



## PRODUCT DATA SHEET

# EFA-Füller<sup>®</sup> BF 1

Fly ash according to DIN EN 450-1 – For concrete according to DIN 1045-2

The fly ash **EFA-Füller<sup>®</sup> BF 1** of unit 1 from the power plant in Bremen-Farge of **ENGIE Kraftwerke Farge GmbH & Co. KGaA** is a fine-grained pozzolanic binder that consists mainly of  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$ . The content of reactive  $\text{SiO}_2$  is at least 25 % by mass. It is a type II concrete addition according to DIN 1045-2: Plain, reinforced and pre-stressed concrete structures – Part 2: Specification, properties, production and conformity of concrete – Application document for use with DIN EN 206-1.

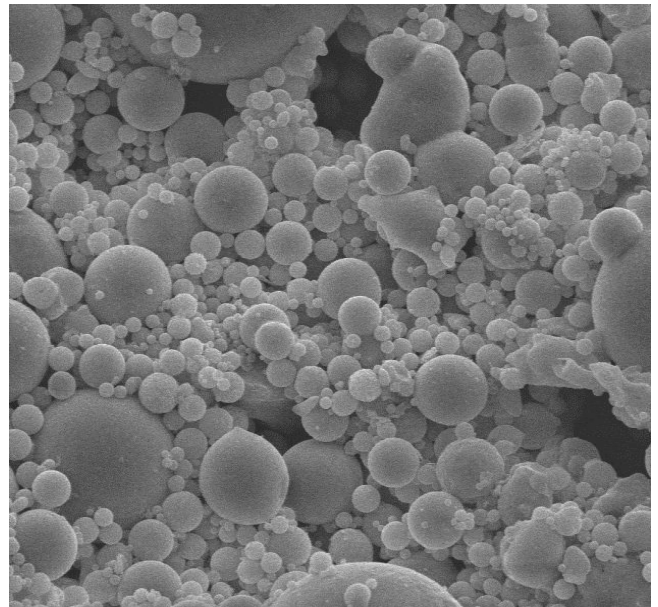
In combination with DIN EN 206-1 DIN 1045-2 regulates the use of **EFA-Füller<sup>®</sup> BF 1** as follows:

- paragraph 5.2.5.2.2:
  - minimum cement content
  - maximum permissible water/cement ratio
  - sulphate resistance
  - combined use with aggregates sensitive to alkalis
- paragraph 5.2.5.2.4: the common use of **EFA-Füller<sup>®</sup> BF 1** and microsilica
- paragraph 5.3.2: the limits for the fine grain content < 0.125 mm
- paragraph 5.3.4: the use of **EFA-Füller<sup>®</sup> BF 1** in subaqueous concrete

The use of **EFA-Füller<sup>®</sup> BF 1** in bored cast-in-place piles according to DIN EN 1536 and cast-in-situ concrete diaphragm walls according to DIN EN 1538 is regulated by addendum to the enclosure for parts 2.1/2 and 2.1/6 of “Musterliste der Technischen Baubestimmungen”. According to this paragraphs paragraph 5.3.4 from DIN 1045-2 has to be used for these concretes.

Advantages of **EFA-Füller<sup>®</sup> BF 1**:

- cement reduction
- reduction of water demand
- improved workability of fresh concrete including pumping capability
- increased compactability of fresh concrete



scale: 1000:1

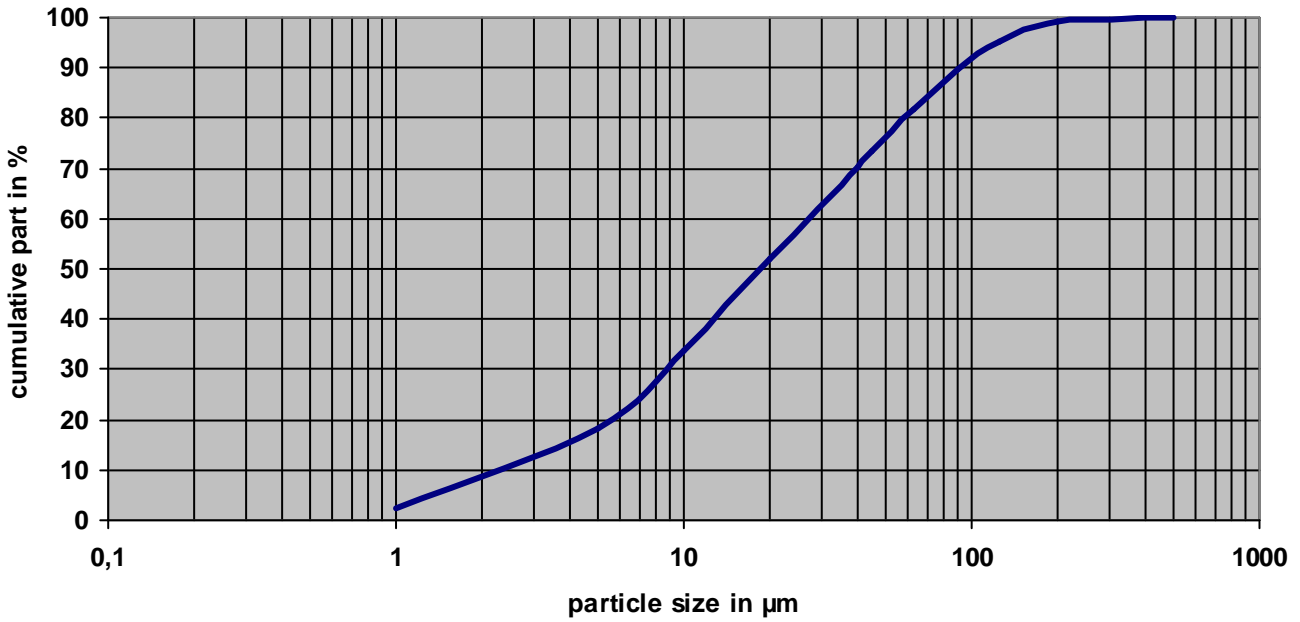
- reduction of the hydration temperature, e.g. for mass concrete
- reduced efflorescence of the concrete
- increased resistance to chemical attacks on concrete, e.g. Sulphate, chloride, sea water

