



2005 EDITION



Terracotta Roofing Book



PLAIN TILES



INTERLOCKING TILES



BARREL TILES



MEDITERRANEAN TILES



OUTSTANDING TILES



TERREAL
TERRACOTTA

LAMBERT

TBF

GUIRAUD

→ | 2005 EDITION |



Terracotta | Roofing Book



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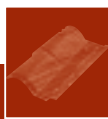
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Welcome

Our terracotta product line fits all architectural styles, all needs, all laying techniques, all around the world. It is available in a rich colour range and a wide choice of accessories, for total terracotta solutions.

TERREAL has developed high-tech processes to transform terracotta into a product of our time, offering high-performance and superb aesthetics, respecting the environment and playing an essential role in modern constructions, with proven technical qualities such as strength or thermal and acoustic insulation.

Our tiles are manufactured in nine production facilities in France, located in terroirs recognized for their know-how in ceramics and the quality of their clay. Our tileries benefit from the most modern processes, developed specifically for the products manufactured at each plant. Every day, TERREAL improves its production techniques in order to meet ever higher requirements.

This catalogue introduces five families of TERREAL tiles that reflect the diversity and wealth of European roofing architecture.

Each tile model is presented in the same fashion, with pages dedicated to colours and realizations, followed by a precise description of the product and its accessories.

At the end of the catalogue, a laying guide presents all the technical solutions you need. The Terracotta Roofing Book is the English sequel version of the French original that was acclaimed by expert juries in 2003 and 2004.

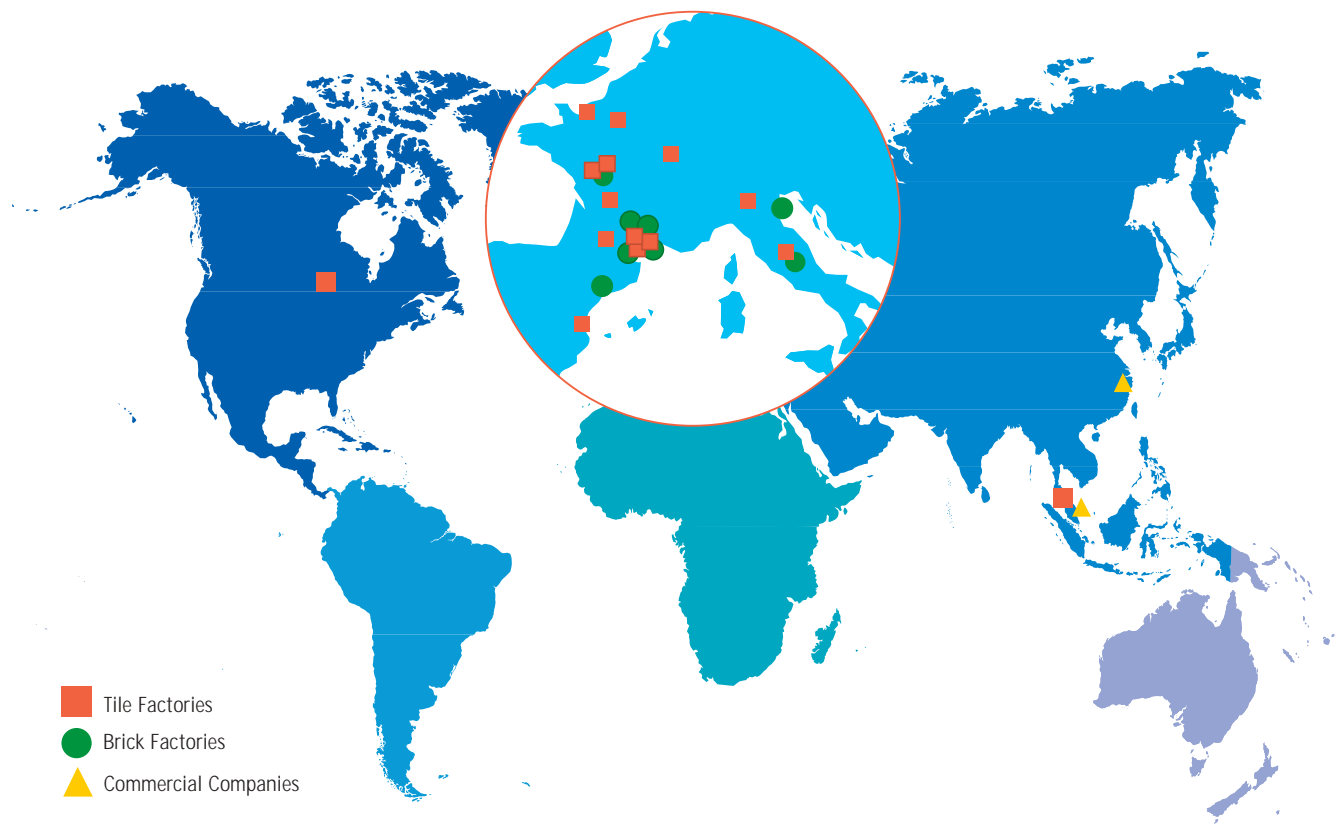
With this new brochure, we invite you to discover and share our passion for terracotta. TERREAL, the terracotta specialist, offers you unmatched diversity in a rich portfolio of easy-to-lay solutions and unlimited inspiration.



