

# Ductal®

## Rainscreen Cladding panel solution

DURABILITY TO BETTER SERVE CREATIVITY



 A member of  
**LafargeHolcim**

 **LAFARGE**  
Building better cities™

**LafargeHolcim**, a world leader in building materials and solutions, has developed a new rainscreen cladding product offering made with our **Fiber-Reinforced Ultra-High Performance Concrete known as «Ductal®»**. As such, we are able to propose, in a competitive offer, the superior qualities and performances of a Ductal® rainscreen cladding solution.

Using a highly effective production tool specially designed to manufacture thin, flat panels, it is now possible to specify a Ductal® rainscreen cladding system at a **cost that is on par with conventional rainscreen cladding systems**, while providing high quality surface finish.

**Ductal® also boast exceptionally high durability due to its extremely low porosity and is the only mineral product, A1 or A2s1d0 classified**, capable of producing large, thin, flat panels in a variety of colors and textures.

# Contents

INTRODUCTION

Page 04

TECHNICAL CHARACTERISTICS

Page 07

COLORWAYS

Page 08

TEXTURES

Page 09

THE DUCTAL® SOLUTION KEY FEATURES

Page 10

Appearance

Durability

Low Maintenance and Easy to Clean

Strength and Resilience

Environmental Focus

Ductal® panels can be used alone or in an External Thermal Insulation (ETI) system - an effective response to the latest thermal regulations.

Comfort and energy savings have made External Thermal Insulation one of the best methods for dealing with the challenges of current energy requirements and meeting the new thermal performance regulations.

An ETI solution is installed behind an exterior wall cladding system involving the creation of an insulated envelope which contributes to the following functions and benefits:

- Visual appearance;
- Heat and sound insulation;
- Resistance to impact, particularly at the ground level;
- Air and water tightness;
- Load transfer from the outside, towards the structure.

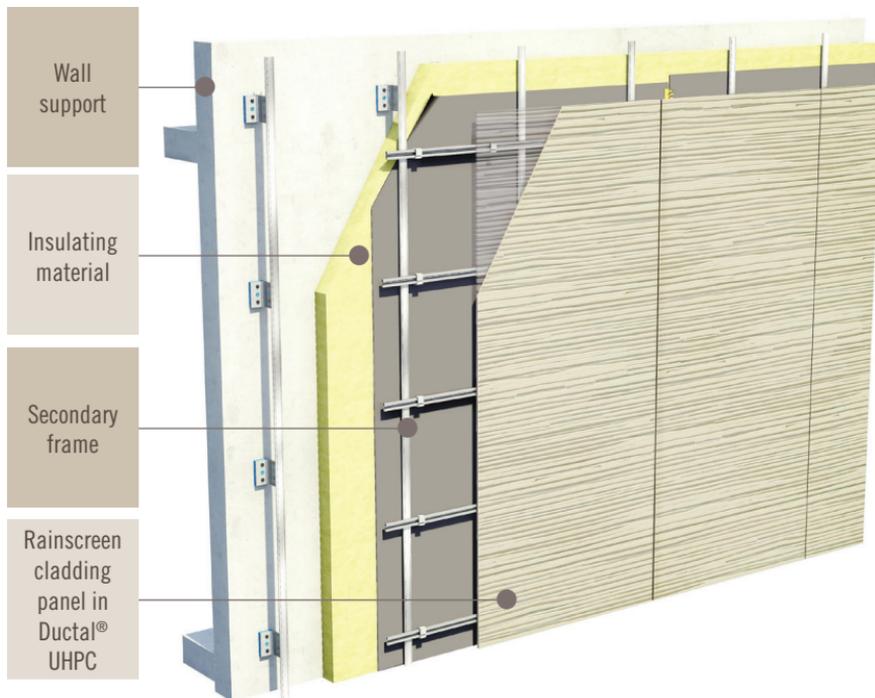
The air gap between the ETI solution and rainscreen cladding panel system helps to eliminate the effects of condensation and expel moisture.

Even though facades are now required to perform new functions, they must continue to satisfy the creative requirements of designers and architects while satisfying the need for sustainable and cost effective solutions.



## Principle of External Thermal Insulation with rainscreen cladding panels

### Hidden fastening





To meet those challenges, LafargeHolcim offers a **rainscreen cladding panel solution made with Ductal®**.

