NATURAL SLATE RAINSCREEN CLADDING SYSTEMS
Developed alongside Danish architects and contractors CUPACLAD® systems offer a revolution in cladding applications for natural slate. The systems offer a new durable, sustainable and easy to fix alternative with a unique character.

The CUPACLAD® rainscreen cladding systems have been developed from the necessity of adapting natural slate to new architectural trends and styles that demand a more sustainable approach. The slate used in our systems is a natural product carefully selected for its durability and characteristics from our 16 quarries. The CUPACLAD® systems combine the efficiency of ventilated cladding and the properties of natural slate offering a competitive and sustainable alternative for all cladding requirements. The CUPACLAD® range offers a number of alternatives guaranteeing a perfect adaptation for a variety of projects.

The fasteners used for the CUPACLAD® systems have been developed following an in-depth design process to ensure a quick and easy installation.

CUPACLAD® offers a new world of design possibilities using natural slate.
NATURAL SLATE, A UNIQUE MATERIAL

Slate is a natural product of unparalleled technical properties that adds value to any project.

DURABILITY

Used since Roman times, natural slate is long-lived, remarkably durable, fire resistant and naturally waterproof. Its aesthetic and technical properties remain unaltered, keeping the elegance and character for much longer than any man made alternatives.

Each slate is handcrafted by our skilled “splitters”, with no additional treatment required. Natural slate is only subject to extraction and mechanical transformation; there are no chemical or heating processes involved as with alternative materials. This and its unparalleled durability result in natural slate being a material with an extremely low carbon footprint.

EXCLUSIVE SELECTION of Natural Slate for The CUPACLAD® systems

The slates used for our systems are a natural product carefully selected for their technical properties and character from our 16 quarries. We carry out stringent quality control processes to guarantee its exceptional performance for all types of cladding design requirements. Our Exclusive Cladding Range ensures a quick and easy installation due to our selection process for regularity and flatness (against other standard roofing selections). They are also held in a specific position depending on the CUPACLAD® system of choice.

CUPA PIZARRAS have been quarrying natural slate for more than 120 years. Our quality control experts choose the perfect slate for each system based on wind load and impact criteria to guarantee its performance as a cladding material. Our Exclusive Cladding Range meets and exceeds the highest European quality standards.

ENVIRONMENTALLY FRIENDLY

Characterized by its natural color and individual texture, natural slate is a material that can enhance the value and beauty of any property. Every slate is unique giving an unparalleled character to any project remaining unaltered for many years.

CUPACLAD®, THE SUSTAINABLE CLADDING

CUPACLAD® natural slate systems are the perfect alternative for an efficient and sustainable cladding.

Due to the nature of the slate production process, our CUPACLAD cladding has a lower environmental impact than other man made alternatives. 5 times less CO2 emissions than fiber cement, 324 times less water absorption than zinc cladding and 10 times less energy consumption than clay.

LIFE-CYCLE ASSESSMENT

Life-cycle assessments allow measurement of the environmental footprint from a cradle to grave perspective. They confirm CUPACLAD® as a sustainable option for cladding due to the use of natural slate versus man-made products.
THE EFFICIENCY OF A RAINSCREEN CLADDING

Now considered the most efficient system for construction envelope purposes. The combination of a ventilated system together with an insulation system gives numerous advantages in terms of thermal and acoustic properties. It avoids thermal bridges and condensation issues.

The rainscreen cladding system consists of a load-bearing wall, a layer of insulation and a covering material fixed to the building with the help of a supporting structure. This system creates a gap between the insulation and covering material called an air cavity. For optimum performance the system must allow constant air circulation through the cavity creating a natural convection process. Warm air inside the cavity is lifted and released to the exterior resulting in a continuous ventilation cycle. This so called ‘chimney effect’ is one of the advantageous characteristics of a rainscreen cladding.

MAIN ADVANTAGES:

Elimination of Humidity
Rainwater penetration is greatly reduced and any moisture is removed through the constant ventilation, reducing the risk of any condensation.

