

Nanodur Concrete for Façade Systems

FAQ - frequently asked questions

September 2016

What is Nanodur concrete?

Nanodur concrete is an Ultra High Performance Concrete -UHPC-. Basis is the cementitious binder Nanodur Compound 5941 from the Dyckerhoff GmbH in Germany. The concrete has to be mixed in a professional prefab plant with local available aggregates (sand and natural stone). Admixtures as superplasticizer and shrinkage retarder can be sourced locally or imported from Germany. Nanodur concrete is a self-compacting concrete -SCC-, dry concrete recipes with low slump are not possible.

Does a premix exist there?

There is no dry premix available, where only water has to be added. Nanodur Concrete is a product for professionals and not for do-it-yourself purposes.

Can we buy ready-made façade panels in Germany?

No German prefab plant is willing to export. Main problem is the fact that there is no possibility of replacement in case of damage during transport or erection within a short time. Further it is more economical to ship the binder alone rather than the finished product.

Prices?

For the Prices of Nanodur Compound 5941 and related consultancy see the brochure "Nanodur Export Instructions". In Germany the material price (without fibers) for 1 m³ of concrete is about 550 €. If you can solve your technical task already with ordinary concrete or with GRC-Panels, Nanodur concrete is no more competitive as well as any other UHPC.

Can I adjust the recipe to fit my needs?

The binder is available in grey or white. Recipes can be individually adapted, e.g. recipes only with sand (maximum diameter: 2 mm). Colorful aggregates, pigments, plastic fibers, steel fibers etc. can be added to meet your individual requirements. The surface can be washed-out concrete, sand blasted concrete, photo print and so on. Please note that the amount of cement paste represents about 50 % of the visible area, the size of aggregates is limited to a maximum diameter of about 8 mm.

Steel Fibers?

In some applications such as elements for blast protection, one needs steel fibers. Also some codes recommend using steel fibers. Common fiber content is between 60 kg/m³ ordinary steel fibers up to 240 kg/m³ of micro fibers. Steel fibers cost between 1.50 to 2.50 €/kg and influence the price of the final product. Fibers have also an effect on the viscosity and workability of the fresh concrete.

What does a prefab plant cost?

If you already have a plant, you have no additional investment with the exceptions of a few adjustments. You don't need special mixing equipment.

Batching and mixing plant	0.75 to 1.5 Mio €
Moulding/pallet carousel system	0.1 to 5.0 Mio €
Building and stockyard	1.0 to 5.0 Mio €

Which panel thickness is possible?

Only cladding systems are applicable.

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| ▪ Panels with thickness of 8 mm
No fibers | max size 0.5 m x 0.8 m
fixing with nails or screws |
| ▪ Panels with 30 mm to 50 mm
No fibers | max size 2.0 m x 4.0 m
fixing with anchor pins like natural stone
or fixing with undercut anchor |
| ▪ Panels with 40 mm to 70 mm
Reinforced or steel fibers | max size 4,0 m x 6,0 m
fixing with anchorage systems e.g. Halfen |

Where can I buy Nanodur Compound?

The material is protected by patents. The product is produced in Germany and sold directly by Dyckerhoff worldwide. There are no local dealers. The minimum quantity is a full silo truck or a full container with paper bags.

Who is my partner?

Dyckerhoff delivers the powder and gives you advice for the recipe. Durcrete does the consultancy for the product and the production. We are partners, sharing our competence to do the best job for the client. So it does not matter if you go directly to Dyckerhoff or have the business conversation with durcrete. You have the two partners on your side.

I am interested, what is the next step?

The first step is a mutual discussion about your challenges and our solutions.

- You are invited to come to the central laboratory of Dyckerhoff GmbH in Wiesbaden/Germany near Frankfurt Airport. You will see a mixing demonstration and can bring some aggregates or other samples with you. This is free of charge.
- The technology partner durcrete visits you in your headquarter or production plant. Time for first consultation is free, but flight and travel expenses have to be paid in advance. This will be a lump sum of 2,000 € within Europe and 5,000 € worldwide (except for Australia). Time frame depends on issuance of visa.