Hervé Gastinel
C.E.O. of TERREAL



Terreal in the World



Terracotta is an exceptional building material that forms part of Europe's Architectural Heritage. Its warm colours and its personality influence authentic and harmonious landscapes.

Tuiles Lambert, TBF, TBL Guiraud, three of the most prestigious French specialists in clay products have now incorporated into the Terreal Group. Terreal works enthusiastically in close contact with roofers, architects and distributors, to design and manufacture its products. These products are the very essence of technical and aesthetic requirements of people who appreciate attractive constructions.

In France, all of Terreal's plants are located where there is a large supply of quality clay. They make tiles, bricks, accessories and façade or civil engineering components adapted to satisfy various market demands. And every plant puts its name behind the guarantee.

Out of its domestic market, Terreal's expanding international coverage relies on major brands in local markets, including Terreal España, San Marco Laterizi in Italy, Terreal Malaysia and Ludowici in the United States.



Terreal in the World

The Terreal Subsidiaries

Italy: San Marco Laterizi, the Creators' Brand



Associated with the greatest Italian architectural creations, such as the new auditorium in Rome, San Marco Laterizi has developed a sophisticated vision of terracotta, combined with creative tradition. It has become the reference for architects both in terms of roof tiles and bricks. Its "fatto a mano" (hand-made) products are a genuine institution in Italy.

Its industrial tool has recently been strengthened by two major investments: at Castiglion Fiorentino, an ultra-modern unit the wall facing bricks and, at Valenza, a tile-plant with more than 100,000 metric tons per year.

USA: Ludowici, the Exceptional Brand



Established in the USA since 1888, Ludowici perpetuates European style on part on some of the New World's most exemplary constructions, such as Yale University or the head office of AT&T.

Combining craftwork expertise with cutting-edge technologies, Ludowici has developed a range of tiles offering a wealth of colours and textures, for the most demanding customers.

Spain: Terreal España, the Land of the Mediterranean



In the heart of one of the most important terracotta markets in Europe, Terreal Spain has established itself as a major figure both for bricks and tiles.

Its range of attractive and high-performance tiles, reputed for their high quality, has been strengthened with the introduction of two new models: the Levantina, the lines of initiate barrel tiles, and the technical and attractive Mediterranea model.

Besides, through its technological mastery of terracotta wall systems, Terreal España is now the uncontested leader in this segment.

Asia: Terreal Malaysia, the Terracotta Know-How in the Heart of Asia



Established more than 10 years ago in Malaysia, Terreal relies on a modern industrial tool.

