

ECLIPSE[®] FLOOR

Shrinkage Reducing Admixture

Product Description

ECLIPSE[®] FLOOR Shrinkage Reducing Admixture is a liquid admixture specially formulated for use in indoor slab-on-grade concrete construction. ECLIPSE[®] FLOOR reduces drying shrinkage and curling enabling joint spacings for a standard 150 mm thick floor to be extended out to 15 metres or even beyond (depending on the characteristics of the concrete mix containing the product).

ECLIPSE[®] FLOOR contains no expansive material, but acts chemically to significantly reduce the primary internal forces that cause shrinkage and curling. ECLIPSE[®] FLOOR at a dosage of 7.5 L/m³ has been shown to reduce drying shrinkage, as measured by ASTM C 157, by up to 80% at 28 days, and up to 50% at one year or beyond.

ECLIPSE[®] FLOOR is a clear liquid admixture which weighs approximately 0.96 kg/L.

ECLIPSE[®] FLOOR is a potent air detrainer and should not be used with air-entrained concrete.

ECLIPSE[®] FLOOR complies with BS 8443.

Advantages

- ECLIPSE[®] FLOOR may be used in any concrete where it is important to control drying shrinkage and resultant cracking, but where there is no requirement for entrained air in the concrete
- For slab-on-grade construction, ECLIPSE[®] FLOOR can be used to increase joint spacings providing for flatter, more durable, lower maintenance floors

Chemical Action

Drying shrinkage of concrete is a complicated phenomena, widely acknowledged to be the combination of several mechanisms. The prime factor causing shrinkage for internal relative humidities in excess of 40% is the surface tension of water. As water-filled pores in the size range of 2.5 to 50 nm lose moisture, curved menisci are formed and the surface tension of water pulls the walls of the pores. ECLIPSE[®] FLOOR reduces the surface tension of water. With reduced surface tension, the force pulling in on the walls of the pores is reduced, and the resultant shrinkage strain is reduced. With ECLIPSE[®] FLOOR at a dosage of 7.5 L/m³ this effect results in ultimate drying shrinkage reductions up to 50%.

Addition Rates

Typical doses of ECLIPSE® FLOOR on concrete flooring mixes will be in the range from 2.5 to 7.5 L/m³ although doses as low as 1 L/m³ have been used. Since ECLIPSE® FLOOR works primarily to the surface tension of pore water, its effectiveness is primarily a function of the concentration as percent by weight of the mix water. This indicates that by reducing the total water content of a concrete mix, less ECLIPSE® FLOOR will be required to obtain optimum results. The optimum dosage range as a percent by weight of mix water is typically in the 2.5 to 5% range.

For mortar and paste compositions where the total mix water amount is higher than for concrete, this guidance for dosage as a function of mix water may be used to determine optimum ECLIPSE® FLOOR addition rates.

Compatibility with Other Admixtures

ECLIPSE® FLOOR Shrinkage Reducing Admixture is compatible with all conventional water reducers, midrange water reducers, superplasticisers, set retarders, accelerators, silica fume admixtures, and DCI S corrosion inhibitor. Precaution should be taken to avoid mixing ECLIPSE® FLOOR with other admixtures before they enter the concrete. However, once they have been separately added to the concrete mix, the products will not exhibit any incompatibility. Although no incompatibility exists between ECLIPSE® FLOOR and air-entraining agents, ECLIPSE® FLOOR has air-detraining properties, making it difficult to entrain air in concrete containing ECLIPSE® FLOOR.

ECLIPSE® FLOOR has slight retarding properties (set times are typically extended less than one hour). If used in combination with other products exhibiting retarding properties the net retardation may be more than the simple additive effect of the two products used separately.

Mix Adjustment

ECLIPSE® FLOOR contains no water, but is added at high dosages and should be accounted for in the mix design. For a conventional concrete mix with 7.5 L/m³ ECLIPSE® FLOOR, this liquid volume will contribute to the overall porosity of the concrete in the same fashion as 7.5 L/m³ of added water. In addition, the effect on concrete workability will be virtually the same as the equivalent volume of water. It is recommended that when incorporating ECLIPSE® FLOOR into an established mix design it should replace an equal volume of water.

Impact on Fresh Concrete Properties

When substituted in a mix design for an equivalent volume of water, ECLIPSE® FLOOR has little or no effect on concrete workability. It does, however, have a slight retarding effect (typically less than one hour extension of set time, see section on compatibility), and will aid in extending workability. ECLIPSE® FLOOR is a potent air detrainer and will make it difficult to entrain air into concretes.

Impact on Hardened Concrete Properties

The primary impact of ECLIPSE® FLOOR is the reduction in drying shrinkage. The addition of ECLIPSE® FLOOR may cause a reduction in concrete compressive strength in the order of 10 to 15%. For established concrete mix designs, where strength must be maintained or ADVA®superplasticisers may be used to reduce water to offset the strength reduction of ECLIPSE® FLOOR, without compromising shrinkage reduction. For more information please consult GCP Applied Technologies.

Technical Service

The Technical Service department of GCP Applied Technologies is available to assist you in the correct use of our products.

Packaging

ECLIPSE® FLOOR is currently available in 1040 litre transitanks or in 205 litre drums.

Dispensing

ECLIPSE® FLOOR is non-conductive and probe type dispensers will not function correctly. Information on dispensing equipment can be provided by GCP. ECLIPSE® FLOOR may be introduced at any time in the batching cycle, but should not be mixed with other admixtures before it is added to the concrete.

Health & Safety

For further information on Health and Safety matters regarding this product we recommend that you consult the relevant Safety Data Sheet from GCP Applied Technologies. In line with general chemical handling precautions avoid contact with skin or eyes and protective gloves/goggles should be worn.

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