**Ductal®**

Ductal® is LafargeHolcim's fiber-reinforced, Ultra-High Performance Concrete.

It is specially blended with a fine aggregate that gives it exceptional texture. Its optimized granular matrix guarantees compactness and self-consolidating rheology.

Extremely low porosity contributes to the material's outstanding durability while its ductile behavior is achieved from the addition of fibers (organic or glass in this application).

LafargeHolcim has developed a product that combines high-quality manufacturing technologies and smart solutions.

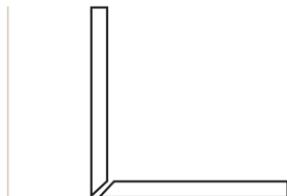
Produced in an industrialized manufacturing process, Ductal® concrete rainscreen cladding panels provide an innovative solution for ventilated facade systems. The attachment systems incorporate standard principles typically used on a variety of rainscreen cladding solutions. This enables the panels to be used alone or combined with other materials.

3 standard panel dimensions	1,2 x 1,2 m	<i>Sub-formats: any size possible; obtained by cutting within standard formats. The cut-outs are performed at the plant.</i>
	1,2 x 2,4 m	
	1,2 x 3,6 m	
Thickness	15 - 16 mm Non-planar geometry available on request	
Weight	35 - 37 kg/m <sup>2</sup>	
Fire classification	A1 (EU legislation) and A2s1d0 (EU legislation) according to the formulation	
Fixing system	Invisible fixations: rail-mounted staples Visible fixations using screws	
Certification	ATEX type A	
Installation	Q4 possibility Anti-graffiti treatment	
Aesthetic	16 colors, 3 finishes and 5 textures	

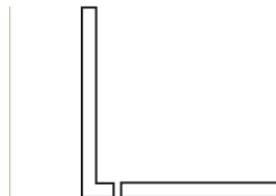
## Corner Treatments



Cross corner



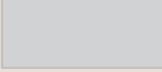
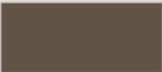
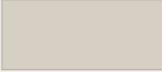
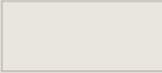
Beveled corner



One-piece corner

# Colorways

Other colors available on request  
*Photos and colors non-contractual*

	Black		Red
	Anthracite		Fawn
	Light gray		Peat
	Ivory		Beige
	Off white		Sienna
	White		Sand
	Blue		Green



Smooth



Woven



Brushed



Wood



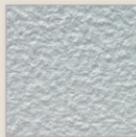
Bush-hammered



Stone



Diamond



Orange skin

Ductal® is the only mineral product capable of producing large, thin, textured panels with A1 or A2s1d0 fire classification.

### Appearance

There are several different designs with a range of colors, textures and shapes to choose from while retaining the mineral nature and authenticity of a concrete rainscreen cladding.

- Colorfast and weather-resistant

A wide range of colors are achieved by adding pigments directly to the mixture; a large range of colors is available. Colors are then sustainable.

- Textures

Ductal®'s self-consolidating behavior and fine-grained texture results in a surface finish that replicates mold materials with the greatest precision. In addition to these textures, bush-hammered, brushed and orange skin finishes are also available.

- Special features

Non-planar geometries and one-piece corners are available on request.

- Panel sizes

An entire floor height up to 3.6 m can be covered with a single panel.

### Durability

Made with fine, high-grade aggregates, Ductal® is a fiber-reinforced Ultra-high Performance Concrete that with one of the lowest porosities of any mineral material commercially available. This extremely low porosity gives it exceptional durability compared with other mineral materials, including: resistance to abrasion, carbonation, penetration of chloride ions, freeze/thaw, etc.

## Low Maintenance and Easy to Clean

Depending on the building location and related constraints such as pollution and grime, a simple cleaning, carried out by a specialised company, is recommended. Damaged panels can be replaced and several surface treatments are available (using specialized products supplied by a partner company):

- Water repellent - providing protection against efflorescence and soiling.
- Anti-graffiti - for publicly accessible areas.
- Glazing: for color customization and shine.



Collective housing, France - Photograph: Manuel Panaget, © LaFargeHolcim - Philippon-Kalt Architects

## Strength & Resilience

Reaction-resistance to fire

Ductal® UHPC provides excellent fire performance: according to the formulation, classified «A1» or «A2s1d0» under the European classification system. Ductal® UHPC panels do not require any additional treatment or chemical coatings for fire protection and can therefore be used with any type of building that must comply with specific legislation, i.e., public or high-rise buildings.