In the region Terreal has developed a line of tiles with warm tones, suitable for Southeast Asia markets. But all models have also a Latin touch that makes them the reference when it comes to style.

Ideally located at the gateway of most Asian markets, Terreal is commercially represented in Singapore and, since 2003, in Shanghai in order to distribute its entire range of roof and façade products in China.



Environment

At Terreal, we are well aware of environmental concerns, and we opted for a pro-active approach on this issue. Our commitment to an environmentally-friendly production encompasses the following elements.

The Choice of our Raw Materials



Our tiles, exclusively made of terracotta, present very interesting and "age-resistant" properties. Terracotta is a natural and rot-proof material, with well known acoustic and thermal qualities. Regulations on refuse products classify Terracotta as an inert material:

- 1 April 18th, 2002 French Government Decree regarding the classification of refuse materials in France.
- 2 1999/31/EC European Directive, defining "inert products" as "products that do not suffer any major physical, chemical or biological modification" throughout their life.

The Manufacturing Process



1 Natural gas is the only fossil energy employed in our factories because of its lower level of greenhouse gas emissions (exclusively CO₂ and H₂O).

2 Major investments to reduce kiln smoke and gas emissions have been made during the last several years (in accordance with February 2nd, 1998 French Government Decree).

3 All waste is treated or recycled; liquids are reused in the production line and other waste is sorted for either recycling or revalorisation (non-recyclable refuse is transferred to a proper disposal centre).

4 From 2005, at least 25% of our electrical supply comes from renewable energies (i.e.: hydraulic, photovoltaic, windwills...), that is above the 2010 target of 21% for renewable sources of electricity in France (and 15% in 2004).

5 Our policy is to rehabilitate open quarry sites as often as possible.



The Thorough Knowledge of our Activities' Environmental Impact



Today, our Terracotta tiles have been studied to determine their environmental impact during their entire life cycle. This study, realised by the French Federation of Tile and Brick Manufacturers, answers to the 14 environmental objectives - including environmentally friendly constructions and economic choices - described in the HQE® approach (see below).

The Protection of Landscapes



Because respecting the environment also means an harmonious blend of your home with the local architectural style, Terreal assists you with the choice of the best tile-aspects for use in your area, among our 46 products available in more than 300 colours.

HQE®, the French label for an ecologically-friendly architecture, is a global approach to accompany development projects, renovations or new constructions, of any size, with a view to sustainable growth. It aims at taking into account the impact of these constructions on the Environment. Our life cycle survey follows the protocol of XP-P01-010 international norm.

Customer Assistance

Technical Assistance

Whatever your question on terracotta tiles, your Terreal representative can help you with your project.

- For the United Kingdom and Ireland: rooftiles@terreal.co.uk
- For other countries: export@terreal.com

For more complex roofs, our Technical Assistance specialists will help you realise your layout study in order to precisely determine the quantity of tiles and fittings required for your project. They will as well provide you with installation advice.



Tiles for turrets

Does your project include a turret? Contact our technical assistance, specialized in projects involving trapezoidal tiles.

Once the study is complete, each tile, whether barrel or plain, is cut and numbered row by row in our dedicated workshop. Please enquire with our sales department for more details.

Web Site: www.terreal.co.uk



Visit our site 24 hours a day to discover our product line, our tile selection assistance and our on-line documentations. In addition, to facilitate your choice in the tile model, a simulator helps you select your style of house, a type of tile and a colour to visualize the corresponding result in 3D. You can as well ask your questions, that one of our experts will be pleased to answer.



Quality and Innovation



To guarantee an optimal quality for our products, we precisely monitor every stage of the production process, from the extraction of clay to the shipping of finished products. This control is implemented by our research teams and by an independent Quality Control Department.

Terreal also created a Research and Development Centre, that develops new products, colours and processes, answering our customers' requests. As a result, more than forty percent of our products have been created during the last ten years.

