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Heavy

CUPA NATURAL SLATE - A ROOF FOR LIFE

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02

CUPA GROUP IS THE WORLD LEADER IN THE SALES AND MANUFACTURE OF NATURAL SLATE. THE GROUP HAS ITS ORIGINS IN A COMPANY CALLED CUPIRE WHICH WAS FOUNDED IN 1968 BY THE UNION OF FIVE SPANISH SLATE PRODUCERS WHO DECIDED TO COMBINE THEIR EFFORTS IN THE EXTRACTION AND PRODUCTION OF SLATE. THEIR AIM WAS TO DEVELOP THEIR QUARRIES AND PRODUCE THE BEST QUALITY ROOFING SLATE IN SPAIN. SIX YEARS LATER, THE BOOM IN NATURAL SLATE TURNED THIS SMALL BUSINESS INTO CUPIRE PADESA, WHICH BECAME THE PARENT COMPANY OF MORE THAN 50 SUBSIDIARY COMPANIES, THE MAJORITY OF WHICH OPERATED IN THE NATURAL SLATE SECTOR.

INTRODUCTION /

In 2006, the business changed its name to Cupa Group to reflect the global reach that the company now enjoyed. The Group employs 1,700 workers and comprises of over 50 companies linked primarily to the building sector with annual sales at over €260 million.

Within Cupa Group, Cupa Pizarras (or Cupa Natural Slate as it is known in the UK) is the company responsible for the sales and marketing of the Natural Slate that the Group manufactures. It was created with the aim of providing the finest quality slate combined with exceptional customer service around the world.

Cupa Natural Slate produces first class slate from quarries that have been operating for over 100 years, and is the world's leading brand in Natural Slate.

With 16 quarries and 22 slate processing factories it exports more than 150,000 tons a year to more than 20 countries around the world including Scotland.

Today Cupa Natural Slate can claim to manufacture one in every four roofing slates used around the world, this, along with a total commitment to quality, reinforces the company's number one global status.

EXPORTS MORE THAN 150,000 TONNES A YEAR

Most csak 6500Ft/m²

NATURAL SLATE IS ONE OF THE OLDEST, MOST EFFICIENT AND MOST ATTRACTIVE ROOFING MATERIALS USED IN THE CONSTRUCTION INDUSTRY. NATURAL SLATE IS A SEDIMENTARY ROCK FORMED BY VOLCANIC ACTIVITY 500-600 MILLION YEARS AGO THAT IS MADE UP OF INERT MATERIALS SUCH AS SILICATES, QUARTZ AND MICA. SLATE IS KNOWN AS A METAMORPHIC ROCK WHICH REFERS TO ITS CHANGE FROM ONE FORM OF MATTER INTO ANOTHER. AN IMPORTANT CHARACTERISTIC OF SLATE IS ITS GRAIN OR 'CLEAVAGE', THAT ALLOWS NATURAL SLATE TO ALWAYS SPLIT IN THE SAME PLACE. IT IS THIS CHARACTERISTIC THAT HAS ENABLED SLATE TO BE USED AS A ROOF COVERING FOR SEVERAL CENTURIES.

WHAT IS NATURAL SLATE?

The process of forming Natural Slate takes millions of years. Mud buried beneath the earth was subjected to intense heat and pressure and changed to clay, then shale and finally slate. The immense lateral pressure exerted by the Earth's gradual cooling and shrinking helps to create the characteristic of cleavage thus forcing horizontal particles to change their direction and finish up at right angles to the direction of the lateral pressure.

Natural Slate is an exceptionally durable and natural material that no man-made product comes close to matching in terms of performance. Quarried, split and cut to size, without further processing, slate is the most durable roofing material available. It is unaffected by weather, acid rain or extremes in temperature, is resistant to chemical attack (acid or alkali), is unaffected by UV radiation, is non-combustible and impermeable to water.

