

ECLIPSE[®] Floor 200

Shrinkage reducing admixture ASTM C494 Type S

Product Description

ECLIPSE[®] Floor 200 is a liquid admixture specially formulated for use in indoor slab-on-grade concrete construction. ECLIPSE[®] Floor 200 is a potent air detrainer and should not be used with air-entrained concrete. ECLIPSE[®] Floor 200 reduces drying shrinkage and curling enabling joint spacings for a standard 6 inch (150 mm) thick floor to be pushed out to 50 feet (15 m), or even beyond (depending on the shrinkage characteristics of the concrete mixture containing the product). ECLIPSE[®] Floor 200 contains no expansive material, but acts chemically to dramatically reduce the primary internal forces that cause shrinkage and curling. ECLIPSE[®] Floor 200 at a dosage of 1.5 gal/yd³ (7.5 L/m³) has been shown to reduce drying shrinkage, as measured by ASTM C157, by as much as 80% at 28 days and up to 50% at one year or beyond. ECLIPSE[®] Floor 200 is a clear liquid admixture which weighs approximately 8.0 lbs/gal (0.96 kg/L).

Uses

ECLIPSE[®] Floor 200 is specially formulated for use in indoor slab-on-grade construction and may be used for any concrete where there is no requirement for entrained air and it is important to control drying shrinkage and resultant cracking. For slab-on-grade construction, ECLIPSE[®] Floor 200 can be used to dramatically increase joint spacings providing for flatter, more durable, lower maintenance floors. During concrete placement and finishing operations, small amounts of ECLIPSE[®] Floor 200 will volatilize into the atmosphere and may cause irritation to the eyes and throat. Adequate ventilation should be provided during placement and finishing to prevent this irritation.

Performance

Drying shrinkage of concrete is a complicated phenomenon, widely acknowledged to be the function of several mechanisms. The driving 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 (nm = nanometers = one billionth of a meter) lose moisture and curved menisci are formed and the surface tension of water pulls the walls of the pores. ECLIPSE[®] Floor 200 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 200 at a dosage of 1.5 gal/yd³ (7.5 L/m³) this effect results in ultimate shrinkage reductions up to 50%.

Product Advantages

- Reduces shrinkage up to 80% at 28 days and up to 50% at 1 year or beyond
- Reduces drying shrinkage and curling enabling joint spacing
- Provides flatter floors with minimal defects
- Saves time and costly repairs
- Enhanced durability with longer usable life

Impact on Fresh Concrete Properties

When substituted in a mixture design for an equivalent volume of water, ECLIPSE® Floor 200 has little or no effect on concrete slump. 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 slump life. ECLIPSE® Floor 200 is a potent air detainer and will make it difficult to entrain air in concrete.

Impact on Hardened Concrete Properties

The primary impact of ECLIPSE® Floor 200 is the reduction in drying shrinkage. The addition of ECLIPSE® Floor 200 will typically cause a reduction in concrete compressive strengths on the order of 10 to 15%. For established concrete mixtures where strength must be maintained, mid-range water reducers such as MIRA®62, MIRA 110, MIRA 95 or superplasticizers such as DARACEM®19 or ADVA® may be used to cut water to offset the strength reduction of ECLIPSE® Floor 200, without compromising shrinkage reduction.

Addition Rates

Typical doses of ECLIPSE® Floor 200 in concrete flooring mixes will be in the range from 0.5 to 1.5 gal/yd³ (2.5 to 7.5 L/m³), although doses as low as 0.2 gal/yd³ (1 L/m³) and as high as 2.5 gal/yd³ (12.5 L/m³) have been used. Since ECLIPSE® Floor 200 works primarily to reduce 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 200 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 200 addition rates.

ECLIPSE® Floor 200 contains no water, but is added at high dosages and should be accounted for in the mixture design. For a conventional concrete mix with 1.5 gal/yd³ (7.5 L/m³) of ECLIPSE® Floor 200, this liquid volume will contribute to the overall porosity of the concrete in the same fashion as 1.5 gal/yd³ (7.5 L/m³) of added water. In addition, the effect on concrete slump will be virtually the same as the equivalent volume of water. It is recommended that when incorporating ECLIPSE® Floor 200 into an established mixture design it should replace an equal volume of water.

Packaging & Handling

ECLIPSE® Floor 200 is currently available in bulk quantities by GCP metered systems in totes or in drums.

Compatibility with Other Admixtures and Batch Sequencing

ECLIPSE® Floor 200 is compatible with most GCP admixtures as long as they are added separately to the concrete mix, usually through the water holding tank discharge line. Although incompatibility does not exist between ECLIPSE® Floor 200 and air-entraining agents, ECLIPSE® Floor 200 has air-detraining properties, making it difficult to entrain air in concrete. ECLIPSE® Floor 200 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.

In general, ECLIPSE® Floor 200 may be added to the concrete batch sequence at any time, however preferably after the dry materials and most of the water. Different sequencing may be used if local testing shows better performance. Please see Technical Bulletin TB-0110, *Admixture Dispenser Discharge Line Location and Sequencing for Concrete Batching Operations* for further recommendations.

Pretesting of the concrete mix should be performed before use, and as conditions and materials change in order to assure compatibility, addition times in the batch sequencing and concrete performance. Please consult your GCP Applied Technologies representative for guidance.

Dispensing Equipment

Dispensing equipment will be provided by GCP Applied Technologies. ECLIPSE® Floor 200 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.

Flammability

ECLIPSE® Floor 200 has a flash point of 209°F (98°C). This is substantially above the upper limit of 140°F (60°C) for classification as a flammable material and above the limit of 200°F (93°C) where DOT requirements would classify this as a combustible material. Nonetheless, this product must be treated with care and protected from excessive heat, open flame or sparks. For more information consult the SDS.

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