Terreal Guarantee



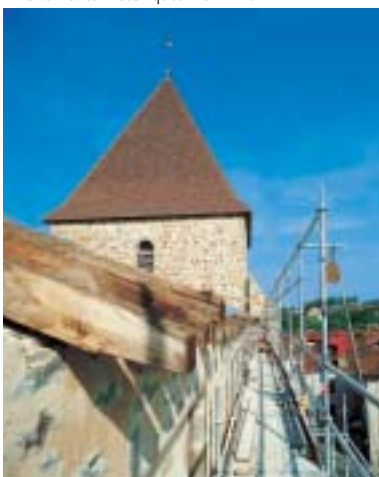
One of the most stringent quality certification program in the world, the NF label is the minimum quality standard we impose on our products. Issued by AFNOR⁽¹⁾, the NF label details the test methods used to validate the following characteristics of the approved tile models:

- dimensional characteristics (aspect),
- resistance to bending,
- physical characteristics: waterproofing tests (class 1),
- physical characteristics: frost resistance tests (type C).

Please refer to the Regulatory Environment page of this book to consult the list of NF-accredited tiles within our range (P. 192).

(1) AFNOR Certification - 11, avenue Francis de Pressensé - 93571 Saint-Denis La Plaine Cedex - France - www.marque-nf.com

Monuments Historiques Plain Tile



How to Select your Terracotta

The Origins and the Basics



The history of terracotta tiles unquestionably started in the East: some historians date the firing of clay tiles at about 2000 BC in Mesopotamia, the birthplace of urban civilizations, while others claim that the Chinese invented clay tiles a few hundred years earlier.

Early Chinese tile-makers were inspired by roofs made of bamboo sticks, cut in half and interlocked (the same way as today's Mediterranean barrel tiles).

The ancient Greek and later the Romans spread the invention all over Europe, including the British Islands, where mainly thatch and minerals were used. Since that period, thanks to the universal knowledge of the work of clay, and to a unique longevity, terracotta has become a distinctive roofing material in the English landscapes.

Taking their inspiration from stone tiles and slate, plain clay tiles have been used in the South of Britain since early Middle Age, coexisting with slate as the main roofing material, depending on locally available resources.

Thanks to their thickness and triple overlapping principle, plain tiles make a roof remarkably watertight. Each newly laid tile lets appear to the eye only a third of its surface, the lower part called "the gauge". The other two thirds represent the covered part, and are essential for waterproofing.

Even if clay tiles in Britain are traditionally plain, other types of rustic terracotta tiles have survived across the centuries. For instance barrel tiles, which are still very popular around the Mediterranean, can be found on a few classified castles or abbeys, mainly around Roman Roads. Coming from the Flemish Coast, non-interlocking pan tiles (also described as "S-shaped" tiles) have become part of the local architecture in many shires.

Around the middle of the XIXth century, the Industrial Revolution made possible the introduction of the revolutionary interlocking clay tile. The main difference between an interlocking tile and a plain tile is the presence of interlocks on the ridges, around the exposed area. Interlocking the tiles, instead of overlapping them on top of each other, increases the exposure (visible area), which represents 3/4th of the surface for interlocking tiles, compared with 1/3rd for plain tiles. With this system, roofs are laid faster, with less material per square metre, and less labour.

The Qualities of Terracotta



Modern firing technologies produce terracotta tiles that are totally frost-resistant, and that can be technically laid in all Britain. Natural and rot-proof, terracotta enhances the buildings it covers with an almost unlimited range of warm and natural

and minerals, these shades are applied before firing the tiles at temperatures around 1,000° C, and as a consequence do not fade. On the contrary, they age beautifully to blend into the landscape and heritage.

For further information about the natural qualities of terracotta, please refer to the Environment and Sustainable Development page (P. 8).

All in all, to opt for a terracotta tile is not only to choose a durable and authentic roof cover, it is also to increase the very visible value of one's property.

colours, smooth or sandfaced textures. Obtained from oxides



How to Select your Terracotta Tile?

How to Select your Terracotta Tile?