During quarrying, boulders are split by hammer and chisel along the grain, until the required thickness is achieved. Splitting, grading and sorting are still done by hand – a skill handed down through generations. Final dressing to exact dimensions is a machine operation, producing a bevelled edge. Coincidentally, this enhances waterproofing, by breaking the surface tension of water running over the slate's edge, preventing capillary action.

Slate has been used on European roofs for centuries with heritage roofs still performing brilliantly after 150 years. With this combination of fine appearance and outstanding durability, it's not surprising that more people are specifying Natural Slate.

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NATURAL SLATE'S APPEARANCE IS ONE OF ITS STRONGEST ATTRIBUTES. ITS NATURAL COLOUR, TEXTURE AND GRAIN, WHEN APPLIED TO A PITCHED ROOF DELIVER A CLEAN, SCULPTURED AND STRIKINGLY BEAUTIFUL APPEARANCE. TWO SLATES ARE SIMILAR BUT NEVER IDENTICAL. COLLECTIVELY THEY CREATE COMPELLING AESTHETIC VALUE TO BUILDINGS. CUPA'S SLATE IS 100% NATURAL. THE VALUE OF SLATE LIES IN ITS PROPERTIES, AMONG THE MOST IMPORTANT OF WHICH ARE: INPERMEABILITY, DURABILITY AND VERSATILITY.

WHY USE NATURAL SLATE?

It is a very versatile material since it can be used to cover any shape, pitch and space whether this is for conventional or unconventional roof forms. In addition to providing an outstanding finish, it also allows a virtually unlimited array of visual effects that would be impossible to obtain with other materials.

Slate has traditionally been used for residential buildings and civic buildings such as town halls, churches, hospitals, schools and universities. While these buildings may have quite different forms and characters, in all cases the use of slate gives them a strong sense of permanence and importance.

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WHY USE NATURAL SLATE?

WHY USE NATURAL SLATE?

SLATE HAS A REMARKABLE LIFE SPAN AND BECAUSE OF THIS IS AN EXTREMELY COST-EFFECTIVE MATERIAL WITH REGARD NOT ONLY TO CONSTRUCTION COSTS BUT ALSO MAINTENANCE AND DURABILITY COSTS. APART FROM THE NATURAL BEAUTY OF SLATE, IT IS ALSO A VERY RESISTANT MATERIAL THAT NEVER LOSES ITS TECHNICAL PROPERTIES. THIS MAKES NATURAL SLATE ROOFS MORE DURABLE THAN ROOFS MADE FROM OTHER MATERIALS. FURTHERMORE, ONCE SLATE HAS BEEN INSTALLED ITS MAINTENANCE COSTS ARE PRACTICALLY ZERO.

Slate is ideally suited for projects where exposure, durability and life span are important considerations, and its strikingly beautiful appearance is often a major factor when it comes to choosing slate over other building materials. Independent authorities place the life expectancy of concrete and ceramic tiles at 51 and 63 years respectively, while slate is expected to last for more than 100 years.

While extremely strong, roof slates weigh significantly less than ceramic or concrete tiles and because they are impermeable to water, unlike man-made products, slate does not increase the load on a roof structure after rain.

TO SUMMARISE, THE BENEFITS OF NATURAL SLATE ARE:

- → IMPERMEABLE TO WATER
- → WEATHER AND UV RESISTANT
- → CHEMICAL RESISTANT, NOT AFFECTED BY CHEMICALS OR POLLUTANTS (ACID OR ALKALI)
- → NOT DAMAGED BY FUNGI, MOSS, INSECTS, ANIMALS OR BIRDS
- → STRONG, WHILE WEIGHING SUBSTANTIALLY LESS THAN MAN-MADE ROOFING TILES
- → NON-COMBUSTIBLE

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HISTORY OF NATURAL SLATE IN SCOTLAND

DURING THE 18TH, 19TH AND EARLY 20TH CENTURIES QUARRYING THROUGHOUT SCOTLAND WAS COMMON PLACE. THE ACTIVITY WAS FOCUSED AROUND FOUR MAIN AREAS OF THE COUNTRY:

