

Technical Data Sheet*

Ductal® Envelope White

A technology of LafargeHolcim
ductal®

Date	June 2021	Written by	S. HERBÉ
Version	EN	Validated by	J.N. RIVOAL

* according to the standard NFP 18-470 « Ultra High Performance Fiber-Reinforced Concrete – Specifications, performance, production and conformity »

General characteristics	
Nominal formula and mixing process	Cf. Mix design sheet
Size of the largest aggregate Dupper	0,6 mm
Length of the longest fibers Lf	12 mm
Class associated with the type of fibres	Type A
Casting method	Placement by self-weight or piston pump

Properties at fresh state	
Target value of slump flow	240 ± 18 mm
Working time at 20°C	1h
Air content (entrapped air)	3,0%
Curing after casting	As long as it is possible, the Ductal element has to be kept at 20°C. A curing product has to be applied on the exposed surfaces and these surfaces have to be protected to limit desiccation.

Mechanical properties at 28 days	
Characteristic compressive strength f _{ck}	100 MPa
Mean value of elastic limit under tension f _{ctm,el}	7,5 MPa
Characteristic value of elastic limit under tension f _{ctk,el}	6,7 MPa
Mean value of post-cracking strength under tension f _{ctfm}	4,6 MPa
Characteristic value of post-cracking strength under tension f _{ctfk}	3,2 MPa
Mean value of Young's modulus E _{cm}	46 GPa

Properties at hardened state	
Density	2300 kg/m ³
Coefficient of thermal expansion	10,5 µm/m/°C
Total shrinkage at 90 days	1,4 ± 0,15 mm/m

Other properties	
Poisson's ratio	0,2
Creep coefficient	1
Reaction to fire class	A2-s1,d0