Structural Movement Reduction
The air cavity avoids temperature variations resulting in less pronounced structural movements. This reduces the risk of cracks and other structural issues.

Savings
Thermal efficiency is increased due to the cooling effect in summer and greater heat retention in winter.

Durability
The cladding material is kept dry due to continuous ventilation. Many issues related to humidity (efflorescence etc.) are reduced resulting in a longer life span of the installation.

CUPACLAD® SYSTEMS

CUPACLAD® systems have been developed to be able to adapt to any kind of project combining alternative fastening methods and slate formats.

101 SERIES
Invisible fastening

101 Logic
101 Random
101 Parallel

201 SERIES
Visible fastening

201 Vanguard

CUPACLAD® systems are now considered the most efficient system for construction envelope purposes. The combination of a ventilated system together with an insulation system gives numerous advantages in terms of thermal and acoustic properties. It avoids thermal bridges and condensation issues.

The rainscreen cladding system consists of a load-bearing wall, a layer of insulation and a covering material fixed to the building with the help of a supporting structure. This system creates a gap between the insulation and covering material called an air cavity. For optimum performance the system must allow constant air circulation through the cavity creating a natural convection process. Warm air inside the cavity is lifted and released to the exterior resulting in a continuous ventilation cycle. This so called ‘chimney effect’ is one of the advantageous characteristics of a rainscreen cladding.

CUPACLAD® systems have been developed to be able to adapt to any kind of project combining alternative fastening methods and slate formats.
101 SERIES FASTENING METHOD

Screws are made of stainless steel with a large flat head that enables an easier and more secure fixing.

Slates are fastened using our specially designed screws self-drilling to ensure optimal installation while remaining completely invisible to minimize design impact.

CUPACLAD® 101 Logic features a balanced design that highlights the unique texture and looks of the natural slate.

CUPACLAD® 101 Logic system utilizes 16 x 8 slates fitted horizontally with invisible fasteners.

<table>
<thead>
<tr>
<th>Slate size</th>
<th>16 x 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal thickness</td>
<td>1/4 - 3/8</td>
</tr>
<tr>
<td>Slates per ft²</td>
<td>1.67</td>
</tr>
<tr>
<td>Weight per ft² (slate)</td>
<td>≤ 6.14 lb/ft²</td>
</tr>
</tbody>
</table>
CUPACLAD® 101 Random

DYNAMIC AND CREATIVE

CUPACLAD® 101 Random combines different slate sizes, creating a dynamic and unique design.

CUPACLAD® 101 Random features 20 x 10, 20 x 8 and 20 x 6 slates fitted horizontally with invisible fasteners.

<table>
<thead>
<tr>
<th>Slate size</th>
<th>20 x 10</th>
<th>20 x 8</th>
<th>20 x 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal thickness</td>
<td>1/4 - 3/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slates per ft²</td>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight per ft² (slate)</td>
<td>≤ 6.14 lb/ft²</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CUPACLAD® 101 Parallel

UNIFORM AND REGULAR

CUPACLAD® 101 Parallel features a regular design with even joints. This results in a uniform and consistent layout that highlights the character of natural slate.

CUPACLAD® 101 Parallel features 16 x 10 horizontally aligned slates fitted with invisible screws.

<table>
<thead>
<tr>
<th>Slate size</th>
<th>16 x 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal thickness</td>
<td>1/4 - 3/8</td>
</tr>
<tr>
<td>Slates per ft²</td>
<td>1.43</td>
</tr>
<tr>
<td>Weight per ft² (slate)</td>
<td>≤ 6.14 lb/ft²</td>
</tr>
</tbody>
</table>
**Fastening the metal brackets**

The metal brackets are installed in alternate courses on each side of the vertical profile. It is required to use both fixed point metal brackets (on the upper end of each profile) and brackets with an sliding point to allow for expansion of the profile.

**Installation of insulation**

Choose the most suitable insulation material based on the project requirements. Install in accordance with the manufacturers recommendations.

