

Tegral Twin-Skin Systems

Design Opportunities and Benefits

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steel roof sheeting and cladding in Ireland

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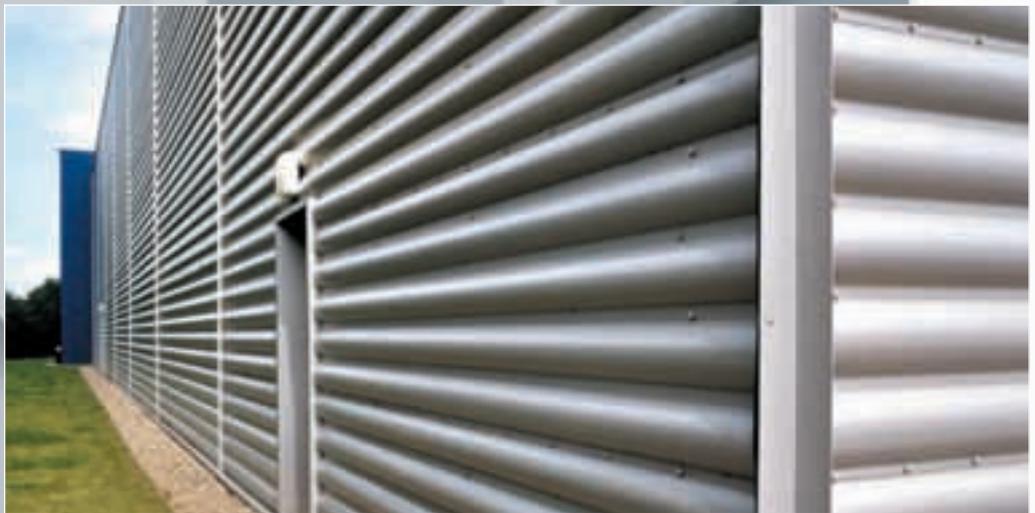
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Freedom of Expression

Twin-Skin roofing and cladding systems are a popular form of construction consisting of an internal profiled metal liner sheet, a metal spacer system and an external profiled metal weathering sheet. The system is insulated using glass or mineral wool quilt or slab and built up on-site. For maximum flexibility Tegral also supply a secret fix system (Alu-Seam® and Seam-Loc) and a site-assembled composite system (Trinsul).

Tegral's Twin-Skin roofing and cladding systems can offer the designer the opportunity to achieve both aesthetic appeal and the required functionality to meet regulatory design standards. Tegral Twin-Skin systems can also be specified to provide key functional benefits such as fire resistance and acoustic protection - direct advantages not found in other roofing and cladding systems. The five key benefits of Tegral Twin-Skin systems are presented as follows:



1 Freedom to Curve

Tegral's Twin-Skin Systems can be curved to create interesting designs for BOTH roofing and cladding.



2 The Potential of Shape

Tegral produce a range of profiles to suit all design needs. Used on large elevations they can create striking shadow effects or combined with innovative detailing, they can create arresting design features.



3 Strength & Protection

Tegral's Twin-Skin systems are proven as the best choice for fire and acoustic protection.



4 Green Credentials

Reduce, Reuse and Recycle - in line with Ireland's national campaign to reduce waste and help protect the environment - Tegral Twin-Skin systems are FULLY recyclable unlike PIR core composite panels.



5 Colour - Nature's True Bounty

Available in a vast array of colours, Tegral's Twin-Skin roofing and cladding may be specified to suit every environment.

Freedom to Curve

Tegral's roofing and cladding profiles can be curved to provide the designer with many creative opportunities. The nature of Tegral's Twin-Skin profiled metal systems allows for either self-curving or machine curving of the individual profile sheet depending on the radius involved. The Tegral Alu-Seam® standing seam roofing system allows for both concave and convex curving with the benefit of secret fixing. The sinusoidal form of Tegral Fineline 19 allows for curving to very tight radii. Further information is available from Tegral.

