

Eclipse[®] Floor

Shrinkage-reducing admixture

Product Description

Eclipse[®]Floor is a liquid admixture for concrete that dramatically reduces drying shrinkage and the potential for drying shrinkage-induced cracking and curling. Rather than functioning as an expansive agent, Eclipse Floor acts by reducing the surface tension of pore water. Eclipse Floor is specifically formulated for use in non air-entrained concrete applications. Eclipse Floor is a clear liquid admixture that weighs approximately 0.92kg/L.

Chemical Action

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 humidity in excess of 40% is the surface tension of water. As water-filled pores in the size range of 2.5 to 50nm (nm or nanometre, is one billionth of a metre) 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, thereby reducing the force pulling in on the walls of the pores – and the resultant shrinkage strain is reduced.

Applications

Eclipse Floor can be used in slab-on-grade construction, and any structure where it is important to control drying shrinkage cracks. For slab-on-grade construction, Eclipse Floor can be used to increase joint spacings, providing for flatter, more durable and lower maintenance floors.

Product Advantages

- Eclipse Floor reduces drying shrinkage and curling. Depending on the shrinkage characteristics of the concrete mixture containing the product, it enables joint spacings to be increased.
- Eclipse Floor contains no expansive material, but chemically acts to significantly reduce the primary internal forces that cause shrinkage and curling.
- Eclipse Floor at a dosage of 7.5L/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.
- Reducing drying shrinkage, curling and resultant cracking helps reduce maintenance costs over the service life of the structure.

Mixture Adjustment

Eclipse Floor is a clear liquid admixture. It contains no water, but is added at high dosages and should be accounted for in the mix design. For a conventional concrete mix with 7.5L/m³ of Eclipse Floor, an equivalent volume of water should be reduced from the mix design.

Dispensing Equipment

Please contact your local GCP representative for further information regarding the dispensing equipment for this product.



Addition Rates

Typical dosage rates of Eclipse Floor in concrete flooring mixes will be in the range of 2.5 to 7.5L/m³, although doses as low as 1L/m³ and as high as 12.5L/m³ have been used. Since Eclipse Floor works primarily to reduce the surface tension of pore water, its effectiveness is primarily a function of the concentration as a percent by weight of the mix water. Therefore, if the total water content of a concrete mix is reduced, less Eclipse Floor is required to obtain optimum results.

Compatibility with Other Admixtures

Eclipse Floor is fully compatible with the complete line of GCP admixtures. In mixtures containing mid- or high-range water reducers, it is recommended that Eclipse Floor be used with polycarboxylate based MIRA[®] mid-range water reducers and ADVA[®] high-range water reducers. In general, Eclipse Floor may be added to the concrete batch sequencing 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. Eclipse Floor may cause slight retarding properties (set times are extended less than one hour) and aid in extending slump life.

Other Precautions

During concrete placement and finishing operations, small amounts of Eclipse Floor will volatilise into the atmosphere and may cause minor irritation. Adequate ventilation should be provided during placement and finishing to prevent this irritation.

Eclipse Floor has a flash point of 102°C. This is substantially above the upper limit of 60°C for classification as a flammable material, and above the limit of 93°C where the Department of Transportation (DOT in USA) would classify as a combustible material. Nonetheless, this product must be treated with care and protected from excessive heat, open flame or sparks. For more information, please refer to the Material Safety Data Sheet.

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