

# BASF Watertight Concrete Solutions

## Technical Specification - BS 8102 Type B (structurally integral) protection

### OVERVIEW

All concrete detailed to be constructed as part of the BASF Watertight Concrete System must conform to the following specification and any pertinent British, and/or British European Standards. Where there are no specific standards covering an operation, or part of an operation, then it is expected that recognised industry best practice is utilised.

### CONCRETE

All concrete shall be designed and supplied in accordance with the requirements of BS EN 206:2013+A1:2016 (Concrete. Specification, performance, production and conformity), BS 8500-1:2015+A1:2016 (Concrete. Complementary British Standard to BS EN 206. Method of specifying and guidance for the specifier) and BS 8500-2:2015+A1:2016 (Concrete. Complementary British Standard to BS EN 206. Specification for constituent materials and concrete) including any subsequent amendments.

The concrete must have a minimum cement content of 350kg/m<sup>3</sup> and a maximum free water/cement ratio of 0.45. These limits are the minimum requirements, and/or any other aspect of the concrete specification may require the application of a higher cement content or lower water/cement ratio. It is important that the most onerous concrete mix design requirements are properly applied to ensure compliance with this specification and the overall concrete specification. The cement types listed in BS 8500-1:2015+A1:2016 Table A.6 are all suitable for use, but when selecting the cement type, it is recommended that consideration be given to the use of blended cements to reduce the risk of early age thermal cracking. Trial mixes can be carried out where requested, to confirm that the proposed concrete mix design, and associated materials, conform to all relevant standards and are fit for purpose.

### ADMIXTURE

The standard dosage rate of MasterLife WP 799 is 1 x 875g bag per 0.5m<sup>3</sup> of concrete. Other dosages may be used, or required in special cases according to specific job site conditions. In this case please consult our Technical Services Department for further dosage rate guidance.

### APPLICATION PROCEDURE

MasterLife WP 799 should be added to the concrete during the initial mixing stage. It should not be added to dry components and ideally be added after at least 70% of the target mixing water has been added. As MasterLife WP 799 also contains ingredients that will increase the consistence level of the concrete, it is essential that the product is allowed to fully mix through prior to the addition of the remaining target water; failure to comply with this requirement could lead to the concrete having a higher consistence level than that required. The MasterLife WP 799 sachets are designed to be soluble in water and do not require any breaking or tearing prior to being added to the concrete mix.

Although not recommended, MasterLife WP 799 can also be added to the concrete on arrival at the job site. In this situation, the concrete must be fully remixed after the addition of the MasterLife WP 799 to ensure its full and homogenous distribution throughout the whole load. Due to the differences in the mixing efficiency of equipment being used, it is impossible to give a specific mixing time for this operation, but it is recommended to give an absolute minimum of 5 minutes mixing time, at full mixing speed (minimum 10 rpm), after the final addition of MasterLife WP 799.

As the addition of the MasterLife WP 799 will increase the consistence level of the concrete, this should be taken into consideration when ordering the concrete, and if necessary, a lower consistence class of concrete should be ordered to allow for this subsequent increase. Typically, a consistence level of 50 to 70mm, prior to the addition of the MasterLife WP 799, will then provide a concrete with a target final consistence level of 130 to 150mm.

It is strongly recommended that these figures be verified, and if necessary modified, by performing trial mixes on the intended materials prior to the actual supply to site.

Under no circumstances should any additional water in excess of the required water/cement ratio, be added to the concrete, at any stage to increase the consistence level. If during the batching stage, or during any trial mixes, it is

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noticed that the addition of the MasterLife WP 799 does not result in the desired final consistence level, then additional water reducing admixtures from BASF's MasterPozzolith, MasterPolyheed or MasterGlenium range may be added to give the desired consistence level.

MasterLife WP 799 is fully compatible for use in combination with the products in BASF's MasterPozzolith, MasterPolyheed or MasterGlenium ranges, it is not compatible for use with products in the MasterRheobuild range.

### CONCRETE SUPPLIER

Concrete suppliers should hold third party accreditation to quality schemes such as those managed and operated by the Quality Scheme for Ready Mixed Concrete (QSRMC), British Standards Institution (BSI) or similar approved.

Where the proposed concrete supplier does not have such accreditation, then BASF shall be notified prior to the commencement of supply. Our approval for use of such suppliers may be given following an inspection and audit, or following previous satisfactory performance.

### PLACING AND WORKMANSHIP

In general, the requirements of BS EN 13670:2009 (Execution of concrete structures) should be complied with at all times.