Impact strength

The mechanical performance of Ductal® UHPC gives the panels exceptional strength and impact resistance.

Panels use on ground floors are subject to stringent impact strength requirements. If required, a specific constructive design is possible.

## Environmental Focus

A life cycle analysis and a life cycle cost analysis have been carried out on 3 cladding panel

solutions: Ultra-High Performance Concrete (UHPC), compact laminate (HPL) and aluminum.

- Life cycle analysis (LCA)

The life cycle analysis was performed on the cladding panel alone; the insulation system and structure were not taken into account. The results are expressed in square meters of panel. The study was carried out on an 8-storey reference building (all 3 solutions being designed to achieve the same thermal performance see page 14).

For France, an Environmental Product Declaration (EPD) and LEED/BREEAM/ HQE documents have been drawn up.

- Life cycle costs analysis (LCC)

As with the LCA, which factors in the full range of a product's environmental footprint throughout its life cycle, the LCC is used to calculate all the costs generated by a product throughout this same life cycle. The total product cost takes into account its acquisition cost, use and maintenance cost as well as its removal cost.

Thanks to durability, the Ductal® rainscreen cladding panel reduces use, maintenance and removal costs to a very low level.

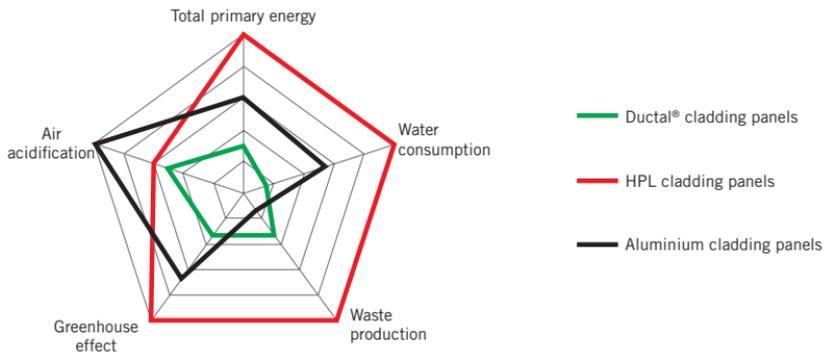
UHPC materials boast outstanding durability and low maintenance requirements, significantly extending the life cycle of buildings or infrastructures



Platform Basket Offices, Italy - Architect Lauro Sacchetti Associati - Photographer Marco Caluz

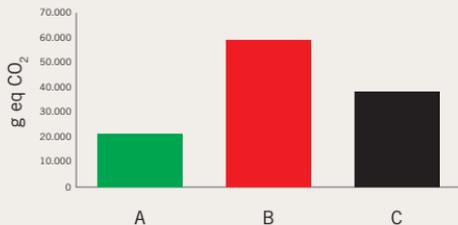
## Comparison of environmental impacts

The figures may vary depending on the formula and the product used



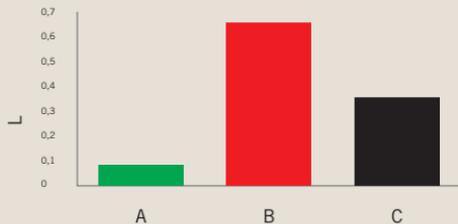
### Greenhouse gas emissions

Ductal® rainscreen cladding panels have very low levels of greenhouse gas emissions compared to HPL and Aluminum cladding solutions (2 to 3 times lower).



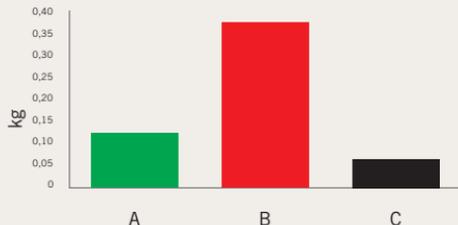
### Water consumption

Ductal® rainscreen cladding panels use 6 times less water than HPL solutions and 3 times less than aluminum solutions.



### Waste production

The aluminum solution shows the best result, mainly due to its low weight (recycling rates are comparable). The HPL solution generates far more waste, mainly during the production phase.





Ductal®  
ductal@lafargeholcim.com  
www.ductal.com