Tegral have over 25 years experience in helping architects achieve their design goals



Tegral Alu-Seam®



Tegral Arcline 40™



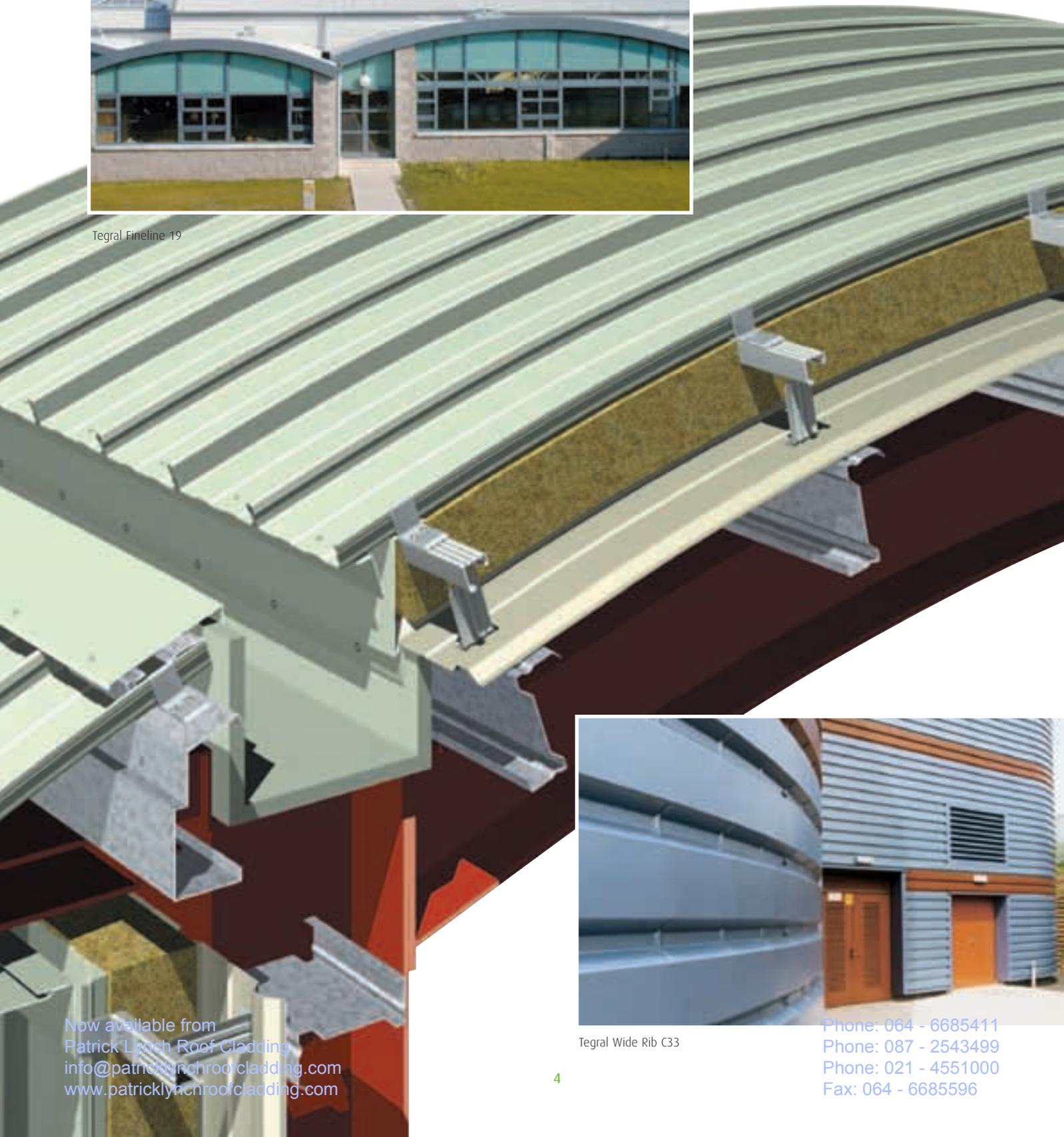
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m to Curve