To ensure that the concrete has a sufficient consistence level to allow placing and compaction, BASF recommends using concrete designed, and supplied, with a minimum consistence class of S3. Lower consistence levels may be utilised where circumstances such as the provision of gradients precludes the use of higher consistence concrete. In this situation, the compaction regime applied must be suitable to permit full and appropriate compaction of the concrete. Concrete with a higher consistence class than S3 is also permitted, provided that it is designed to comply with the concrete specification, and that it is resistant to segregation.

Concrete shall not be placed at temperatures below 5°C unless suitable pre-approved precautions are in place.

Workmanship will comply with the appropriate parts of BS 8000 (Workmanship on building sites).

The correct placement, compaction and subsequent curing of the concrete remains the responsibility of the contractor, even in the event that BASF are in attendance during a concrete pour.

Where concrete is to be placed in deep sections, tremmie pipes or concrete pumps shall be used to prevent concrete being allowed to free fall from heights greater than two metres. Care must be taken when compacting the concrete to ensure that it is fully compacted without segregation, and that it is free from any voids or honeycombing.

Concrete finishing should result in a laitance free finish. Please consult BASF if further treatment is required when finishing (For example: power floating, dry-shake, surface retarders etc.)

### CURING

Concrete curing should commence as soon as the concrete is finished, suitable curing will be applied for at least the minimum period detailed in BS EN 13670:2009 (Execution of concrete structures), Section 8.5 (Curing and protection). If the proposed curing regime is the application of curing compounds, then this will need to be agreed with BASF prior to the commencement of any concreting operations. BASF's recommended products are MasterKure SB 181 and MasterKure WB 207.

Curing compounds are not permitted on construction joints, on surfaces to be treated, or surfaces where bonding of other materials is required, unless they are fully removed prior to the subsequent operation, or they are proven to have no detrimental effects on the subsequent operations.

### CONSTRUCTION CONSIDERATIONS

In general, the requirements and recommendations of the relative parts of BS EN 1992 (Eurocode 2. Design of concrete structures) and, in particular, BS EN 1992-3:2006 (Eurocode 2. Design of concrete structures. Liquid retaining and containing structures) should be adhered to at all times.

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### SECTION THICKNESS

To meet the requirements of BS 8102:2009 (Code of practice for protection of below ground structures against water from the ground) for a Grade 3 Habitable environment, the BASF Watertight System requires a minimum section thickness of 200mm.

### CONSTRUCTION JOINTS

Construction and day joints will conform to details supplied by BASF Construction Chemicals. Construction joints that require sealing with MasterSeal and MasterInject products will be float finished, clean and free of debris. MasterSeal and MasterInject products must be protected from ground and rain water between construction phases.

### MOVEMENT JOINTS

Where movement joints are required, MasterSeal 930/933 joint waterproofing bandage and epoxy resin adhesive are to be used in accordance with details supplied by BASF Construction Chemicals.

### TIE BAR HOLES

Where tie bar holes need to be sealed, MasterSeal 925 hydroswelling rings and plugs are to be used in accordance with details supplied by BASF Construction Chemicals.

### SERVICE PENETRATIONS

Service penetrations including pipes ducts and temporary works will be sealed using MasterSeal and MasterInject products in accordance details supplied by BASF Construction Chemicals.

### KICKERS

Monolithic kickers shall be formed to raise the construction joint with walls when constructing base slabs. Kickers will be floated clean if MasterSeal 910 hydroswelling waterbars are to be used. If MasterSeal 910 is not required a surface retarder must be used to create a key. Kickers must not be mechanically scabbled.

### LAND DRAINS

Land drains will be designed in accordance with BS 8102 to ensure ground water is directed away from the structure.

### DRAINAGE MEMBRANE

Drainage membrane can be utilised in conjunction with the BASF Watertight System.

### MAINTENANCE OF TREATED SURFACES

MasterLife WP 799 will significantly reduce the deterioration and staining of treated surfaces. Concrete containing MasterLife WP 799 cannot be over coated with any subsequent treatment without abrasive cleaning.

### WARRANTY

BASF's 10-year warranty includes loss or damages caused by the visible ingress of water through the structure. However, the warranty does not include the use of BASF's watertight products outside the manufacturer's recommendations. For example:

- The use of incorrect dosages and application methods.
- Poor workmanship and/or compaction.
- Deviations from the requirements of BS EN 1992-3:2006 Eurocode 2. (Design of concrete structures. Liquid retaining and containing structures).
- Mechanical damage incurred from or by a third party.

### CONTACT DETAILS

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