- Ballachulish
- An area known as the Slate Islands, near Oban
- A number of quarries situated between Arran and Dunkeld
- Aberdeenshire, in a location known as the Slate Hills

The use of Natural Slate as a building material in Scotland is believed to originate in the 14th century as part of the Finlaggan project on the island of Islay in the Inner Hebrides. These early slates were believed to come from the Easdale area (part of the Slate Islands) where the industry was centred for 200 to 300 years. It was around this time that other regions in Scotland began quarrying, in particular at Ballachulish which opened in 1693. This quarry grew to become the dominant force in Scotland and by 1888 was producing over 15 million slates a year. This facilitated the introduction of cheaper Welsh slate into Scotland which then began to force the indigenous industry into decline. This, combined with the advent of manufactured concrete tiles, meant that the Scottish quarries could not compete and were forced to close in 1966.

Slate Deposit

Slate Extraction

Transformation

Packaging

Warehousing and Loading

Redevelopment

PRODUCTION PROCESS

1. Slate Deposit

The extraction process starts once all the geological, mining, geotechnical studies and prospecting tasks have been completed. Further sample tests are then completed, which identify the intrinsic slate characteristics, its level of quality and reserve potential of the vein. This analysis then indicates which method (either open-air quarrying or underground mining) is most suitable for extracting the slate. On-going analysis is carried out throughout the lifespan of the quarry to ensure a constant production of quality slate and to help plan for the future. All these processes are led by Cupa Engineering and Services which is part of Cupa Group.

2. Slate Extraction

Once the site has been cleared the slate can start to be extracted by using heavy machinery. The slate is extracted in large blocks by using a diamond-threaded saw and can take several hours to complete. Initially a pipe made by two connecting perforations (one vertical and one horizontal), enables the diamond thread to be introduced. Water is used here to both cool and cleanse the rubble. This water is recycled and purified to avoid wastage and minimise the impact of such an important resource. Once this stage is completed, the large blocks are then transported by truck to the transformation shed.

3. Transformation

The large slate blocks extracted from the quarry are then cut down to more manageable and different sizes, depending on the final slate formats that are expected to be produced. Then, our master craftsmen split the blocks by hand into layers, ensuring that each unit is of the highest standard. The recycled water is used here too and keeps the blocks wet reducing the waste and easing the splitting procedure. Once split, the slates pass onto a cutting machine which bevels the edges. This is designed to improve the flow of the water once the slate is on the roof.

4. Packaging

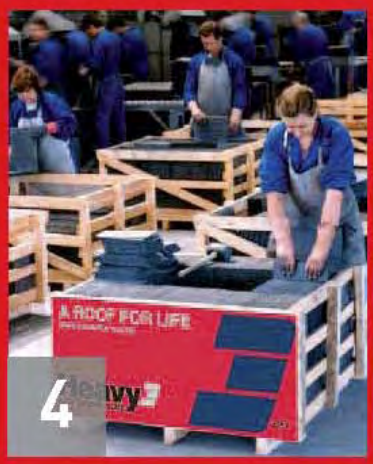
After being sorted and classified, the slates are counted and packed in wooden pallets for storage and transportation. Each pallet is given a numbered label indicating the description of the slate (quarry, size, thickness etc.) and the name of the person who selected the slates to go in the pallet.

5. Warehousing and Loading

Once the slates are packed into pallets, they are immediately sent to the Cupa central warehouse and assigned a new label with a bar code, ensuring the traceability of each pallet from its origin to its final destination. The Quality Department carries out strict controls throughout the manufacturing process as well as on the final product itself. The quality control system is regularly audited by different national accredited organizations.

6. Redevelopment

The manufacturing of slate is purely a mechanical process and so does not generate any kind of chemical waste. The waste that is generated is natural, unusable extracted material. Once a quarry has been exhausted of useable slate the natural landscape is returned to its original state by a process of hydro-seeding native plants. The whole process is authorised and supervised by environmental organizations.



Quality Control and Packaging
Before packing, the slate is selected and classified. It is then packed in wooden pallets by hand.

