



## TECHNICAL DATA SHEET – DUCORIT® ULTRA HIGH PERFORMANCE GROUT

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### DESCRIPTION

The ultra high performance grout, Ducorit® is used for structural grouted connections in wind turbine foundations and oil & gas installations - both offshore and onshore.

### PRODUCTS

The core of the Ducorit® products is the unique Densit® Binder. The different properties of Ducorit® S1, Ducorit® S2, Ducorit® S5, Ducorit® S5<sub>r</sub> and Ducorit® D4 are obtained by adding aggregates such as quartz sand or bauxite.

Ducorit® products are characterised by extreme strength and stiffness, making them a strong structural component and not just a filling material. Using Ducorit® does not require special precautions with respect to environmental or personal hazards.

### PUMPABILITY

Ducorit® products are pumpable up to several hundred metres through hoses between 2" and 5". Due to viscosity and high inner cohesion of the mixed material, there is no risk of washing out cement particles, separation or mixture with water when cast below sea level.

### EARLY STRENGTH DEVELOPMENT

Ducorit® develop a significant early strength. After 24 hours of curing at 20°C (68°F), the strength reaches approximately 25% of the long term value. The early strength is even more pronounced with regard to the material stiffness.

### FATIGUE

Due to ultra high strength and durability of Ducorit® products, the fatigue strength is outstanding compared to normal concrete. As fatigue strength depends upon the static strength of concrete, the fatigue strength of Ducorit® can be up to more than five times the strength of normal concrete.

### MECHANICAL PROPERTIES

PROPERTIES	DUCORIT® D4	DUCORIT® S5	DUCORIT® S5 <sub>R</sub>	DUCORIT® S2	DUCORIT® S1
Compressive strength $f_c^2$ - MPa/psi	200 / 29,000	130 / 18,850	130 / 18,850	120 / 17,500	110 / 16,000
Static modulus of elasticity $E_c$ - GPa/ksi	70 / 10,000	55 / 8,000	55 / 8,000	47 / 6,800	35 / 5,000
Dynamic modulus of elasticity $E_d$ - GPa/ksi	88 / 12,800	60 / 8,700	60 / 8,700	48 / 6,975	37 / 5,400
Tensile strength $f_t$ - MPa/psi	10 / 1,500	7 / 1,000	7 / 1,000	6 / 870	5 / 725
Flexural strength $f_{bt}^*$ - MPa/psi	23.5 / 3,400	18 / 2,600	18 / 2,600	11 / 1,450	13.5 / 2,000
Density $\rho$ - kg/m <sup>3</sup>	2740	2440	2382	2350	2250
Poisson's ratio $\nu$	0.19	0.19	0.19	0.18	0.19
Consistence class <sup>1)</sup>	a2	a2	a2	a1	-
Compressive Strength class <sup>3)</sup>	C170/185	C100/115	C110/125	C90/105	C80/95
Compressive Strength class (24h) <sup>1</sup>	Class A	Class B	Class A	Class A	Class A
Shrinkage <sup>1)</sup> $\epsilon_{s,m,91}$	SKVB I (0,413 ‰)	SKVB 0 (0,559 ‰)	SKVB 0 (-)	SKVB 0 (0,576 ‰)	-
Shrinkage <sup>1)</sup> $\epsilon_{s,i,91}$	SKVB I (0,421 ‰)	SKVB 0 (0,567 ‰)	SKVB 0 (-)	SKVB 0 (0,579 ‰)	-

(Minimum 28 days curing at 20°C). \*with 1.9% by volume of steel fibres)

<sup>1</sup> DAfStb-Richtlinie Herstellung und Verwendung von zementgebundenem Vergussbeton und vergussmörtel (Juni 2006).

<sup>2</sup> Note that the stipulated values are mean values, based on 75x75 mm cubes.

<sup>3</sup> Strength class refers to characteristic strengths on respectively 150x300 cylinders and 150x150 mm cubes.



Quality checked by

