**EN 934-2 TABLE: 3.1 and 3.2**

**AYDOSPER**

**High Range Water Reducing / Superplasticizing Admixture**

**Admixtures for concrete;** material added during the mixing process of concrete in a quantity not more than 5 % by mass of the cement content of the concrete, to modify the properties of the mix in the fresh and /or hardened state. **High range water reducing / superplasticizing admixture;** admixture which without affecting the consistence, permits a high reduction in the water content of a given concretemix, or which, without affecting the water content increases the slump/flow or produces both effectssimultaneously

**Description**

Highly water reducing and superplasticizing concrete admixture that is used in production of high-performance concretes/precast members and increases early and final strengths. It improves the density and imperviousness of concrete by ensuring homogenous distribution of cement within the concrete and significantly reducing the water requirement of concrete. It allows for perfect hydration of fine/coarse aggregates, cement and mineral additives within the concrete. Therefore, it improves the compressive resistance and strength of concrete.

**Chemical Properties**

**EN 934-2 Çizelge 1 - General requirements**

|  |  |  |
| --- | --- | --- |
| **Characteristics** | **Specification** | **Test Method** |
| Homogeneity | Homogeneous when used. Segregation shall not exceed the limit stated by the manufacturer. | AY-TA.001 Visual |
| Color  | Uniform and similar to the description declared by the manufacturer. | AY-TA.001 Visual |
| Relative Density | D ± 0.03 if D > 1,10D ± 0.02 if D ≤ 1,10Where D is the manufacturer's stated value of density. | TS 781 ISO 758 |
| pH Value (20 0 C) | Manufacturer's stated value ± 1 or within manufacturer's stated range. | TS 6365 EN 1262 |
| Dry Content (%) | 0.95 T ≤ X < 1.05 T, if T ≥ 20 %0.90 T ≤ X < 1.10 T, if T < 20 %T is manufacturer's stated value % m/m.; X is test result % by mass on dry material content.  | TS EN 480-8 |
| Chloride Content (%) | Either ≤ 0.10 % by mass or not above the manufacturer's stated range. | TS EN 480-10 |
| Alkali Content (%) | Not above the manufacturer's stated maximum. | TS EN 480-12 |
| Effective Component (%) | Infrared spectra to show no significant change with respect to the effective component when compared to reference spectrum provided by the manufacturer. | TS EN 480-6 |
| Freezing Point (%) | Not above the manufacturer's stated maximum. | AY-TA.011 |
| Corrosion Behavior | Contains only components according to EN 934-1:2008, Annex A.1 |
| Dangerous Substances | Comply with annex ZA |
| Dosage | Dosage of contribution is based on the aggregate properties, water quality, concrete class, water-cement ratio and temperature of place. |
| Shelf Life | 12 Months  |

**Performance requirements**

**EN 934-2 Table 11.1 Specific requirements for set retarding/high range water reducing/super plasticizing admixtures (at equal consistence)**

|  |  |  |
| --- | --- | --- |
| **Essential Characteristics** | **Performance** | **Harmonised** **Technical Specification** |
| Compressive strength | At 7 days | Test mix ≥ 100 % of control mix | EN 12390-3 |
| At 28 day | Test mix ≥ 115 % of control mix |
| Setting time | Initial | Test mix ≥ control mix + 90 min | EN 480-2 |
| Final | Test mix ≤ control mix + 360 min |
| Water reduction | In test mix ≥ 12 % compared with control mix | EN 12350-2EN 12350-5 |
| Air content in fresh concrete | Test mix ≤ 2 % by volume above control mix unless otherwise stated by the manufacturer | EN 12350-7 |

**EN 934-2 Table 11.2 Specific requirements for set retarding/high range water reducing/ super plasticizing admixtures (at equal w/c ratio)**

|  |  |  |
| --- | --- | --- |
| **Essential Characteristics** | **Performance** | **Harmonised** **Technical Specification** |
| Retention of consistence | 60 min after the addition the consistence of the test mix shall not fall below the value of the consistence of the control mix | EN 12350-2EN 12350-5 |
| Compressive strength | At 28 days: Test mix ≥ 90 % of control mix | EN 12390-3 |
| Air content in fresh concrete | Test mix ≤ 2 % by volume above control mix unless otherwise stated by the manufacturer | EN 12350-7 |

**Areas Of Application**

In higher quality and stronger concretes.