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////////////////// HEAVY 3 CUPA NATURAL SLATE [CUPA HEAVY 3]

CUPA HEAVY 3

↑

CUPA 3 QUARRY
SAN PEDRO DE TRONES
(LEON)
NORTHERN SPAIN

Heavy 3 is a blue-black slate from the Group's Cupa 3 quarry in San Pedro de Trones (Leon) in northern Spain, where some 25,000 tonnes are manufactured each year. The quarry has been in operation since 1892 and produces a distinctive Natural Slate that has a very rough surface. It is ideally suited to the Scottish market due to its close similarity to the traditional highland slate from Ballachulish that is no longer produced.

The inclement weather in these markets means that thicker slate is needed to protect buildings from dampness through capillarity and also from the high winds that prevail in some parts of Scotland. Capillarity refers to how easily a liquid can rise through a pore. It is a physical phenomenon and therefore it is not limited to slate and affects all overlapped laminated materials.

Scottish roofs (unlike those in England and Wales) have timber sarking nailed across the rafters which the slates are nailed directly to. The sarking exists to provide extra protection from the weather, reduce heat loss and improve the overall strength of the roof. Because of this many slaters in Scotland (unlike their counterparts in England and Wales) tend to walk over the roof slates whilst applying them to a building. With this in mind, thinner slates tend to break or crack thus providing a further incentive to invest in Heavy 3 for roofing requirements.

Heavy 3 Natural Slates are available in the following sizes:

← 30x20cm (11.8x7.9")

→ 35x20cm (13.8x7.9")

← 40x20cm (15.7x7.9")

→ 40x25cm (15.7x9.8")

← 50x25cm (19.7x 9.8")

↓

TALISKER DISTILLERY
CARBOST
SKYE
SCOTLAND

←

CUPA 3 QUARRY
SAN PEDRO DE TRONES
(LEON)
NORTHERN SPAIN

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CASE STUDY 01

THE MALTINGS, HADDINGTON

Located in the heart of East Lothian, between the Lammermuir Hills and the Firth of Forth, The Maltings is situated within the desirable market town of Haddington and is home to 66 luxury homes within easy commuting distance of Edinburgh.

This combination of refurbishment of a B-listed building and new developments within such a beautiful thriving town demanded building materials of not only the highest quality, but were also sensitive to strict planning regulations. Designed to suit both contemporary and traditional lifestyles, it was essential that a versatile roofing material was specified that was sensitive to these issues. Heavy 3's premium credentials, its unparalleled quality and its likeness to Scotland's indigenous Ballachulish slate placed it as the perfect material for a roofing solution for this development.

With Heavy 3's 100 year guarantee there is not only peace of mind for the developer, in this case, Scotia Homes but also its customers. The end result delivers a quality look that completes these premium homes.

MAIN CONTRACTOR
Scotia Homes (north)

ROOFING CONTRACTOR
Marley Contract Services

← THE MALTINGS, HADDINGTON

CASE STUDY 02

THE RACE COURSE, MUSSELBURGH

Situated close to the River Esk and some 6 miles east of central Edinburgh is the Musselburgh Racecourse, where since 1816, year- round programmes for both flat and national hunt meetings have taken place.

The old Edwardian Grandstand sits side by side with new build facilities. A key feature of this project was to be able to provide a roofing slate that was not only in keeping with the surrounding traditional builds, but was also a close match to indigenous Scottish slate (which has not been manufactured for some 50 years). This made Heavy 3 the ideal choice and further demonstrates its versatility through use on the refurbished Grandstand as well as the new facilities.

MAIN CONTRACTOR
Robert Rollo & sons

ROOFING CONTRACTOR
Robert Rollo & sons

← **THE RACE COURSE, MUSSELBURGH**

CASE STUDY 03

RESIDENTIAL HOUSING

GLENEAGLES

Gleneagles is synonymous with the game of Golf and, since 1919, the King's Course has tested the aristocracy of golf, both professional and amateur. "The Palace in the Glen", as it is known, is only a one hour motorway drive from Edinburgh and Glasgow and is one of the leading golf and spa luxury hotels in Scotland.

