



## Mortar with Basalt Fiber 13.00635.15

**Test results**  
 Version 1207.006  
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Basalt fiber 13.00635.15 can be used for the improvement of mechanical properties (strength, toughness) of mortar or concrete. Testing results of mortars with basalt fibres 13.00635.15 showed ductile, strain softening character of failure during bending tests and high energy absorption compared to mortars without fibre addition.

### 1. Technical data of integral fiber

	Cem-FIL 62/2	Basalt fiber 13.00635.15
Monofilament diameter, $\mu\text{m}$	18	13 $\pm$ 0.5
Length, mm	6.0	6.35 $\pm$ 10%
Sizing	-	No. 15 for concrete
Type of sizing/ dispersability	unknown/ nearly no dispersion	hydrophilic/ slow dispersion
Sizing content, % weight	-	0.8-1.1
Moisture content, % weight	-	< 0.5
Density (without sizing), g/cm <sup>3</sup>	-	2,67

### 2. Matrix composition: mix proportions of matrices [kg/m<sup>3</sup>]

	Mortar with Cem-FIL CF62/2	Mortar with basalt fiber 13.00635.15
CEM III/B 32,5 N LW-HS-NA	539.4	539.4
Fly ash	242.7	242.7
Microsilica suspension	53.9	53.9
Sand 0/1 mm	1078.7	1078.7
Water	242.7	242.7
Glenium ACE 30 (BASF)	3.9	4.2
Cem-FIL 62/2	32	-
Basalt fiber 13.00635.15	-	36

### 3. Mortar production

3 different mixing speeds: Speed I correspond to 120 rotations per minute (rpm), speed II to 200 rpm and speed III to 380 rpm. The mixing procedure is following:

- (1) Mixing of cement and fly ash at speed I for approx. 10 seconds,
- (2) Addition of water, mixing at speed I for 30 seconds,
- (3) Addition of microsilica, mixing at speed I for 60 seconds,
- (4) Addition of sand, mixing at speed I for 30 seconds,
- (5) Addition of superplasticizer, mixing at speed II for 60 seconds,
- (6) Addition of fibres, mixing at speed I for 10 seconds.
- (7) After homogenization of fibres mixing at speed III for 15 seconds.

### 4. Comparison of test results of mortars with integral fibres Cem-FIL 62/2 and with basalt fiber 13.00635.15

	Mortar with Cem-FIL 62/2	Mortar with basalt fiber 13.00635.15	Difference
Bending strength, MPa	9.5	9.6	+1%
Compression strength, MPa	35.7	37.0	+4%

Based on performed test it is possible to conclude that in relatively young mortar or concrete age (some weeks after mortar or concrete mixing) basalt fibres basalt fiber 13.00635.15 are suitable for concrete reinforcement – as integral fibres in the same applications as Cem-FIL 62/2.