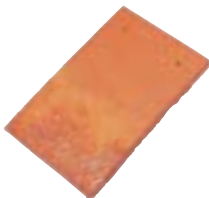
The Different Categories of Terracotta Tiles



Plain Tiles

Genuine clay plain tiles help to blend new or renovated buildings with local architecture and contribute to increase the real estate value. They also bring incomparable rhythm and volume to the roof, thanks to their slight camber (laterally or longitudinally). These traditional shapes are also appreciated because they block water ingress by capillarity. Technically, clay plain tiles are exclusively laid on high-pitched roofs, from 35° up. They differ in size and thus in number per square metre. The number of tiles per sq.m. varies between 26 and 70 depending on the model. The British market distinguishes three types of clay plain tiles, depending on their manufacturing process and final aspect. As the European leader in plain tiles, Terreal is able to answer to all the specificities of this traditional market.

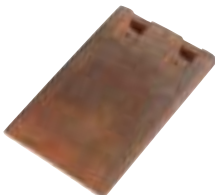
Hand-Made Clay Plain Tiles



With their labour-intensive process, small size, thickness (15 mm and above) and rich texture, these tiles excel in the renovation of Classified Monuments or fine old buildings. Once laid, they can scarcely be recognized from recovered old plain tiles.

- *Monuments Historiques Plain Tile.*

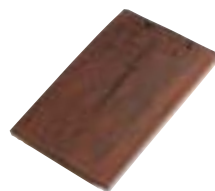
Handcrafted Clay Plain Tiles



While made on modern production-lines, these plain tiles have been designed to look like hand-made tiles. In that product line, Terreal proposes a portfolio including different shapes, thickness, textures and irregular rustic finish. They are dedicated to outstanding homes and projects that must keep all their character.

- *Héritage, Pommard, Priory, Sologne and Ségala Old Country.*

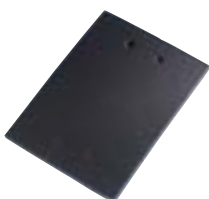
Machine-Made Clay Plain Tiles



In that core-segment, Terreal proposes one of the most extensive offer and expertise on the European market, with 6 different models. Varying in shape and texture, these best-sellers are accompanied by comprehensive colour ranges and fittings. Their thickness varies between 11 and 13 mm.

- *Éminence, Grand Cru, Grand Cru Bullnose, Périgord, Rustique and Sologne.*

Large-Format Clay Plain Tiles



For large-scaled roofs, or when the budget becomes tight for usual plain tiles, Terreal has innovated by creating large-format models, in order to save on products per square meter (and therefore on labour-cost). This exclusive offer ranges from 26 to 48 tiles per square metre and preserves the elegance of covered projects.

- *Bocage, Élysée, Ségala and Meursault.*



How to Select your Terraco

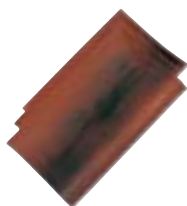


Interlocking Tiles

Terreal's rich line of interlocking tiles can satisfy all requirements of modern or traditional architectural projects.

British practice defines 3 groups among interlocking tiles, based on profile and format criteria. The combination of roof pitch and rain/wind exposition determines which models are compatible with the project in order to ensure perfect waterproofing of the roof. The three families of interlocking tiles are:

Interlocking Pan Tiles



With their typical shapes, they are the legacy of "S-shape" pan tiles, once without interlocking system. Introduced by the Dutch, they have spread throughout the country from North Sea harbours to the Midlands. Terreal proposes three models in that category:

- *Côte Fleurie, Renaissance and Mercurey.*

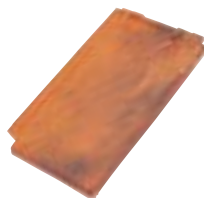
Interlocking Profile Tiles



Designed to be functional and easy-to-lay, they are also appreciated for their timeless look. They combine value and technical performance thanks to their shapes that shed rainwater away from the interlocks. They include models from 14/sq.m. up to 10/sq.m.