Situated off the King's Course at Gleneagles, this highly sought after development consists of three unique and exclusive mansions that are rumoured to be worth circa £1m. With this in mind, only materials with a high quality finish were used on this development placing Heavy 3 as the ideal roof covering solution. Crucial to achieving planning permission for a project of this type was the use of materials that are sympathetic to the surroundings, again making Heavy 3 the most appropriate choice, given its similarity to indigenous Scottish slate.

MAIN CONTRACTOR
W S Dunsire Contractors

ROOFING CONTRACTOR
W S Dunsire Contractors

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RESIDENTIAL HOUSING

CRAMOND ROAD NORTH, EDINBURGH

This much sought after suburb of Edinburgh combines a village atmosphere with walks on the shoreline and along the River Almond. The Cramond Gate development features high quality contemporary living in a traditional setting.

Cramond is a traditional village comprising of cottages and shops all built with conventional materials. Heavy 3 was the ideal choice here as it blended in with the surround buildings that used the indigenous Ballachulish slate as a roofing material. Together with its 100 year guarantee, Heavy 3 ensures that a high quality traditional look will stand the test of time no matter what the climate throws at it.

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MAIN CONTRACTOR
Bryant Homes

ROOFING CONTRACTOR
Avonside Roofing

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CASE STUDY 05

CASTLE BUSINESS PARK, STIRLING

Castle Business Park provides ten high quality, modern offices set amidst 28 acres of attractive landscaped grounds. The business park is situated on the outskirts of Stirling, providing excellent access to Scotland's main cities and other provincial centres via M9 and M80 transport links.

The Business Park lies in the shadow of one of Scotland's most historic castles that dates back to the 15th century. As a consequence, it was particularly important to the planning authorities that the roofing material specified be sympathetic to the surrounding area. Heavy 3's close likeness to the look and feel of traditional Scottish Ballachulish slate made it the perfect choice as a roofing material for this project.

MAIN CONTRACTOR
Robertson Construction

←
CASTLE
BUSINESS PARK,
STIRLING

As Scotland's most recently appointed city, Stirling required a prestigious shopping centre to mark its new found commercial status in Scotland's economy. This new build property, located in the heart of this traditional city, needed to demonstrate the modern face of Scottish architecture. The solution was to create a build that was modern in design but that used high quality building materials for its construction. In the absence of quality Scottish slate Heavy 3 became the perfect choice for such a project. This ensured a very Scottish look, as well as the reassurance that can only be delivered by a product of this quality.

CASE STUDY 06

THE THISTLE SHOPPING CENTRE, STIRLING

MAIN CONTRACTOR
John Laing Construction

THE THISTLE SHOPPING CENTRE, STIRLING

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HEAVY 3 NATURAL SLATES COMPLY WITH THE FOLLOWING

QUALITY SPECIFICATIONS

	CRITERIA OF THE 2 MOST IMPORTANT NATURAL SLATE NORMS		TEST RESULTS OF CUPA 3 SLATE	
TESTS	European Standard EN 12326-1	N.F. Mark (New French Norm)	Tested by LNE (NF) June 2006	Tested by ATG 2006
% Water Absorption	≤0.6%	≤0.4%	0.22%	0.3%
Specific Weight (Gr/Cm³)	N/A	N/A	2.82g/cm³	2.8g/cm³
Longitudinal Resistance Flexion	N/A	N/A	71 Mpa	N/A
Modulus of Rupture	Determined by Producer	Determined by Producer	65 Mpa	61 Mpa
Carbonate Content	≤5%	<1.5%	0.3%	0.1%
Thermal Cycle	T2	T1	T1	T1
SO2	S2	S1	S1	S1
Carbon Free	≤2%	≤1.5%	0.45%	N/A
Length and Width	Declared Value ±5mm	Declared Value ±3mm	COMPLIES	COMPLIES
Thickness (Individual)	Nominal Thickness ±35% & ≥2mm	Nominal Thickness ±25% & ≥2mm	COMPLIES	COMPLIES
Thickness (100 Packed Slates)	Nominal Thickness ±15%	Nominal Thickness ±10%	COMPLIES	COMPLIES
Straightness of Border	≤5mm slates <500mm ≤1% slates >500mm	≤3mm slates <300mm ≤1% slates >300mm	COMPLIES	COMPLIES
Squared	1% of Longitude	1% of Longitude	COMPLIES	COMPLIES
Plan	2% of Longitude	1.5% of Longitude	COMPLIES	COMPLIES