**Installing the flashings**

Install a ventilation flashing at the first course of the cladding and the metal flashings at single points (edges, window frames, etc).

**Fasten the “L” shaped profiles**

Fasten the vertical profiles to the metal brackets allowing at least 3/4 for an air cavity. The vertical profiles must be perfectly level before fitting the remainder of the system components.

**Installing the CUPACLAD® 101 horizontal profiles**

Install the horizontal profiles with the vertical ones at each intersection. The horizontal profiles must be perfectly level as their position will dictate the final position of the slates. Fit also an inverted 101 horizontal profile at the first course of the cladding to allow the fastening of the first course slate.

**Installing the first course slate**

Cut a slate to a height of 3 1/4” approx. Fasten it inverted matching the bottom edge of the slate with the first 101 horizontal profile.

**Fastening the slates with the self-drilling CUPACLAD® 101 screw**

Each slate must be aligned with the upper edge of the profile and fitted with two stainless steel CUPACLAD® 101 self-drilling screws.
1. Pizarra natural CUPA PIZARRAS
2. Pizarra de arranque
3. Tornillo autotaladrante CUPACLAD
4. Perfil horizontal CUPACLAD® 101
5. "L" shaped vertical profile 20 x 24
6. Tornillo autotaladrante INOX
7. "Fixed point" metal bracket
8. "Sliding point" metal bracket
9. Aislante
10. Muro portante
11. Ventilated flashing
12. Top metal flashing
13. Sill metal flashing
14. Metal lintel flashing
15. Metal jambs flashing
16. Metal flashing

TECHNICAL DETAIL CUPACLAD® 101 Random
CUPACLAD®
SERIE 101
Logic, Random and Parallel
**FASTENING SYSTEM**

CUPACLAD® 201 Vanguard stainless steel clips have been designed by our R&D department. Every slate is fastened to the horizontal profile using two clips that remain partially visible once the system is installed.

**PERFECT RESULT**

The stainless steel clips have flanges that work just like a spring absorbing differences in the thickness of the slates resulting in a perfect leveled cladding surface.

**EASE OF INSTALLATION**

Our metal rails feature small holes in them to mark the exact position where the clips should be placed. This avoids the necessity of drawing vertical guidelines and individual fastening for the clips.

**PATENTED SYSTEM**

CUPACLAD® 201 Vanguard is a patented system developed by our R&D department that is designed to meet the highest technical requirements of the construction industry.

**VISIBLE FIXING SYSTEM**

CUPACLAD® 201 series is identified by the use of stainless steel visible fasteners. The contrast between natural slate and steel gives this cladding a unique modern appearance.

**CUPACLAD® 201 Vanguard**

The stainless steel clips have flanges that work just like a spring absorbing differences in the thickness of the slates resulting in a perfect leveled cladding surface.

**MODERN AND EFFICIENT**

CUPACLAD® 201 Vanguard main feature is the combination of big slates and stainless steel brackets giving as a result a clean combination of contemporary appeal.

**CUPACLAD® 201 Vanguard features**

- 24 x 12 cm slates fitted horizontally with visible fixings.

**Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slate size</td>
<td>24 x 12</td>
</tr>
<tr>
<td>Nominal thickness</td>
<td>1/4 - 3/8</td>
</tr>
<tr>
<td>Slates per ft²</td>
<td>0.64</td>
</tr>
<tr>
<td>Weight per ft² (slate)</td>
<td>≤ 4.10 lb/ft²</td>
</tr>
</tbody>
</table>
Fastening the metal brackets
The metal brackets are installed in alternate courses on each side of the vertical profile. It is required to use both fixed point metal brackets (on the upper end of each profile) and brackets with a sliding point to allow for the profile movement.

Installing of insulation
Choose the most suitable insulation material based on the project requirements. Installing in accordance with the manufacturers recommendations.

Installing the flashings
Fasten a ventilated flashing at the first course of the cladding and the metal flashings on “singular” points (edges, window frames, etc).

