Reactive powder concrete (RPC) is characterised by an optimised microstructure due to precise grading of all particles. Its high mechanical performance allows a significant reduction in the thickness of concrete elements. Incorporation of industrial wastes and by-products contributes to the reduction of the clinker content and lower embodied energy. According to the application, it can be fine tuned with regards to workability, mechanical properties (e.g. reinforcement) and surface functionalisation (e.g. hydrophobicity). The material is developed by **CBI** and **Acciona**.

Name of product	Reactive Powder Concrete (RPC)
Function of product	Outer/Inner layer of sandwich facade elements
Form	Bulk material (fluid/solid)
Raw Material	Cement, Sand, Water, Fly-ash, Slag, Silica fume, Superplasticizer

Properties

Property	**Unit**	**Value**	**Test methods/standardisation**
Chemical/physical properties			
Bulk density	kg/m^3	2400	EN 12390-7
Composition of materials			
Structures and construction			
Dimensions of product	m		Customised dimensions
Mechanical properties			
Compressive strength	N/mm^2	> 140	EN 12390-3
Flexural strength	N/mm^2	8-10	EN 12390-5
Tensile strength	N/mm^2	> 5	RILEM TC 162-TDF
Shrinkage	mm/m	0.4	"mechanical strain gauge"
Thermal properties			
Thermal conductivity	W/(m·K)	0.860	EN 12667
Specific heat capacity	J/(g·K)		
Hygrothermal properties			
Water vapour diffusion resistance factor			
Moisture buffer value	$kg/(m^2 \cdot \%RH)$		
Water vapour permeability	kg/(m·s·Pa)		
Acoustic properties			
Sound absorption coefficient	%		
Sound reduction index	dB		
Fire Safety			
Reaction to fire			Spalling controlled using PP fibers
Resistance to fire	Minutes		
Environmental properties			
Embodied energy (% renewable)	MJ/kg	1.27 (7.8%)	
GHG emissions	kg CO_2 eq	0.21	per kg
TVOC (SVOC)	$\mu g/m^3$		
Radon	Bq/m^3		
Photocatalytic capacity			Possibility for surface functionalisation