Curve



Tegral Finline 19



Tegral Wide Rib C33

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The Potential of Shape

Profile shapes for roofing and cladding

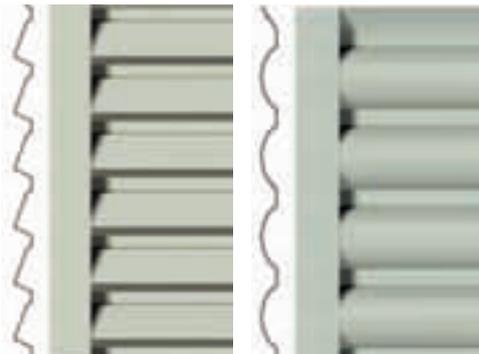
The term profile is used to describe the shape of the metal sheets used in the Tegral Twin-Skin system. The careful choice of profiles used in combination with each other, with interesting details or with other forms of cladding materials can emphasise a particular feature or change the overall scale and volume of a structure.

Depending on the depth of profile used, Tegral Twin-Skin systems can create different shadow effects which can be exploited by the designer to provide an attractive contrast to smoother surfaces.

Tegral offer sinusoidal and trapezoidal profiles with depths ranging from Mini Rib (8mm) to Deep Rib (60mm) including our own unique design registered feature profiles Shadowline 47™ and Arcline 40™. Many of our profiles can be used horizontally, vertically and diagonally providing more options for creativity in design and reducing the appearance of height or breadth accordingly.

Finally, our Alu-Seam® and Seam-Loc Standing Seam systems provides the long span roofing solution with the benefit of secret fixing and the option to curve.

Feature Profiles



Shadowline 47™

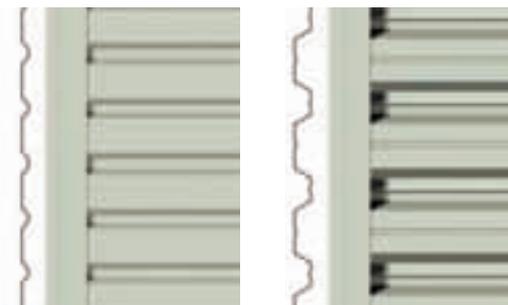
Arcline 40™

Trapezoidal



Wide Rib C33

Broad Rib 40



PL19

Mid Rib 46

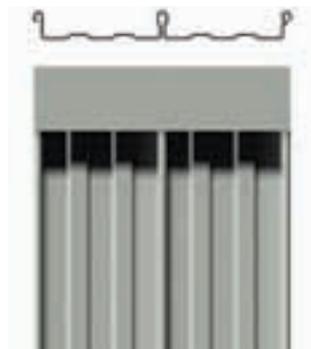
Tegral Twin-Skin systems offer choice of shape, depth, orientation and colour to create contrasts, shadow effects and styles

Sinusoidal

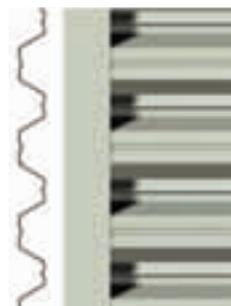


Fineline 19

Standing Seam



Alu-Seam®/ Seam-Loc



Deep Rib 60

H A P E

Profile shapes



Tegral Finline 19



Tegral Arcline 40™



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Tegral Finline 19

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Strength & Protection

Strength & Protection

Fire

There has been a great deal of confusion regarding the fire performance of metal cladding systems in recent years. The designer can be reassured that Tegral Twin-Skin systems meet the highest standards for fire protection laid down by both the insurance industry and the regulatory authorities and therefore provide the greatest possible reassurance to both designer and occupier.

Maximum use of non-combustible roofing and cladding systems will always provide both designer and client with the HIGHEST level of fire protection.