### CHARACTERISTIC VALUES

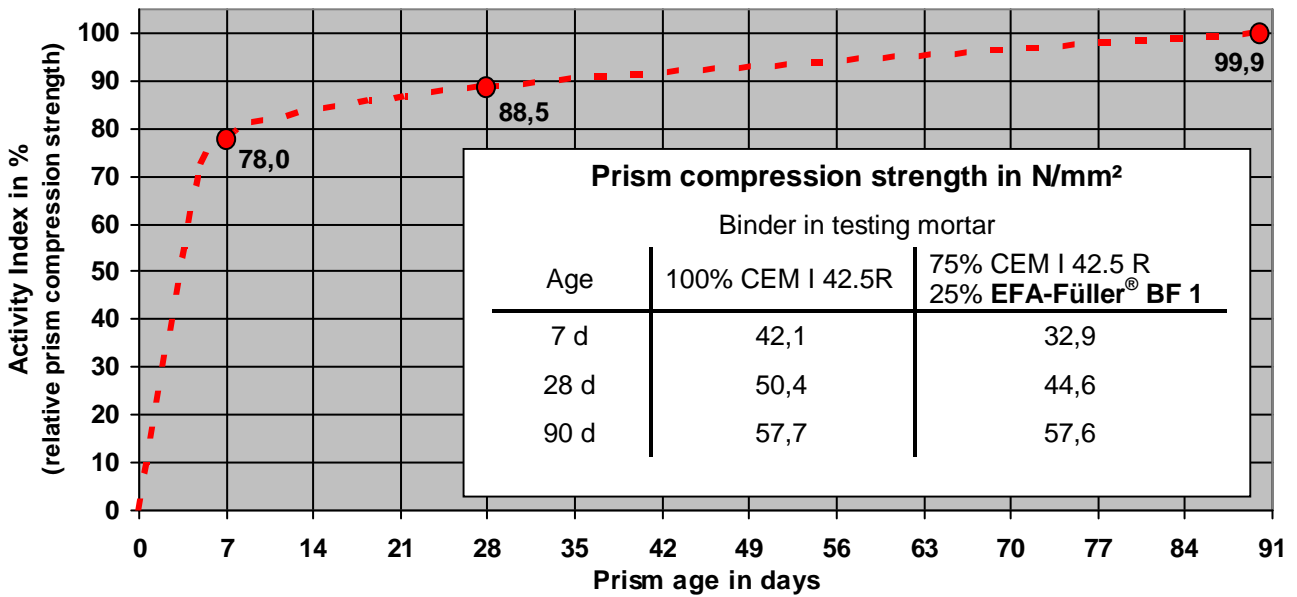
Loss on ignition: category A	≤ 5 % by mass
Fineness > 45 µm	17,1 ± 10 % by mass
Na <sub>2</sub> O equivalent *	2,74 % by mass
Bulk density (DIN EN 459 part 2) *	0,97 t/m <sup>3</sup>
Particle density	2.29 ± 0.20 t/m <sup>3</sup>

\* average of the year 2015

PARTICLE SIZE DISTRIBUTION \*



STRENGTH DEVELOPMENT \* (according to DIN EN 196 part 1)



\* average from year 2015

**BauMineral**

Werk Farge

Z-3.31-1713

INSTITUT FÜR BAUFORSCHUNG AACHEN

EFA-Füller® BF 1

Fly ash according to DIN EN 450-1

1077 - CPR - 42606101

External control and certification

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