Installing the slates to the top of the cladding
At the top of the cladding when joining the gutters or flashing it is necessary to use the 201V top profile to which the slate must be fitted with two self-drilling screws or rivets.

Fastening the “L” shaped vertical profiles
Fasten the vertical profiles to the metal brackets allowing at least 3/4” for an air cavity. The vertical profiles must be perfectly level before fitting the rest of the system components.

Fastening the CUPACLAD® 201 Vanguard horizontal profiles
Install the horizontal profiles with the vertical ones at each intersection. The gap between horizontal profiles when fitting a 24 x 12 slate must be 10.” The horizontal profiles must be perfectly level as their position will dictate the final position of the slates.

Installing the slates with the special CUPACLAD® 201 Vanguard clips
The clips are fitted to the holes in the horizontal profiles. Each slate is supported by two clips on the lower edge while fitted with another two on the top.
1. CUPA PIZARRAS natural slate
2. CUPACLAD® 201-V Clip
3. Horizontal CUPACLAD® 201-V profile
4. L-shaped 50X60 vertical profile
5. CUPACLAD® 201-V top profile
6. Metal bracket, “fixed point”
7. Metal bracket “sliding point”
8. Self-drilling stainless steel screws
9. Insulation
10. Load bearing wall
11. Ventilated profile
12. Top metal flashing
13. Sill metal flashing
14. Metal lintel flashing
15. Metal jamb flashing
16. Metal flashing
CUPACLAD®

201 Vanguard
The dimension of the metal bracket will depend on the thickness of the insulating material to be installed in each case and the spacing between should be specified for each project.

The fasteners used for the wall brackets must be specified on a project basis by the manufacturer who will take into consideration the characteristics and detail of the supporting wall and the exposure on site.

**CUPACLAD® 201-V top profile**

For circumstances that require the use of a top section with concealed fastening, a special top profile is needed. Made of aluminum alloy 6060-T6, natural slate is then fastened by a rivet or self-drilling screw.

**c. Secondary Substructure**

- **Metal brackets**

  Metal brackets are required for fastening the metal profile to the supporting wall. This allows adjustment of the distance between the substructure and the supporting wall to compensate for any irregularities and allowing the use of an insulation material behind the air cavity if specified.

  Two different types of brackets must be used in order to achieve optimal installation:
  - **Fixed point bracket**: Should be secured to the solid structure of the building in order to resist vertical weight and horizontal wind loads. Their vertical profile is secured to the fixed-point bracket using the round holes.
  - **Sliding point brackets**: Sliding point brackets secure the remaining length of the vertical profile to the wall using elongated holes, to allow movement due to the thermal expansion of aluminum.

**CUPACLAD® SYSTEMS COMPONENTS**

a. Exclusive Cladding range, the slate for CUPACLAD® systems

b. Primary substructure

b.1. CUPACLAD® 101 systems Logic, Random and Parallel

- **CUPACLAD® 101 screw**
  
  CUPACLAD® 101 series screws self-drilling have been developed to ensure optimal installation to the metallic structure. Produced in AISI 316 (A4) stainless steel they feature a flat head that guarantees flawless fastening.

- **CUPACLAD® 101 horizontal profile**
  
  The CUPACLAD® 101 horizontal profile was designed by our R&D department to ease the installation of the slates with invisible fasteners. It is made in 6060-T6 aluminum alloy.

  The horizontal profiles must be perfectly level as their position defines the alignment of the slates. Taking the top edge of the profile as the reference.

  The distance between profiles is defined for each system based on the slate size used (see page 14 and 15).

b.2. CUPACLAD® 201 System Vanguard

- **201 Vanguard special clip**
  
  CUPACLAD® 201 metal clips are produced in AISI 316 (A4) .05” thick stainless steel.
  
  The stainless steel clips have flanges that work just like a spring absorbing differences in the thickness of the slates resulting in a perfect level surface.

- **201 Vanguard horizontal profile**
  
  The horizontal profile for CUPACLAD® 201 Vanguard is a patented system for ease of installation of our slates, manufactured from 6060-T6 aluminum.

