

# MICRO AIR<sup>®</sup> 210

(Formerly Atro-air)

## Air- entraining admixture for concrete

### Description

MICRO AIR 210 is an air-entraining admixture, which creates ultra-stable air bubbles that are strong, small and closely spaced.

#### Applications

Entraining a controlled air content in a wide range of concrete types:

Normal mix designs.

Low slump concrete.

Concrete containing high carbon content fly ash.

Concrete containing large amounts of fine materials.

Concrete using high-alkali cements.

High temperature concrete.

Concrete with extended mixing times.

### Advantages

MICRO AIR 210 is especially useful in the types of concrete known for their difficulty to entrain and maintain the air content desired.

Entrainment of the optimum air content in concrete results in the following improvements to quality:

Increased freeze / thaw resistance.

Reduced permeability - increased watertightness.

Reduced segregation and bleeding.

Improved plasticity and workability.

Increased resistance to scaling.

Greatly improved stability of air entrainment.

Ready to use - solution is at optimum strength for accurate dispensing.

### Packaging

MICRO AIR 210 is supplied in 220 kg. drums and bulk delivery as appropriate.

#### Typical properties\*

\* Properties listed are only for guidance and are not a guarantee of performance.

|                   |                      |
|-------------------|----------------------|
| Specific gravity: | 0.986 - 1.036        |
| pH:               | 10.5 - 12.5          |
| Colour:           | Amber - brown        |
| Chloride content: | Nil to BS 5075: 1982 |
| Flash point:      | Not applicable       |
| Freeze point:     | -1°C                 |

### Standards

MICRO AIR 210 meets the requirements of:

ASTM C-260-86

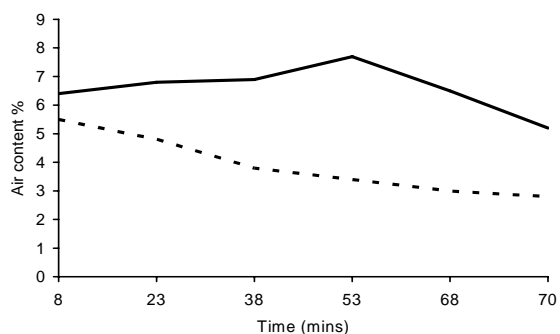
AASHTO M-154

CRD-C 13-77

BS 5075: 1982 Part 2

DIN 1048 Part 1

Figure 1 Air content vs mixing time



--- Standard air entraining admixtures — MICRO-AIR 100

1- In accordance with ASTM C-182: 3 minutes mix, 3 minutes rest followed by 2 minutes final mixing.

2- 13 minutes agitation and 2 minutes mixing.

3- Retempered and 2 minutes mixing time.

The graph represents the average of a number of laboratory and field evaluations data. The tests were conducted on concrete mixes known for their difficulty to entrain and maintain the desired air content. These mixtures contained large amounts of fine materials, high carbon content fly ash, high alkali cements, high concrete temperatures and low slumps.

#### Application procedure

As stated in ACI 212 and other publications, when two or more admixtures are used, they must be added to the mix separately (through dispensers or manually) and must not be mixed with each other prior to adding to the concrete mix.

For optimum, consistent performance, the air-entraining admixture should be dispensed on damp, fine aggregate.

Add MICRO AIR 210 admixture to the concrete mix using a dispenser designed for air-entraining admixtures; or add manually using a suitable measuring device that ensures accuracy within  $\pm 3\%$  of the required amount.

#### Dosage

There is no standard dosage rate for MICRO AIR 210 admixture. The exact quantity of air-entraining admixtures needed should be determined by trial mixes. Factors are: temperature, cement, sand grading, sand-aggregate ratio, slump, means of conveying and placement, use of extra fine materials such as fly ash and micro silica.

The amount of MICRO AIR 210 admixture used will depend upon the amount of entrained air required under actual job conditions. In a trial

mix, use 60ml to 400ml / 100kg of cement and adjust in the light of results obtained. In mixes containing water-reducing, set-controlling admixtures, the amount of MICRO AIR 210 needed is somewhat less than the amount required in plain concrete.

#### Storage

MICRO AIR 210 admixture should be stored and dispensed at 2°C or higher. Although freezing does not harm this product, precautions should be taken to protect it from freezing. If it freezes, thaw and reconstitute by mild mechanical agitation. Do not use pressurised air for agitation. Shelf life is 12 months when stored as above.

#### Safety precautions

MICRO AIR 210 is a caustic solution. In case of contact with skin, eyes or clothing, immediately flush the exposed area with water for at least 15 minutes. Remove contaminated clothing and shoes. Call a doctor - especially if contact is with eyes. Wash clothing before re-use and discard shoes. Always keep the product out of the reach of children.

#### Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

#### Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

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