

# DAREX<sup>®</sup> AEA ED

Air-entraining admixture ASTM C260

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## Product Description

DAREX<sup>®</sup> AEA ED 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> AEA ED 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. One gallon of DAREX<sup>®</sup> AEA ED weighs 8.34 lbs (one liter weighs 1.00 kg). DAREX<sup>®</sup> AEA ED complies to ASTM C260 *Standard Specifications for Air-Entraining Admixtures for Concrete*.

## Product Advantages

- Air stability makes it particularly useful for longer transit times
- Functions well across a wide range of concrete materials

## Uses

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

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

## Performance

Air is incorporated into the concrete by the mechanics of mixing and stabilized into millions of discrete semi-microscopic bubbles in the presence of a specifically designed air-entraining admixture such as DAREX<sup>®</sup> AEA ED. These air bubbles act much like flexible ball bearings increasing the mobility, or plasticity and workability of the concrete. This can permit a reduction in mixing water with no loss of slump. Placeability is improved. Bleeding, plastic shrinkage and segregation are minimized.

Through the purposeful entrainment of air, DAREX<sup>®</sup> AEA ED markedly increases the durability of concrete to severe exposures particularly to freezing and thawing. It has also demonstrated a remarkable ability to impart resistance to the action of frost and de-icing salts as well as sulfate, sea and alkaline waters.

## Addition Rates

There is no standard addition rate for DAREX® AEA ED air-entraining admixture. The amount to be used will depend upon the amount of air required for job conditions, usually in the range of 4% to 8%. Typical factors which might influence the amount of air-entraining admixture required are temperature, cement, sand gradation and the use of extra fine materials such as fly ash and microsilica. Typical DAREX® AEA ED 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® AEA ED becomes even greater when used with water-reducing and set-retarding agents. This may allow a reduction of up to ⅓ in the amount of DAREX® AEA ED required for the specified air content.

## Packaging & Handling

DAREX® AEA ED is available in bulk, delivered by metered tank trucks, totes and drums.

DAREX® AEA ED will freeze at about 30 °F (-1 °C), but its airentraining properties are completely restored by thawing and thorough mechanical agitation.

## 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. Pretesting of the concrete should be performed to determine dosage and addition times of all admixtures.

## Compatibility with Other Admixtures and Batch Sequencing

DAREX® AEA ED is compatible with most GCP admixtures as long as they are added separately to the concrete mix. In general, it is recommended that DAREX® AEA ED 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® AEA ED 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.

## 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® AEA ED 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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