

## Information Mix Design Q3 BAG Bauartikel GmbH

Test certificates on hardened concrete		Results	
Compressive strength (cube 150x150x150) 28 days		> 50 MPA	
Test certificate No. 220011095-15-01-01, Material Testing Institute MPA NRW	F	XF1, XF2, XF3 and XF4	
Spacers according to DBV leaflet Eurocode 2 copy January 2011	T	XS1, XS2, XS3	
	A	XD1-XD3, XS1-XS3, XF2, XF4, XA1-XA2	
Additional test-certificates			
Frost-Thaw resistance according to BE II FT visual according to Method D-R, Material Testing Institute Graubünden, Switzerland			
Frost-Thaw resistance according to DS/CEN/TS 12390-9 2006, freeze-thaw resistance-scaling, 112 frost-thaw cycles			
Mix Design: DS 423.41:2002 Testing of concrete. Hardened concrete. Internal stability			
Mix Design: DS 423.42:2002 Testing of concrete. Hardened concrete. Concrete composition			
Mix Design: DS 423.43:2002 Testing of concrete. Hardened concrete. Paste homogeneity			
Mix Design: DS 423.44:2002 Testing of concrete. Paste cracks and bond			
Mix Design: EN 480- 11:2005 Admixtures for concrete, Mortar and grout-test-method Part: 11 Determination of air void characteristics in hardened concrete			

Raw material	Declaration	Certificates
Sand 0-2	Sarah II	CE marked JD Spolka ul. Piastowska 3, 45081 Opole PN-EN 12620 + A1:2010, PN-EN 13043 : 2004/Ap1:2010 Petrographic analysis by laboratory BARG L.M.B. Dolny Slaska Sp. Z o.o.
Cement	Gorazdze Cement SA CEM I 52,5 R	Statement of performance for Streets and Bridges INSTYTUT BADAWCZY DROG I MOSTOW PN-EN 196-1, PN-EN 196-2, PN-EN 196-3
Fly Ash	Betoment OP	CE marked, 1488-CPR-0040/W Material research and testing department University of Weimar Report 11.11.006.10 according to DIN EN 450-1
Plasticizer	BASF Master Glenium 432	Plasticizer for concrete according to DIN EN 934 2:T 3.1/3.2, contains substances according to EN 934-1:2008
Silica Fume	Silica Fume Category I	According to EN 206-1 or mortars, grouts and other mixers
Air in Trainer	Master Air 125	Air-entraining agent for concrete compliant with DIN EN 943-2

### Further restrictions regarding exposure class XC4

DIN EN 206-1/DIN 1045-2					
Class Designation	Environment description	Examples where exposure classes may occur	max w/c	min. strength	min. cement content
					kg/m <sup>3</sup>
XC1	Dry or permanently wet	Inside building with low air humidity	0,65	20/25	260
XC2	Wet, rarely dry	Water retaining structures, Foundations	0,6	25/30	280
XC3	Moderate humidity	Inside building with moderate/high air humidity	0,55	30/37	280
		External structures sheltered from rain			
XC4	Cyclic wet and dry	External structures exposed to rain water	0,50	30/37	300

- Water cement ration mix design Q3 < 0,38
- Total paste or cement content > 300 kg/m<sup>3</sup>