Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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European Technical Assessment

ETA-19/0267 of 19 June 2020

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General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	"MasterAir 250 MHK"
Product family to which the construction product belongs	Elastic micro hollow spheres as concrete admixture
Manufacturer	BASF Construction Solutions GmbH Dr.-Albert-Frank-Straße 32 83308 Trostberg DEUTSCHLAND
Manufacturing plant	BASF Construction Solutions GmbH 39443 Staßfurt Deutschland
This European Technical Assessment contains	6 pages including 2 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 260017-00-0301

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Specific part

1 Technical description of the product

The concrete admixture "MasterAir 250 MHK" is a liquid air entraining admixture consisting of water and a high number of specifically sized and evenly distributed elastic synthetic micro hollow spheres acting as air voids.

The concrete admixture increases the freeze and freeze-thaw resistance with or without de-icing agents of concrete.

The concrete admixture is free of silicon dioxide.

The concrete admixture "MasterAir 250 MHK" is produced from specific constituents in a production plant.

2 Specification of the intended use in accordance with the applicable European Assessment Document

"MasterAir 250 MHK" is an admixture for plain, reinforced and pre-stressed concrete used as site-mixed, ready-mixed concrete or concrete for precast products as well as an admixture for sprayed concrete.

The performances given in Section 3 are only valid if the "MasterAir 250 MHK" is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of concrete incorporating "MasterAir 250 MHK" of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

Table 1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Particle size distribution (d_{50})	(45 ± 10) µm
Absolute density	(0,50 ± 0,02) kg/dm³
Conventional dry material content	(3,7 ± 0,3) % by mass
pH value	10,5 ± 1,5
Total chlorine	≤ 0,20 % by mass
Water soluble chloride	≤ 0,10 % by mass
Alkali content (Na_2O equivalent)	≤ 0,10 % by mass
Corrosion behaviour	Current density ≤ 10 µA/cm²
Compressive strength*	≥ 80 % of control mix
Air content and bulk density (fresh concrete)*	≤ 2 % by volume above control mix
Air content of freshly mixed concrete by the volumetric method and Freeze thaw resistance of hardened concrete	See Annex A
* with the maximum recommended dosage of concrete admixture "MasterAir 250 MHK": 16,0 kg/m³ concrete	

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 260017-00-0301 the applicable European legal act is: 1999/469/EC(EU).

The system to be applied is: 2+

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 19 June 2020 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Bahlmann

Table 2 Overview of test results determined on fresh concrete

Concrete	Cement	Admixture content [kg/m³]	Mixing time [min]	Flow table consistency [mm]	Volume of elastic micro hollow spheres [% by volume]
I A	CEM I 42,5 R	16,0*	2	380	1,25
I B		16,0*	10	370	0,50
I C		0,07**	2	440	-**
II A	CEM III/A 42,5 N	16,0*	2	380	1,00
II C		0,08**	2	440	-**

*: Compliance dosage [in kg/m³ concrete]
**: Reference concrete with air entraining admixture acc. to EN 934-2

Table 3 Test results freeze thaw resistance (CDF-test)

Concrete	Freeze thaw cycles				
	4	6	14	28	Test
I A	40	63	95	140	Scaling [g/m²]
	-	97,8	97,3	95,8	RDM [%]
I B	32	57	109	193	Scaling [g/m²]
	-	99,7	100,5	98,1	RDM [%]
I C	64	102	179	293	Scaling [g/m²]
	-	98,8	96,2	97,2	RDM [%]
II A	469	644	1000	1498	Scaling [g/m²]
	-	97,9	94,6	91,7	RDM [%]
II C	531	772	1291	1967	Scaling [g/m²]
	-	97,9	93,0	94,3	RDM [%]

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Installation

"MasterAir 250 MHK" is an admixture for plain, reinforced and pre-stressed concrete used as site-mixed, ready-mixed concrete or concrete for precast products as well as an admixture for sprayed concrete.

The use of concrete admixtures may cause adverse effects on the properties of concrete, which may be determined.

The recommended maximum dosage of the admixture "MasterAir 250 MHK" is 16,0 kg per m^3 concrete. The admixture "MasterAir 250 MHK" is in accordance with EN 206 a liquid admixture (water content of ≥ 96 %). Its water content shall be taken into account when calculating the water/cement ratio.

For each case of application initial tests shall be carried out with the intended concrete composition and the intended addition of the admixture to demonstrate that the concrete can be processed reliably with the intended consistency provided under the conditions of the site and that the required properties are achieved.

In the context of this initial test a testing of the freeze-thaw resistance of concrete with elastic micro hollow spheres with CDF-test according to CEN/TS 12390-9, clause 7, is required. The recommended relative dynamic modulus of elasticity according to CEN/TR 15177 is greater or equal than 0,75 and scaling less or equal than 1500 g/m^2 after 28 freeze-thaw cycles.

The elastic micro hollow spheres in fresh concrete shall be verified by washing-out according to ASTM C173/C173M-01. The Roll-a-Meter value corresponding with the dosage verified by testing the freeze-thaw resistance shall be established in the initial test.

A typical reduction of the strength class as for concrete with air entraining admixtures (cp. EN 206, Table F.1) does not occur.

Packaging, transport and storage

Materials shall be handled and stored with care according to EN 934-6.

In the production plant the admixture shall be stored in delivery packaging, suitable silos or containers.

The admixture may be delivered in suitable transport containers, which shall be clean and free of other materials. During transportation the admixture shall be prevented from pollution.

It is the responsibility of the manufacturer of the product to ensure that the information on these provisions is given to those who are concerned.

"MasterAir 250 MHK"	Annex B
Specifications for use	