheodynamic self-compacting concrete.
5. Can be used with air entraining **Micro Air® 200** (environment condition XF1-XF4 according to TS EN 206-1) to increase Freezing - Thawing resistance.
6. Used with **Meyco® MS 610** micro silica (environment condition XA1-XA3 according to TS EN 206-1) to improve the performance of concrete and its strength in aggressive environments.
7. Used with **Meyco® TCC 735** and **Binder® 5** to prevent shrinkage by preventing rapid losing of the water in concrete mixture.
8. Used against fissures from plastic shrinkage with synthetic fibers **Meyco® FIB. SP 530/540/550** and steel fibers.
9. In environments with high temperature and wind, must be used with a suitable curing membrane or material like **Masterkure® 101, Masterkure® 107, Masterkure® 176 or Masterkure® 181** to prevent the water of the mixture inside the concrete from evaporating.

Watchpoints

- Not suitable to use with **Rheobuild®** series (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, Coarse and fine aggregate must be mixed until a homogenous and dry mixture is obtained. If admixture is added to the dry mixture before adding water, then it would be absorbed by fine aggregate and uniform distribution will not be obtained. Even if all the mixing water is added on top of this, aimed concrete class and properties could not 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 **GLENIUM® SKY 551** is to be used under +15°C, then necessary precautions have to be taken in cure conditions (temperature and time) and cement dosages.
- Since it is a specially designed product for the user, it may exhibit different properties based on cement type and aggregate structure. For this reason, prior experiments must be made to check if the admixture is consistent with the material before the concrete production.
- The performance of **GLENIUM® SKY 551** 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 **BASF Yapı Kimyasalları San. A.S.** technical service for detailed information.

Packaging

30 kg can
220 kg drum
1000 kg tank
Bulk

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

12 months after the production date under appropriate storing conditions. Opened packages can be used throughout the shelf life if the package cover is well closed.

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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.

**Rheodynamic Concrete: Self-leveling concrete without a need for vibration, with a low distribution (65 - 70 cm), and with low water/cement ratio*

*(**)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)*

Disclaimer

This information given here is true, represents our best knowledge and is based not only on laboratory work, but also on field experience. However, BASF Yapı Kimyasalları San. A.S. is only responsible from the quality of the product. BASF Yapı Kimyasalları San. A.S. cannot be hold responsible from the results caused by applications of the product not in accordance with the written suggestions of how and where to use the product and/or faulty applications. This technical document is valid until a new one is printed and abates the previous editions. 01/2008