EUROPEAN SPECIFICATIONS:

EN 12326.

BRITISH STANDARD:

BS 680 Part 2.

FRENCH SPECIFICATIONS:

NF 228-02/01/01.

BELGIAN SPECIFICATIONS:

ATG H 571.

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HEAVY3 GEOLOGICAL ANALYSIS

1. INTRODUCTION

SLATE IS A FINE-GRAINED METAMORPHIC ROCK DERIVED MAINLY FROM MUDSTONE AND SHALE. DURING METAMORPHISM THE QUARTZ AND CLAY MINERALS PRESENT IN THE ORIGINAL SHALE ARE RECRYSTALLISED AND THE CLAY MINERALS REPLACED BY WHITE MICA AND CHLORITE. THE ABILITY TO SPLIT SLATE INTO FLAT SHEETS IS DUE TO THE ALIGNMENT OF THE WHITE MICA AND CHLORITE MINERALS DURING RECRYSTALLISATION THE EXTENT TO WHICH THESE PROCESSES HAVE TAKEN PLACE AFFECTS THE QUALITY OF THE SLATE.

FIG.1 PLANE POLARISED LIGHT

FIG.2 CROSS POLARISED LIGHT

FIG.3 PLANE POLARISED LIGHT

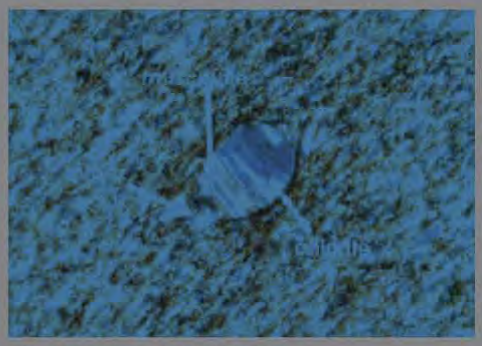

FIG.4 CROSS POLARISED LIGHT

FIG.5 PLANE POLARISED LIGHT

FIG.6 REFLECTED LIGHT

2. Petrographic Analysis

Modus operandi: The slate was examined using traditional petrographic techniques, thin sections of slate (30µm thick) were examined under the optical microscope using both plane and cross polarised light. The principal minerals present were determined by X-ray diffraction and the chemical composition was determined by X-ray fluorescence analysis.

2.1 Optical Microscopy

Under the optical microscope, it can be seen that the Heavy 3 is a fine-grained slate with a pervasive foliation due to the alignment of platy minerals (Fig.1 & 2). This alignment of fine-grained minerals enables the rock be split into thin sheets suitable as roofing slates.

At greater magnification (Fig.3 & 4) it can be seen that the principal minerals are chlorite, white mica and quartz. Chlorite is recognised by its green colour in plane polarised light (Fig.3), the white mica by its bright colours under cross polarised light and quartz by its grey colour also under cross polarised light (Fig.4).

This assemblage of minerals is typical of low grade metamorphic rocks sometimes referred to as the greenschist facies. When examining the large grain under cross polarised light the intergrowth of the principal minerals is clearly visible.

The iron sulphide minerals (pyrite) are present as large crystallised cubes approximately 1mm in diameter (Fig. 5 & 6). These crystalline cubes are very resistant to the effects of weathering. In contrast, pyrite in poor quality slates is usually amorphous and found disseminated throughout the rock. Other minerals, identified using the optical microscope, were zircon and tourmaline. These minerals are rare and do not affect the properties of the slate.

