

# RHEOMAC<sup>®</sup> 707

## Low dosage, liquid, integral waterproofer

### Description

A liquid admixture for concrete to give high water resistance, based upon a blend of surface active agents and refined lignosulphonate. Waterproof concrete is the result of good concrete practice coupled with the lowest w/c ratio compatible with achieving full compaction. The use of RHEOMAC<sup>®</sup> 707 enables all these criteria to be met due to its strong plasticising and water reducing properties.

### Primary uses

RHEOMAC<sup>®</sup> 707 should be used in all structural concrete that is constantly or intermittently in contact with water such as sea walls, tunnels, basements, structural and pre-cast concrete in exposed superstructures.

### Advantages

- Concrete containing RHEOMAC<sup>®</sup> 707 is resistant to water penetration either under conditions of hydrostatic pressure or capillary absorption.
- Durability is increased due to a significant reduction in w/c ratio.
- Sulphate attack is reduced due to the sulphate bearing ground water being resisted.
- The cohesive properties of the concrete are improved thus reducing segregation and bleeding.
- Concrete of similar workability to a control mix produced with RHEOMAC<sup>®</sup> 707, is easier to place.
- Pumpability of concrete is greatly improved.
- The surface finish of the concrete is improved.

### Packaging

RHEOMAC<sup>®</sup> 707 is available in bulk or 210 litre drums.

### Action

RHEOMAC<sup>®</sup> 707 assists in the production of water resistant concrete by its two fold action:

- I. It significantly reduces water demand to enable production of good workability concrete with a minimum water/cement ratio.
- II. It disrupts the cellular network within the concrete mass (capillaries), that are normally inter-connected thereby reducing the concrete permeability. Test results using Initial Surface Absorption Tests (ISAT) in accordance with BS 1881: Part 5: 1970, on concrete with RHEOMAC<sup>®</sup> 707 show a decrease in surface absorption of between 60-80% over a similar concrete without RHEOMAC<sup>®</sup> 707.

### Composition

A blend of specially selected surface active agents and refined lignosulphonates.

### Typical properties

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

|                   |  |
|-------------------|--|
| Colour:           | Brown liquid.  |
| Specific gravity: | 1.185 at 25°C.   |
| Air entrainment:  | 2 ± 1% according to grading of sand and water content. |
| Chloride content: | Nil to BS 5075.  |
| Nitrate content:  | Nil.   |
| Freezing point::  | 0°C. Can be reconstituted if stirred after thawing.    |

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## Standards

ASTM C494: Types A & D.

## Directions for use

RHEOMAC<sup>®</sup> 707 should be added with the mixing water preferably via a dispenser. It should never be added to the dry cement. No extension to mixing times are required.

## Points to remember when producing waterproof concrete:

- Ensure specified water / cement ratio is not exceeded; work within the range of 0.4 to 0.6.
- Keep water content as low as possible compatible with achieving full compaction.
- Place concrete quickly and ensure it is thoroughly compacted.
- Protect new concrete against rapid drying out and ensure adequate and complete curing with BASF's MASTERKURE curing compounds.

## Dosage

320ml per 100kg of cement. Field trials should be conducted to determine the effect of RHEOMAC<sup>®</sup> 707 on the workability of the concrete.

## Effects of over dosage

- Slight set retardation. (No effect on striking times).
- Slight increase in air content.
- Increase in workability.

## Special features

Advantage of RHEOMAC<sup>®</sup> 707's strong plasticising action must be taken to reduce water contents to a minimum. A reduction in w/c ratio in the region of 10 to 15% can generally be achieved.

## Dispensing

RHEOMAC<sup>®</sup> 707 should be dispensed through a proprietary dispenser such as those available from BASF. Details upon request.

## Typical test results

**Table 1 - Water absorbency**

| Mix Proportions:   | Series I | Series II |
|--------------------|----------|-----------|
| Cement             | 340kg    | 400kg     |
| Sand               | 650kg    | 585kg     |
| 20mm-5mm aggregate | 1280     | 1285      |
| Workability        | 50mm     | 100mm     |

|                                | Series I |  | Series II |  |
|--------------------------------|----------|--|-----------|--|
|                                | None     | RHEOMAC <sup>®</sup> 707 at 320ml / 100kg cement | None      | RHEOMAC <sup>®</sup> 707 at 320ml / 100kg cement |
| Cement                         | SRC      | SRC  | OPC       | OPC  |
| Air %                          | 1        | 3  | 1         | 3  |
| W/C                            | 0.5      | 0.44   | 0.43<br>5 | 0.37   |
| Density kg/m <sup>3</sup>      | 2.43     | 2.43   | 2.45      | 2.43   |
| Water absorbency after 2 hours | 4.6      | 2.0  | 4.1       | 1.8  |

**Table 2 - Initial surface absorption test**

| Reference:               | Initial surface absorption (ml/m <sup>2</sup> /sec) |        |        |        |
|--------------------------|---|--------|--------|--------|
| Control                  | 10 min  | 30 min | 1 hour | 2 hour |
| 1                        | 2.04  | 1.15   | 0.87   | 0.73   |
| 2                        | 2.58  | 1.77   | 1.44   | 1.28   |
| 3                        | 2.33  | 1.61   | 1.35   | 1.23   |
| Average                  | 2.31  | 1.51   | 1.22   | 1.08   |
| RHEOMAC <sup>®</sup> 707 |   |        |        |        |
| 1                        | 0.98  | 0.48   | 0.34   | 0.24   |
| 2                        | 1.09  | 0.56   | 0.41   | 0.28   |
| 3                        | 0.60  | 0.35   | 0.27   | 0.20   |
| Average                  | 0.89  | 0.46   | 0.34   | 0.24   |



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## Analysis of results

The typical results above show that RHEOMAC<sup>®</sup> 707 is effective as a permeability reducing admixture both under conditions of pressure and capillary absorption. It can be used with complete safety with OPC and SRC cements. That it significantly lowers water cement ratio whilst maintaining workability without affecting compressive strength.

All products should be used in accordance with the manufacturer's instructions. No responsibility can be taken by the manufacturer where conditions of use are beyond our control.

## Storage

Store under cover, out of direct sunlight and protect from extremes of temperature.

## Safety precautions

RHEOMAC<sup>®</sup> 707 contains no hazardous substances requiring labelling. For further information, refer to material safety data sheet.

## Note

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

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

## Quality and care

All products originating from BASF's Dubai, UAE facility are manufactured under a management system independently certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001, ISO 14001 and OHSAS 18001.

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**As all BASF technical datasheets are updated on a regular basis it is the user's responsibility to obtain the most recent issue.**

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### BASF Construction Chemicals UAE LLC

P.O. Box 37127, Dubai, UAE

Tel: +971 4 8090800

www.basf-cc.ae

Fax: +971 4 8851002

e-mail: marketingcc.mideast@basf.com



Certificate No.  
963680



Certificate No.  
945787



Certificate No.  
772556