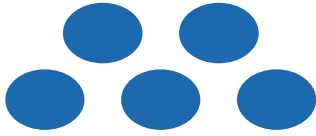


# MIRACON Technology, LLC



## **ToughAir™**

Next Generation, Air-Entraining  
Polymer-Based Admixture  
ASTM C260  
AASHTO M-154

### Product Description

ToughAir™ is a liquid, next generation air-entraining admixture that provides freeze-thaw resistance by creating air cells that are very stable, small and closely spaced.

ToughAir™ significantly improves placing and finishing of concrete, especially in low slump concrete mixes.

### Use

- ToughAir™ is recommended for all concrete exposed to freeze-thaw cycles.
- All ready-mix, precast and pre-stress products where an air content is specified.

### Features

- Air stability is greatly enhanced, especially if longer transit times are needed.
- Designed to perform uniformly, independent of total cementitious content of the mix.
- Rheological properties help to minimize water of convenience needed at the batch plant or if/when re-tempering on the job to meet slump/spread specifications.
- Significantly enhances cohesiveness of any mix, optimizing aggregate matrix in low or

high slump concrete.

- Helps to reduce bleeding and consequently mitigate plastic shrinkage or cracking.
- Performs uniformly across a wide range of concrete materials and admixtures.
- Economical and reliable in concrete mixes which are typically difficult to entrain.

### Benefits

- Improved workability
- Optimized air-void structure in hardened concrete
- Increased resistance to scaling from deicing salts
- Reduced Permeability
- Reduced Bleeding
- Improved ability to entrain air in concrete with high-carbon content in the fly ash
- Temperature independent-does not require adjustment from colder to warmer seasonal conditions.
- Improved stability over extended mixing time, even with low slump concrete.

## Guidelines For Use

There is no standard dosage for ToughAir™ admixture. Variations in concrete, such as gradations of sand and rock, can have some, typically minor, influence on dosage. Also, the air generation characteristics of some other chemical admixtures can affect the total air content for a particular mix design.

Typical ToughAir™ addition rates range from 0.15 oz./cwt. To 1.25 oz./cwt.

## Compatibility With Other Admixtures And Batch Sequencing

ToughAir™ is compatible with most admixtures available in the marketplace as long as they are added separately. There is no single preferred sequence for adding ToughAir™. If ToughAir™ is added during the dry batching process, typically it is added on top of the sand as it is going into the truck or batch. If ToughAir™ is added in a wet batch process, typically it is added at the final stage of the pre-mix process. Different sequencing methods may be used based upon local testing, illustrating best method and performance. Please consult your Miracon representative for guidance, if needed.

## Packaging, Storage & Shelf Life

ToughAir™ is available in 270 gallon (1021 L) totes or 55 gallon (208 L) drums.

ToughAir™ should be protected from temperatures below 34°F (1°C). Although freezing does not harm this product, precautions to protect from freezing should be taken.

ToughAir™ has a minimum shelf life of one year (12 months). Depending on storage conditions, the shelf life may be longer.

## Product Notes

ToughAir™ will neither initiate nor promote corrosion of reinforcing and/or pre-stressed steel in the concrete or of galvanized or other steel floor and/or roof systems. No calcium chloride or other chloride-based ingredients are used in the manufacture of this admixture.

## Related Documents

Material Safety Data Sheets (MSDS):  
ToughAir™

### [Additional Information](#)

For additional product data or use information, please contact your Miracon Technologies, L.L.C. representative.

[www.miracontech.com](http://www.miracontech.com)

Miracon Technologies, LLC.  
Air Entraining System