

Title (en)  
PRODUCTION METHOD AND STRUCTURAL ELEMENT

Title (de)  
HERSTELLUNGSVERFAHREN UND BAUELEMENT

Title (fr)  
PROCEDE DE FABRICATION ET ELEMENT DE STRUCTURE

Publication  
**EP 2092130 A2 20090826 (FR)**

Application  
**EP 07871863 A 20071214**

Priority  
• FR 2007002072 W 20071214  
• FR 0611197 A 20061221

Abstract (en)  
[origin: FR2910502A1] The process for manufacturing a structural element (10), comprises assembling two flat ultra high performance concrete modules (12) by embedding together on their opposite sides, and thermally treating sides of the modules. The concrete has fibers and a compressive strength of greater than 80 MPa. The heat treatment is carried out by sanding, blasting or applying a retarder and then washing after producing the module. The structural element is reinforced by externally or internally reinforcing the modules. The process for manufacturing a structural element (10), comprises assembling two flat ultra high performance concrete modules (12) by embedding together on their opposite sides, and thermally treating sides of the modules. The concrete has fibers and a compressive strength of greater than 80 MPa. The heat treatment is carried out by sanding, blasting or applying a retarder and then washing after producing the module. The structural element is reinforced by externally or internally reinforcing the modules. The concrete is obtained from a mixture of: common Portland cement, high-performance Portland cement, high-performance and rapid hardening Portland cement and Portland cement with low tricalcium aluminate content of normal type or with high performance and rapid hardening, a glass microsilica (10-30 wt.%) with grains having a large diameter of 0.5 microns and obtained as a byproduct in zirconium industry, a water reducing superplasticizer and/or a fluidifying agent (0.3-3 wt.%), and a stone sand constituted of quartz grains that have large diameter of 0.08-1 mm and other adjuvants; cement with a particle size corresponding to a harmonic diameter of 3-7  $\mu$ m, a mixture of calcined bauxite sands of different size, finest sand having an average size of less than 1 mm and the coarser sand with an average particle size of less than 10 mm, silica fume of which 40% of the particles are smaller than 0.1  $\mu$ m, an anti-foaming agent, water reducing superplasticizer, fibers and water; Portland cement, granular elements, fine pozzolanic reaction elements, metal fibers (1-4 vol.%), dispersant and water; 100 p of Portland cement, 40-70 p of fine sand with a grain size of 150  $\mu$ m, 20-30 p of amorphous silica with a grain size of less than 0.5  $\mu$ m, 30-50 p crushed quartz with a grain size of less than 10  $\mu$ m, 45-80 p of steel wool, a fluidifying agent and 15-22 p of water; or cement (8-24%), granular elements having a maximum grain size (Dmax) of less than 1 mm, 2.5-35 vol.% of pozzolanic reaction elements having an element particle size of less than 0.5  $\mu$ m and constituents improving the toughness of the matrix among acicular or platelet shape elements having an average size of 1 mm and a dispersant. The overweighing granular elements have a maximum grain size (D) of  $\geq$  800  $\mu$ m and an individual length (l) of 4-20 mm. Ratio (R) between the average length (L) of fibers and the maximum size (D) of granular elements is 10. An independent claim is included for a structural element.

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Citation (search report)  
See references of WO 2008087299A2

Citation (examination)  
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• EP 0934915 A1 19990811 - QUILLERY & CIE ENTREPRISE [FR], et al  
• FR 2708263 A1 19950203 - BOUYGUES SA [FR]  
• T O M CIMBETON: "G11 Fiches techniques tome 2 : Les bétons : formulation, fabrication et mise en oeuvre", 31 October 2006 (2006-10-31), XP055461935, Retrieved from the Internet <URL:http://cb-artcontemporain.net/images/base/cimbeton%20betons\_formulation\_fabrication2.pdf> [retrieved on 20180322]

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