- *Montchanin, Côte de Nuits PV, Marseilles Tile, Côte de Beaune, Résidence and Santenay.*

Interlocking Clay Plain Tiles



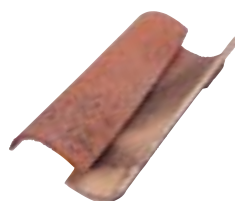
Here is the latest interlocking clay tile segment, expanding all across Europe year after year. These innovative models derive their slick look from clay plain tiles and offer a flat gauge without any apparent water-shedding system. Terreal's 3 interlocking plain tile models range from 18/sq.m. up to 10/sq.m.

- *Giverny, La Gauloise and Volnay PV.*



Barrel Tiles

Unchanged since the Roman Empire, the barrel clay tile is still a dominant roofing material on the Mediterranean shores, and can also be spotted on a few Classified Buildings in Britain. These tiles are conical, and will lock by simply sliding one into the other.



Laid on low-pitched roofs, barrel tiles are perfectly adapted to torrential rainfalls. There are two major length in that segment: 500 mm and 400 mm. Terreal proposes a complete range of barrel tiles, including products with a strong Mediterranean identity and an original Monuments Historiques Barrel Tile, whose texture and colours have been designed to match Northern architectures.

- *Canalaverou 40 and 50, Languedocienne and Monuments Historiques Barrel Tile.*

terracotta Tile?



Mediterranean Tiles

What differentiates a Mediterranean from a barrel tile is the presence of interlocks around the exposed area. Technically similar to interlocking tiles, Mediterranean tiles can be laid on lower-pitched roofs: their curved shape and deep interlocking system facilitate the quick draining of rainwater, and also ensure the stability of the tiles.



As the European leader in Mediterranean tiles, Terreal has a large product offer, including classic Mediterranean tiles, patented "Double-cornet" (such as the Romane-Canal) and innovative "Double-conduit" tiles (such as the DC12 or Languedoc DCL, which reproduce the aspect of ancient barrel tiles).

- *Double Conduit 10, Double Conduit 12, Languedoc DCL, Romane TBF, Romane-Canal and Romanée.*

Colours and Fittings

An Outstanding Palette of Colours



The diversity of terracotta colours and textures has been made possible by ceramic innovations along the past few decades. Today, the rich palette of clay tiles perfectly matches the diversity of British architectures.

Thus, the portfolio of clay colours includes not only reds and browns, but also aged colours, patchworks including ochre, orange and dark nuances, and finally slate-like shades (such as our Dark Slate or Graphite Black colours). Sanded colours provide a rustic look to the roofs they cover, close to old weathered tiles, while coated colours will bring a smoother aspect.

These various colours are achieved with sandfacing, sprinkling or coating application of minerals which will vitrify at 1,000° C (1,832° F). The use of inert minerals differentiates terracotta from artificial roofing-products, and ensure an exceptional durability, especially against erosion and colour fading.

Eventually, as with every new or renovation construction project, it is strongly advised to consult local authorities, to learn about possible architectural specifications. As a matter of fact, in protected areas, local regulation may restrict the choice of tile format and colour in order to preserve the heritage.

Terracotta Accessories for a Perfect Finish

Our roofing product-line includes terracotta fittings specifically designed for each model of tile. These clay accessories allow roofers to follow local building habits and architectural styles, down to the detail.

Dry-accessories, that is fittings which require no mortar, have also been developed with many Terreal tiles, and are the guarantee of time-saving on the project.

Proud of their identity and diversity, Terreal's 46 clay tile-models have been designed to respect protected heritage as well as architectural creativity. They can blend in any British landscape, from slate-areas to plain tile tradition, from pan-tile cities to modern roofs laid with interlocking tiles.

With this unique catalogue, we invite you to discover the diversity of our product lines, and their main laying recommendations, which are described in the attached Laying Guide, written for the roof-professionals (see P. 190 to 224).



How to Select your Terracotta Tile?

Export Customer Service

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