

# DAREX<sup>®</sup> II AEA

Air-entraining admixture ASTM C260

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## Product Description

DAREX<sup>®</sup> II AEA is an air-entraining admixture which generates a highly stable air void system for increased protection against damage from freezing and thawing, severe weathering, or de-icer chemicals. DAREX<sup>®</sup> II AEA is a complex mixture of organic acid salts in an aqueous solution specifically formulated for use as an air-entraining admixture for concrete and is manufactured under rigid control which provides uniform, predictable performance. It is supplied ready to- use and does not require pre-mixing with water. DAREX<sup>®</sup> II AEA is a dark brown liquid. One gallon weighs 8.7 lbs (1.04 kg/L). DAREX<sup>®</sup> II AEA complies to ASTM C260 *Standard Specifications for Air-Entraining Admixtures for Concrete*.

## Product Advantages

- Air stability makes it particularly useful for longer transit times
- Produces excellent air void systems in concretes that are traditionally difficult to air entrain

## Uses

DAREX<sup>®</sup> II AEA is used in ready-mix and concrete products plants to improve air entrainment stability. It is particularly effective in maintaining air content during longer haul times. DAREX<sup>®</sup> II AEA performs well in conventional concrete and is effective in plasticizing mixes and with slag, lightweight, or manufactured aggregates which tend to produce harsh concrete.

DAREX<sup>®</sup> II AEA entrains air effectively with microsilica concrete and with fly ash concrete.

## Performance

DAREX<sup>®</sup> II AEA disperses and generates millions of discrete semimicroscopic bubbles throughout the concrete composite. Once thoroughly mixed, the concrete contains a stable network of bubbles which act much like ball bearings increasing mobility, or plasticity, of the concrete. This adds workability to the mix and permits a reduction of water with no loss of slump. Placeability is improved. Bleeding, segregation and green shrinkage are minimized.

Through the purposeful entrainment of air, DAREX<sup>®</sup> II AEA markedly increases the durability of concrete to all exposures.

## Compatibility with Other Admixtures and Batch Sequencing

DAREX<sup>®</sup> II AEA is compatible with most GCP admixtures as long as they are added separately to the concrete mix. In general, it is recommended that DAREX<sup>®</sup> II AEA be added to the concrete mix near the beginning of the batch sequence for optimum performance, preferably by “dribbling” on the sand. Different sequencing may be used if local testing shows better performance. Please see GCP Technical Bulletin TB-0110, *Admixture Dispenser Discharge Line Location and Sequencing for Concrete Batching Operations* for further recommendations. DAREX<sup>®</sup> II AEA should not be added directly to heated water.

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

## Addition Rates

There is no standard addition rate for DAREX<sup>®</sup> II AEA. The amount to be used will depend upon the amount of air required under job conditions, usually in the range of 4% to 7%. Typical factors which might influence the amount of air entrained are temperature, cement, sand gradation and use of extra fine materials such as fly ash. Typical DAREX<sup>®</sup> II AEA addition rates generally range from ½ to 5 fl oz/100 lbs (30 to 320 mL/100 kg) of cement.

The air-entraining efficiency of DAREX<sup>®</sup> II AEA becomes even greater when used with water-reducing and set-retarding agents. This may allow a reduction of up to ⅔ in the amount of DAREX<sup>®</sup> II AEA required for the specified air content.

## Concrete Mix Adjustment

Entrained air results in increased yields with a consequent decrease in the cement content of the placed concrete. This condition calls for a mix adjustment, usually accomplished by reducing the fine aggregate content. This is in addition to the reduction in water content brought about by the increase in plasticity.

## Packaging & Handling

DAREX<sup>®</sup> II AEA is available in bulk, delivered by metered tank trucks, totes and drums.

DAREX<sup>®</sup> II AEA will freeze at about 30 °F (-1 °C), but its air-entraining properties are completely restored by thawing and thorough mechanical agitation.

## Dispensing Equipment

A complete line of accurate dispensing equipment is available. These dispensers can be located to discharge into the water line, the mixer, or on the sand.

## Specifications

Concrete shall be air entrained concrete, containing 4% to 8% entrained air. The air contents in the concrete shall be determined by the pressure method (ASTM Designation C231), gravimetric method (ASTM Designation C138) or volumetric method (ASTM Designation C173). The air-entraining admixture shall be DAREX® II AEA as manufactured by GCP Applied Technologies, or equal. The air-entraining admixture shall be added at the concrete mixer or batching plant at approximately ½ to 5 fl oz/100 lbs (30 to 320 mL/100 kg) of cement, or in such quantities as to give the specified air contents.

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