In concretes where it is desired to have excellent fluidity and maintain the viscosity,

In production of concrete with thin and compact reinforcements for difficult compacting,

In concretes to ensure high water reduction and long workability,

Where it is necessary to mold early or load the molds quickly,

In precast and prefabricated concrete production,

In production of pre-stressed concrete,

In architectural concrete, engineering and artistic structures.

**Properties / Advantages**

Ensures producing strong and high-quality concrete.

Provides high early strength in a short time especially in cold weathers.

Improves the resistance of concrete to freezing-thawing cycle and increases its strength.

Improves water tightness of concrete thanks to low water/cement ratio.

Ensures self-compacting of concrete.

Allows for achieving high unit weight and strength.

Ensures pumping of the concrete to long distances.

Saves on energy by reducing the curing time and temperature in production of precast members.

Does not have any retarding effects and ensures setting of concrete in normal period of time.

Reduces carbonation rate of concrete, improves its mechanical properties such as shrinkage and creep.

Ensures achieving a smoother concrete surfaces with a better appearance.

Eliminates the risk of segregation.

Allows for easy placement and faster strengthening, saves on workmanship and ensures earlier molding / mold turnover.

**Application / Warning**

Isused by adding into the mixture water of concrete or directly mixing into the fresh low-slump concrete.

Should not be directly added onto the dry mixture.

After adding 70% of the water to be added into the mixture,

Should be mixed with the remaining water and then added into the mixture.

In case of directly adding into the fresh concrete, the mixing time should be prolonged for minimum 1-2 minutes at high speed and such mixing time should be determined during laboratory tests.

Concrete components may differ by their structures. The admixture to be added into the mixture to prevent segregation of the concrete should be applied in the suitable doses. Prior tests should be performed to check whether the admixture is suitable for the design of a certain concrete.

In case of using the admixture in the amount exceeding the specified use range, the setting time of the concrete may be prolonged. In such cases, the concrete should be kept humid to allow for curing until it hardens.

does not contain chloride or any other components that result in corrosion in the reinforcements. Therefore, it is suitable for use in reinforced concrete structures.

**Suitability**

Suitable for use with all types of concretes with or without admixtures.

In case it is desired to use high amounts of cements, it is used along with mineral additives such as fly ash, micro silica and cinder.

In order to increase the freezing-thawing resistance, it is used together with air entraining It is not recommended to use the product together withproducts that contain polycarboxylate.

is not suitable for use with otherNFS based superplasticizing admixtures.

The product is used together with Concrete antifreeze in order to speed up the setting time by increasing the hydration temperature of concrete under cold weather conditions.

The product is used together withStabilizer at worksites in order to increase viscosity of concrete.

At high temperatures and in case of drafts, make sure to prevent the mixture water within the concrete from evaporating. At the curing stage, curing may be used to prevent fast evaporation of the humidity within the concrete and formation of cracks.

Steel, polypropylene and organic fibers may be used against shrinkage cracks.

It is recommended to perform tests prior to using the products.

In case of mixing with other admixtures, the performance of the product decreases.

Admixtures should not be stored by mixing together.

Mixing and storage equipment should be properly cleaned

**Storage/Shelf Life**

Original, unpacked and undamaged products (drums, barrels, containers IBC) should be stored away from direct sunlight and frost at temperatures from +5ºC to +35ºC. In case the product is stored in an unsuitable environment and it freezes, the product should be thawed at ambient temperature without using direct heat and should be stirred using mechanical methods until it is homogenous. When stored under suitable conditions, the shelf life of the product is 12 months from the date of production.

**Health and Safety**

Please use protective clothing, protective gloves, full goggles and a face mask according to Occupational Health and Safety Regulation. Avoid contact with skin and eyes. In case of contact, rinse with plenty of water. In case of digestion, please seek medical attention. For transportation, storage, disposal of the product, its physical, ecological, toxicological information and other details and recommendations please refer to the Safety Data Sheet of the product.