Fire insurance and Tegral Twin-Skin systems

The two principal reference authorities for fire insurance are Factory Mutual (FM) and the Loss Prevention Council (LPC). Factory Mutual who provide approval to many international companies, have a preference for non-combustible materials. The LPC require the use of non-combustible or LPC approved combustible materials. Regarding Tegral Twin-Skin systems, the metal components and glass or mineral wool material are classified as NON-COMBUSTIBLE and are therefore usually acceptable to insurers without further qualification.

Statutory requirements and Tegral Systems

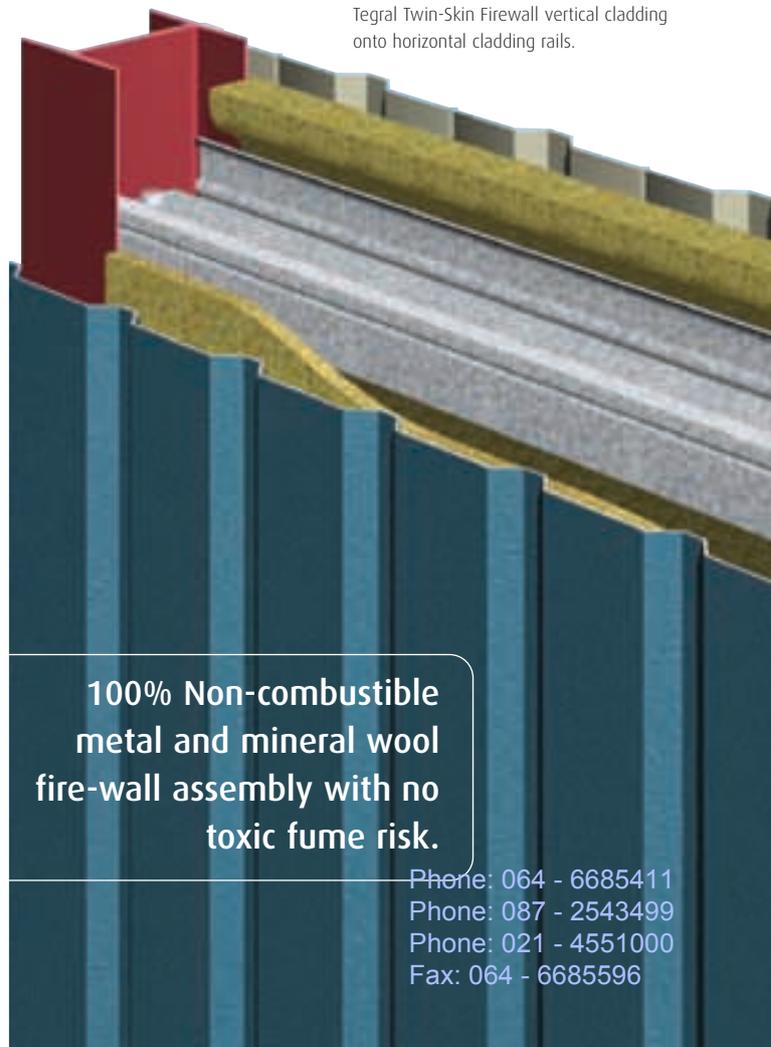
British Standard 476 is the relevant recognised standard in the UK and Ireland for fire performance. The combination of Class 0 (most favourable classification) profiled metal external cladding and internal liner sheets together with the use of non-combustible glass or mineral wool insulation have been approved to BS 476: Part 22 for fire resistance. Tegral Fire-Wall assemblies have been independently certified by Warrington Fire Research Centre Ltd. (WFRC) in the UK and meet the requirements for integrity and insulation to suit a variety of system applications.

Further information is available from Tegral Metal Forming Technical Services.



Tegral Shadowline 47™

WFRC No. C52869
Tegral Twin-Skin Firewall vertical cladding onto horizontal cladding rails.



100% Non-combustible metal and mineral wool fire-wall assembly with no toxic fume risk.

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Protection

Acoustic

Tegral's Twin-Skin systems for both roofing and cladding provide an excellent solution for sound absorption and noise reduction and satisfy the Health & Safety and Environmental Health regulations.

