

BETEC[®] 250 W

High strength micro-concrete with strength class C80/95

CE

Product description

BETEC[®]250 W is a special designed high performance micro-concrete with high initial and final strength development with final strength class of C80/95 and tested fatigue re-sistance according to Model Code 90, Model Code 2010 and Eurocode 2 part 2 (2010). BETEC[®]250 W stands out by controlled volume expansion and offers maximum durability and applicability.

Advantages

- High early- and final strength development to strength class C80/95 for the most durable and reliable structural connections, statically and dynamically load bearing.
- S-N curves according to Model Code 90, Model Code 2010 and Eurocode 2, part 2 (2010) can be used for design without restrictions.
- Less downtime and fast deployment for wind farm completion.
- High surface load capacity guarantees long-term maintenance-free constructions
- Extended workability times and exceptional rheology are ensuring fast, easy and cost effective application even with pumps.
- Compact mortar matrix due to self-compacting and controlled volume expansion < 0,6 %
- Declaration of performance according to EN 1504-6

Certificates

- Declaration of performance according to EN 1504 part 6 / System 2+
- Assessment for fatigue strength according to Model Code 90, Model Code 2010 and Euro-code 2, part 2 (2010).

Areas of Application

BETEC[®]250 W is specifically designed for :

- Constructive connection of onshore-wind energy towers to the foundation
- Friction-locked connection of concrete elements in the erection of wind energy towers
- Grouting of machines and industrial equipment
- Assembly of wind energy towers and anchoring in the foundation
- Grouting of rails and sleepers.

Product Properties

Technical Data/Properties(*)

BETEC® 250 W		
Property	Unit	Value ⁽¹⁾
Grain size	[mm]	0-5
Application thickness	[mm]	≥ 15
Consistency	[-]	very flowable
Free flow slump	[mm]	≥ 700
Maximum water addition	[l /25 kg]	2.5
at + 5 °C		2.5
at + 20 °C		2.6
at + 40 °C		
Workability time	[min]	~ 90
Application temperature (Powder, water and environment)	[°C]	+5 to +40
Shrinkage	[%]	≤ 0.6
Expansion	[Vol-%]	≥ 0.1
Fresh mortar density	[kg/dm³]	~ 2.3
Yield (25kg bag)	[dm³]	~ 12
Calculation quantity	[kg/m³]	2100
Strength development	[-]	fast
Compressive strength (2)(4)	[MPa]	~ 70
24 h		~ 105
28 d		
Compressive strength class	[-]	C 80/95
Exposure classes ⁽³⁾	[-]	X0, XC1-XC4, XD1-XD3, XS1-XS3, XA1-XA2, XF1-XF3
Moisture classes ⁽³⁾	[-]	WO, WF, WA
Shelf life	12 months Stored under cover, clear of ground, protected from all sources of moisture and frost.	
Packaging	Bags of 25 kg with plastic liner. 40 bags per pallet (1000 kg)	
Appearance	Grey powder	

(1) Typical values in production control. All tests were performed under a conditioned conditions of 21 °C and 65% RH.

(2) The illustrated compressive strengths are measured with 150 mm cubes.

(3) According to EN 206-1:2001 in combination with DIN 1045-2

(4) At +5 °C material and surrounding temperatures the micro-concrete achieves ~5 MPa after 26 hours.

Application

1. Preparation of Substrate

- Substrate preparation has to be according EN 1504-10 section 7.
- The substrate has to be free from dirt, grease, laitance, loose concrete, loose particles or layers which could adversely affect adhesion.
- Remove all damaged concrete and prepare substrate by sand or grid blasting, high pressure water jetting, or other methods until base concrete is exposed, offering sufficient roughness (bond) and open pores.
- The substrate must be pre-wetted with clean water until saturated. The substrate should be damp, but without free standing water.
- The substrate must be frost-free and have a cohesion of minimum 1.5 MPa.

2. Mixing

- The product has to be mixed using a suitable forced action mixer (400-600 rpm). The mixing head must be completely immersed in the powder.
- Add the total required quantity of water into the mixer, add the powder and mix for 5 minutes until a lump-free, homogeneous mixture is obtained. Never use more than the maximum water quantity.
- Once the grout is ready mixed, apply immediately. Do not prepare more material than can be used within the open time of the material.
- When the grout starts to set, remix for 1 minute but never add more water.

3. Application

- The material is always poured or pumped from one side or corner in one continuous application. A dense and non-absorbent formwork is necessary. To prevent air entrapment, sufficient ventilation holes must be provided.
- Do not vibrate.

4. Curing

- After treatment has to be according EN 13670 in combination with DIN 1045-3.
- In warm or windy conditions protect the applied material from dehydration by mist-spraying with clean water or protective tarpaulins until the initial set has taken place.
- In cold conditions cover with insulated tarpaulin, polystyrene or other insulating material. Protect surfaces against frost and rain until final set has taken place.
- In cold, humid or unventilated areas it can be necessary to allow for a longer curing period, or to introduce forced air movement to avoid condensation. Never use dehumidifiers during the curing period or within 28 days after application.
- Formwork should not be removed for at least 48 hours.

- The after-treatment should be at least 5 days.
- The after-treatment should take place as soon as possible, at the latest when the material surface starts to set.
- As an alternative to the conventional treatment methods, suitable curing agents can be used to prevent rapid water loss.

5. Cleaning and maintenance

- Mixing and application equipment should be cleaned immediately with clean water. Hardened material needs to be removed mechanically.

6. Special remarks

- Cementitious materials can lead to incompatibilities under certain conditions in combination with non-ferrous metals (such as aluminium, copper, zinc).
- Low temperatures reduce flow and delay the early strength development. High temperatures accelerate the strength development and decrease the open time of the material.
- Depending on geometry and application thickness, reinforcement steel can be necessary.
- Lateral grouting overhang should be kept as low as possible (approx. 20–50mm).

Health and Safety

BETEC®250 W is a product based on cement and can therefore cause burns to skin and eyes, which should be protected during use. Wear gloves and protective eye shields. Wearing a dust mask is advised. Treat splashes to eyes and skin immediately with clean water. Consult a doctor when irritation continues. If accidentally ingested, drink water and consult a doctor. Users must comply with all risk and safety phrases. MSDS's can be obtained from GCP Germany GmbH. GISCODE ZP1.

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