



JS1000

field-cast joint fill solutions for precast deck panel bridges

Ductal® JS1000 offers a combination of superior properties including strength, durability, fluidity and increased bond capacity. By utilizing these superior properties in conjunction with precast deck panels, engineers can create optimized solutions for advanced precast bridge deck systems – with simplified fabrication and installation processes.

Reinforced with steel fibers, Ductal® JS1000 is significantly stronger than conventional concrete and performs better in terms of abrasion and chemical resistance, freeze-thaw, carbonation and chloride ion penetration.

Because of its optimized gradation of the raw material components, Ductal® is also denser than conventional concrete. This “denseness”, along with nanometer sized non-connected pores throughout its cementitious matrix, attributes to its remarkable imperviousness and durability against adverse conditions or aggressive agents.



PHYSICAL PROPERTIES

Characteristic Values for Design						
	Test Data				Design Values	
	Mean		Standard Deviation			
	MPa	psi	MPa	psi	MPa	psi
Compression	140	20,000	10	1,400	100	14,500
Flexural	30	4,300	5	700	-	-
Direct Tension f_{ij}	8	1,160	1	145	5	725
Youngs Modulus	GPa	ksi	GPa	ksi	GPa	ksi
	50	7,200	2	300	45	6,500

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DURABILITY

- Carbonation penetration depth <0.5 mm
- Freeze/thaw (after 300 cycles) 100%
- Salt-scaling <0.10 g/m²

OTHER PROPERTIES

- Density 2.4 – 2.6 S.G.
- Capillary porosity (>10mm) <1%
- Total porosity 2 – 6%
- Creep coefficient 0.2-0.5

COMPONENTS

- A) Premix - silica fume, ground quartz, sand, cement
- B) High tensile steel fibers - 0.2 mm (0.008 in) diameter x 14 mm (0.5 in) long (>2000 MPa/ 290 psi)
- C) Admixture - high range water reducer/ 3rd generation
- + Water and/or ice

BATCHING

High shear mixers and an ambient temperature above 16°C (60°F) are recommended to successfully produce Ductal® JS1000. Onsite technical assistance by a Lafarge representative is recommended.

PLACING

Ductal® JS1000 can be placed by pouring with the use of a bucket, wheelbarrow or buggy. Any exposed Ductal® surfaces should be covered with poly or vapor barriers to prevent surface dehydration.

JOINT REINFORCING

To minimize any corrosion potential of the reinforcing between the precast panel and joints, non-corrosive rebar (such as GFRP or stainless steel) may be used. Black rebar reinforcement may also be utilized for bottom mat connection.

DESIGN

The high strength of Ductal® JS1000 allows for reduced joint widths. When designing a joint using Ductal® JS1000, the characteristic design values can be reached within 96 hours of casting -- as long as ambient temperatures above 16°C (60°F) are ensured. Please contact a Lafarge representative when designing joints with Ductal® JS1000.

Disclaimer: The values indicated above depend on the product characteristics, experimentation method, raw materials, formulae, manufacturing procedures and equipment used; all of which may vary. This data sheet provides no guarantee or commitment that the values set forth above will be achieved in any particular application of Ductal®. Ductal® is a registered trademark and may not be used without permission. The ultra-high performance material that is Ductal® and its various components are protected by various patents and may not be used except pursuant to the terms of a license agreement with the patent holder.

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Add value with Ductal® JS1000

- improved durability
- increased usage life
- superior freeze/thaw resistance
- impact & abrasion resistance
- reduced joint width and complexity
- dimensional stability
- flexural strength
- lower permeability
- superior toughness
- low chloride ion diffusion
- ductility
- faster construction
- improved resistance to continuous flexing across the joints (from truck loads)
- reduced maintenance
- extremely low porosity
- reduced traffic disruption & risk
- cost effective