Acoustic Design

There are two relevant methods for reducing the effects of noise within a structure - sound reduction and sound absorption. Unlike other forms of cladding such as composite panel, Tegral's Twin-Skin acoustic systems can offer both sound reduction and sound absorption properties.

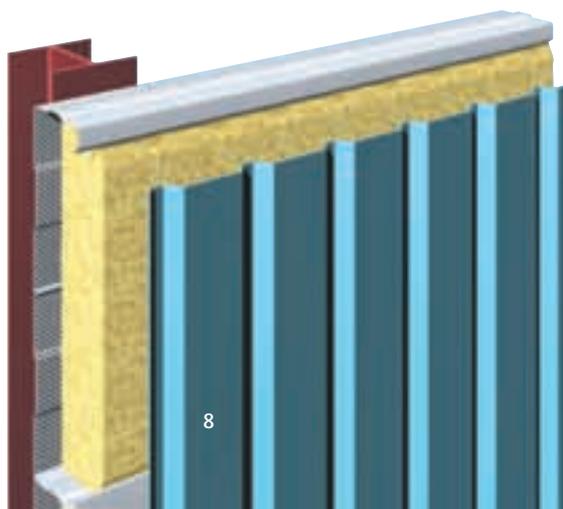
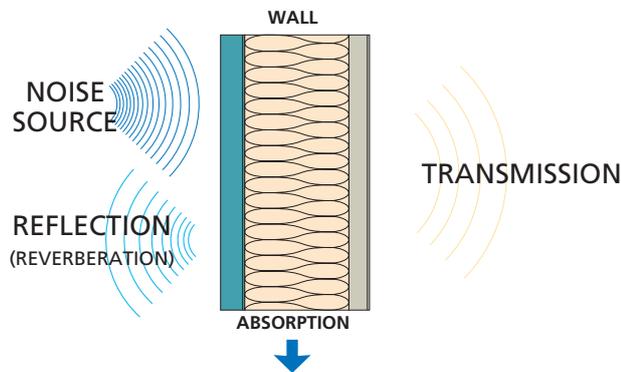
Sound Absorption

Sound absorption is defined as the damping of reverberant sound that normally reflects back from smooth hard internal surfaces. Sound absorption can be provided by using Tegral's perforated Liner Sheets in conjunction with suitable mineral wool insulation material. Please consult Tegral Technical Services for further details.

Sound Reduction

Sound reduction is defined as the reduction in sound transmission (the level of noise escaping from a building). Tegral's Twin-Skin systems provide effective sound reduction as they combine the acoustic insulation properties of mineral wool with the relatively high density of the metal sheeting. Sound reduction can be increased by the use of denser or thicker insulation. Tegral Metal Forming Technical Services can provide design assistance.

For large volume buildings such as gymnasias, concert halls and community centres. Tegral Twin-Skin systems can also help reduce the noise level caused by rain or hail and control reverberated sound.



Tegral Twin-Skin system showing perforated and profiled internal liner sheet for acoustic absorption.

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environment

Green Credentials

EU and the Kyoto Protocol

If the EU is to achieve the Kyoto Protocol goals, then improved insulation will have to be given serious consideration. According to the research institute 'Ecofys', - with better insulation of both old and new buildings, 363 million tonnes of carbon dioxide could be saved each year.

Life Cycle Costing

The cost of a building should be determined on a whole life basis and not just on the initial cost. The choice of roofing and cladding systems can have a significant impact on both the value of business to be conducted in the building and the operating costs of the building, over a lifetime. While initial costs may seem low - the longer term whole life basis should be considered when selecting cladding systems.

Tegral Twin-Skin systems offer significant environmental credentials and, in particular, are 100% recyclable.