2.2 X-Ray Diffraction

The principal minerals present in the slate were identified using XRD analysis and their relative concentrations estimated as follows:

Principal Materials

- Quartz (40%)
- Chlorite (15%)
- White Mica (40%)

Similarly, the concentration of secondary minerals were estimated using XRD:

Secondary Materials

Feldspar (1.5%)
Rutile (1%)

3 Chemical Composition

The chemical composition of the slate was determined using X-ray fluorescence analysis:

SiO_2	→	50.73%
$A1_2O_3$	→	23.24%
K_2O	→	3.58%
Mg O	→	3.38%
Na_2O	→	1.81%
Ca O	→	0.49%
Ti O_2	→	1.17%
P_2O_5	→	0.27%
SO_3	→	0.45%
Fe_2O_3	→	9.94%

CUPA GROUP'S SUCCESS HAS BEEN BUILT ON THE EXTRAORDINARY PURITY OF THE SLATE THAT IS EXTRACTED FROM ITS QUARRIES, AND THE COMPREHENSIVE QUALITY CONTROLS THAT EACH PIECE OF SLATE UNDERGOES.

QUALITY STANDARDS

The area of quality is very important to the Group and it invests heavily in its continuous improvement, to achieve the highest quality product available on the market today. This reinforces Cupa's position as the industry's global leader.

Cupa Engineering Service Ltd. (a company within the Group) is responsible for geological studies, geo-technical analysis, prospecting, sampling, seam evaluation and the direction of quarrying, allowing us to control every aspect of the Natural Slate production process.

All quarries currently operated by the Group are endorsed in those countries where authorisation is mandatory. Our compliance with the Standard ISO 9001:2000 (certified by AENOR) certifies our quality management system. In order to control the quality of our production, regular quality tests are carried out. These tests are done in certified laboratories in the countries to which we export. However, in order to offer the finest quality slate, the Group's own laboratories carry out additional tests as part of our internal quality control system. Cupa Group's thorough and rigorous quality procedures allow the company to offer the guarantee of full traceability, where the origin and production history of each product can be provided.

The Group operate a barcode system that identifies each pallet of slate individually. Our traceability procedure can be identified by means of this unique label that is placed on each pallet (once the pallet has completed quality controls and inspection controls in the manufacturing bay and in the central warehouse). This label contains information about the slate that has been packed and includes test results, the name of the quarry, size of the slates, the number of slates and even the name of the person who selected and packed the pieces. This, we believe, offers our customers something unique in the slate industry and further provides peace of mind in their purchase.

This extensive quality process is paramount to our service. Customers can use our products with confidence and have the reassurance of a 100 year guarantee.

HAVE THE REASSURANCE OF A 100 YEAR GUARANTEE

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REFERENCES

European Standards: Slate Selection

Cupa's slates, once removed from their pallets, need to be graded and sorted according to thickness. If slates are holed on site, the grading of the slates can be completed either before or after the holing process. Heavy 3 requires grading into four separate thicknesses. During the grading phase, it is important to tap each slate to confirm its soundness. This simple test helps detect possible flaws before fixing. Only when all the slates have been graded and checked for imperfections should the fixing process begin.

Fixing

It is important to use the thickest slates at the bottom of the roof, followed by slates of a medium thickness in the middle, reserving the thinnest slates for the top of the roof. If the roof pitch is less than 30º, or the building is single storey, then additional care and attention is required as the visibility of thicker slates increases in these conditions.

Holing

The slate nail should be located approximately 20-25mm from the edge of the slate. The nail hole should be made from the bottom of the slate. Holes can be made by machine or hand.

Notes

Detailed information on slate fixing and specifications can be found in BS 5534:1997, BS 8000:Part 6 or ICP2:2002. Cupa Natural Slate also provides a detailed slating reference manual.

Cupa Natural Materials is the official distributor for Scotland.

Designed & Produced by hookson