



TECHNICAL DATA SHEET

3D 2K Grey

PRODUCT DESCRIPTION

3D 2K Grey is a dry-mix mortar (grey color) which is used for 3D printing of concrete with a 2K technology (accelerator added at the nozzle).

3D 2K Grey could be used with static or continuous mixers or mixing pumps. Alkali-free accelerator added at the accelerated print-head should be used.

3D 2K Grey is ready-to-use mortar, based on Portland cement with a maximum aggregate size of 2 mm.

MANUFACTURER

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TECHNICAL DATA

dmax – maximum aggregate size	2,0 mm	
water content	0,12-0,15 L/kg	
shrinkage	~0,7 mm/m	
density	2,0-2,1 kg/L	
	Without accelerator*	1,6 % accelerator*
compressive strength*		
1 day	25 MPa	21 MPa
7 days	65 MPa	50 MPa
28 days	95 MPa	82 MPa
flexural strength*		
1day	6 MPa	5 MPa
7 days	10 MPa	8 MPa
28 days	14 MPa	12 MPa

*Results were obtained by filling the standard molds (40x40x160mm) with extruded mortar. Mixing, pumping and extrusion was done with an MTec duomix – a continuous mixing pump with MTec`s black stator/rotor system. Extrusion speed was 12 cm/s at 25 mm nozzle diameter. Concrenetics printhead was used with Accelerator MasterRoc SA 183 (Master Builders Solution) 1,6% (per kg of mortar). In case of the test without accelerator the same conditions were used, only accelerator dosage was set to 0%. Test was done in Zevnik Lab. Tests of compressive and flexural strength were done in accordance with EN standard EN 12190 and EN 196/1.



ADVANTAGES

- Facilitates very high build-up rates and printing speeds (5-60 cm/s)
- Allows extreme negative printing angles
- Minimized cracking of printed structures
- Minimized shrinkage
- Consistent extrudability and printability in varying ambient and material temperatures
- Facilitates very high build-up rates and printing speeds (5-60 cm/s)
- High initial and final strength
- Excellent durability of 3dcp objects

APPLICATION RECOMMENDATIONS

- Ideal temperature for material and ambient conditions is 20°C
- Use high enough water content to ensure optimal pumpability, but low enough water to get thixotropic consistency for optimal printability
- 3D 2K Grey has been successfully used with various equipment (e.g. MAI Multimix, Pictor, MTec duomix and duomix 3D, MAI/Vertico Printhead, Concretetics Printhead)
- Pumping speed (of mortar) ranging from 1 L/min up to 15 L/min could be used, depending on technology used, printing parameters, object geometry, ambient conditions etc.
- Alkali free accelerator should be used at the printhead (2K technology of 3D concrete printing). Accelerators like MasterRoc SA 167 or MasterRoc SA 183 (Master Builders Solutions) were successfully used
- Usual alkali-free accelerator dosage is 0,5 -2 %, depends on printing parameters, printing geometry, temperature of mortar and ambient and accelerator type
- Conduct trials before full-scale printing
- Ensure proper curing conditions after printing
- Consult with structural engineers and material supplier prior to loading structures.