The Case for steel

The results of a recent study on a Twin-Skin system carried out by CORUS Colors showed that only a very small proportion of environmental impacts were due to the coating used. The principle contribution is attributable to the steel substrate. Steel however offers the following environmental credentials:

- ✓ 100% recyclable.
- ✓ Uses minimum volume of materials.
- ✓ Clean, dust free construction.
- ✓ Minimum site waste.
- ✓ Good end of life options - dismantle and re-use, demolish and recycle.
- ✓ Offsite fabrication in controlled environment.
- ✓ Adaptable and flexible to suit changing lifetime requirements.



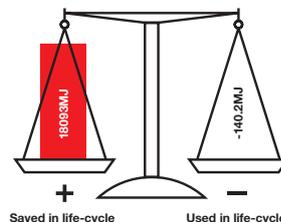
Tegral Fineline 19

The Case for mineral and glass wool insulation

A leading mineral wool manufacturer tested their mineral wool insulation for performance against key environmental impacts.

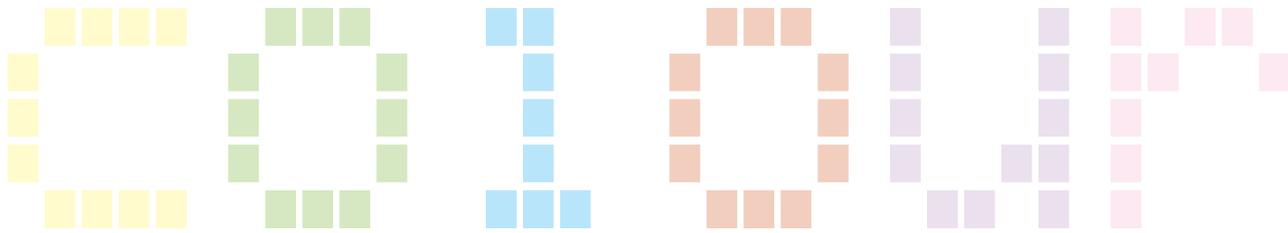
A typical mineral wool insulation product can save more than 100 times the energy used in its manufacture, transportation and disposal. The energy balance can become positive only five months after installation.

Rockwool Eco-balance: Energy



Mineral and glass wool insulation will, in their lifetime, save 100 times more energy than was used in their production.

- ✓ Mineral wool saves 61 times more eutrophication components than were emitted during production.
- ✓ The use of mineral wool results in the balance of acidifying gas production becoming positive only four months after installation. (Source: Force Technology / dk-Teknik / www.rockwool.com)
- ✓ The use of glass wool saves 100 times more acidifying gases than is used in its production.
- ✓ Glass wool production uses up to 80% recycled glass. (Source: www.isover.com)



Colour - Nature's True Bounty

Tegral have partnered with steel producer Corus Colors to introduce the latest and most innovative pre-coated steel to the Irish market. These pre-coated steel products include the following ranges:

HPS200® – The European market leading pre-coated steel comes with a maintenance free Confidex® guarantee for up to 30 years and offers improved colour fastness.

Prisma® – A new range pre-coated steel with metallic finish also backed by the Confidex® guarantee for up to 25 years.

Each of the above ranges is supported with the Repertoire® Colour matching consultancy from Corus Colors.



Tegral Arcline 40™

Colour Strategy

The appearance of cladding is influenced by many factors, including the surface finish, the shape of the profile, the building form and detailing, and the dynamics of colour itself.

Colour in the environment is a dynamic experience. As the quality and nature of light changes throughout the day so dramatic changes can occur in the appearance of the colour of a structure. The position of the sun will also influence the movement of shadow which will lighten and darken the colour of cladding.

Colour also modifies our perception of shape and form. Dark colours reduce apparent size, whereas light colours increase it. Bright colours also appear to advance towards the viewer.

The aim of designers will always be to contribute to the built environment with their choice of colour on their buildings – the range of colour options from Tegral will facilitate this ambition.

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Tegral Twin-Skin Roofing and Cladding



The Helix, Dublin.
Tegral Roof Decking



Independent News & Media plc.
Tegral Composite Floor Decking



Central Park, Leopardstown, Dublin.
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