  The horizontal rails must be perfectly level as their positioning will define the final alignment of the slates.

  The upper side of the profile features rectangular fixing slots positioned every 2” to house the clips (screws are not required). With this method the use of chalk marks to position the clips is no longer required.

**CUPACLAD® 201-V top profile**

The metal brackets, made of aluminum alloy are installed in alternate courses on either side of the profile.

- **Vertical L profile**

  The “L” shaped 24 x 20 x 3/4” vertical rails manufactured from 6060-T6 profile aluminum alloy supplied in 1/4” lengths. The gap between the vertical rails must be clarified on a project basis taking into account the following variables (the exposure of the site: height of the building, location).
The vertical rails must be perfectly level before they support all the other components of the system.

d. Screws
The joints between the vertical profiles, the metal brackets and between the horizontal and vertical profiles, will be secured with rivets or stainless steel screws A2 (Ø2 1/4”).

Horizontal profiles must be fastened to the vertical profiles in each intersection. In areas where two consecutive horizontal profiles meet, the following must be taken into consideration:
- The end of each batten must have its own fixing.
- Allow a gap of .11” between both profiles.

e. Air cavity
The substructure must allow for an air cavity between the insulation and cladding material.

For optimal air circulation the cavity must:
- Allow minimum of 3/4” width in the narrow areas.
- Both ventilation inlet and outlet must allow enough air circulation. In order to calculate it we must take into consideration the dimensions of the ventilation openings at the top and bottom of the cladding (measurements in cm² per lineal meter of cladding). They should be at least:

<table>
<thead>
<tr>
<th>Building height (ft)</th>
<th>Minimum surface for ventilation (in²/ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10’</td>
<td>20&quot;</td>
</tr>
<tr>
<td>10’ a 20’</td>
<td>25&quot;</td>
</tr>
<tr>
<td>20’ a 33’</td>
<td>30&quot;</td>
</tr>
<tr>
<td>33’ a 59’</td>
<td>40&quot;</td>
</tr>
<tr>
<td>59’ a 79’</td>
<td>45&quot;</td>
</tr>
</tbody>
</table>

At the first course of the cladding the opening at the inner channel must include a ventilated profile that also incorporates a mesh to prevent the entry of insects & small animals.

f. Insulation material
There are various types of insulation on the market suitable for ventilated claddings. The nature and thickness of the insulation must be carefully calculated on an individual project basis taking into account the varying factors (type of building, location and exposure).

g. Waterproof Membrane
For timber buildings it is advisable to cover the supporting wall with a water proof membrane. It is important to ensure the membrane is perfectly installed and will not cause any obstruction for correct ventilation.

h. Flashings
Flashings can be produced in galvanized steel, aluminum or zinc, and are used for edges, window frames and other sections of the cladding.

i. Load bearing wall
The supporting wall must ensure the stability of the building. The wall must be sufficiently stable to support not only the weight of the cladding but also take into account the wind loads transmitted through the substructure.
The quality of our product lies in our total control of the entire production process (from extraction to shipment) and by putting in place the highest quality and environmental policy requirements demanded by ISO 9001 Quality and ISO 14001 Environmental certifications.

Our strength of commitment to quality has earned us the confidence of thousands of architects, contractors and clients worldwide.

With more than a century of experience CUPA PIZARRAS has become the world leader in natural slate production sales and marketing. We strive to keep ourselves in this privileged position by focusing on quality, investing in innovation and our commitment to sustainable growth.

One in every three slates used throughout the world is a CUPA PIZARRAS natural slate. Our 16 quarries and 22 processing facilities combine the latest technology with our traditional know-how and craftsmanship.

Our thorough inspection during the entire production process, from extraction to processing prior to shipment, allows us to produce unique natural slates, recognized worldwide for their quality.

Today we export over 98% of our production to 60 countries on 5 continents.

CUPA PIZARRAS is part of the CUPA GROUP, 65 companies whose mission is to offer innovative building solutions with natural materials.