



## Landini SpA

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CI/SfB



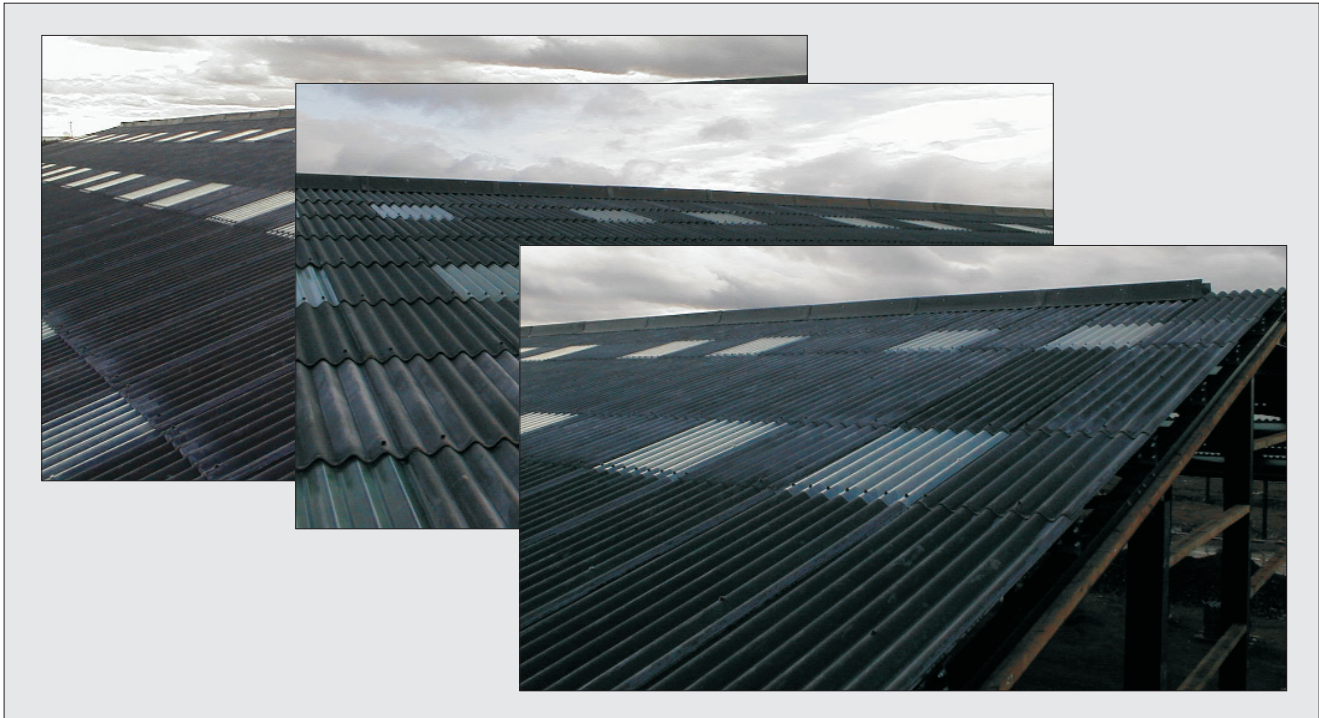
**Agrément  
Certificate  
No 03/4059**

Designated by Government  
to issue  
European Technical  
Approvals

## EUROSIX LAN PROFILED ROOF AND WALL CLADDING

Parement extérieur  
Verkleidung

# Product



• THIS CERTIFICATE RELATES TO EUROSIX LAN PROFILED ROOF AND WALL CLADDING. THE CORRUGATED SHEETS ARE USED FOR ROOFING AND CLADDING, IN EITHER A PLAIN FINISH OR WITH AN ACRYLIC OR MATT COATING.

- The sheets are reinforced with polypropylene strips and are classified as Class C, non-fragile assembly.
- The product is made to a formulation that does not contain asbestos, and complies with the requirements of BS EN 494 : 1994.

continued

## Regulations

### 1 The Building Regulations 2000 (as amended) (England and Wales)



The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of profiled sheets with the Building Regulations. In the opinion of the BBA, Eurosix Lan Profiled Roof and Wall Cladding, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement:	B2	Internal fire spread (linings)
Comment:		The uncoated product is non-combustible. The coated product has a Class 0 surface and meets this Requirement. See sections 8.1 to 8.4 of this Certificate.
Requirement:	B3(3)	Internal fire spread (structure)
Comment:		The roof space and concealed cavities should be subdivided in accordance with this Requirement.
Requirement:	B4(1)	External fire spread
Comment:		The uncoated product is non-combustible. The coated product has a Class 0 surface and meets this Requirement. See sections 8.1 to 8.4 of this Certificate.
Requirement:	B4(2)	External fire spread
Comment:		The product meets the Requirement. See sections 8.1 to 8.4 of this Certificate.

continued

- The product is installed generally in accordance with BS 8219 : 2001 and relevant parts of BS 5427-1 : 1996.
- The sheets are manufactured by Landini SpA in Italy and are marketed in the United Kingdom by:  
Briarwood Products Limited,  
Unit 7, Weston Europark,  
Winterstoke Road,  
Weston-Super-Mare,  
North Somerset BS23 3YT,  
Tel: 01934 641446,  
Fax: 01934 641214  
e-mail:  
briar.wood@ukonline.co.uk  
website:  
www.briarwoodproducts.co.uk

Requirement:	<b>C4</b>	Resistance to weather and ground moisture
Comment:		The product, when installed in accordance with this Certificate, meets this Requirement. See also section 11 of this Certificate.
Requirement:	<b>Regulation 7</b>	Materials and workmanship
Comment:		The product is an acceptable material. See sections 16.1 to 16.3 of this Certificate.

## 2 The Building Standards (Scotland) Regulations 1990 (as amended)



In the opinion of the BBA, Eurosix Lan Profiled Roof and Wall Cladding, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Technical Standards as listed below.

Regulation:	<b>10</b>	Fitness of materials and workmanship
Standard:	B2.1	Selection and use of materials, fittings, and components, and workmanship
Comment:		The products can contribute to a construction meet this Standard. See the <i>Installation</i> part of this Certificate.
Standard:	B2.2	Selection and use of materials, fittings, and components, and workmanship
Comment:		The product complies with this Standard. See sections 16.1 to 16.3 of this Certificate.
Regulation:	<b>12</b>	Structural fire precautions
Standard:	D2.3	Structural protection — Non-combustible materials
Comment:		The uncoated product is non-combustible. The coated product has a Class 0 surface. Both are unrestricted under this Standard. See sections 8.1 to 8.4 of this Certificate.
Standard:	D6.1	Concealed spaces — Principles
Comment:		The roof space and unsealed cavities should be subdivided in accordance with this Standard.
Standard:	D9.1	Fire spread from an adjoining building
Comment:		A roof or wall cladding incorporating the product has an AA classification and is unrestricted under this Standard. See sections 8.1 to 8.4 of this Certificate.
Standard:	D10.1	Fire spread on an external wall
Comment:		The uncoated product is non-combustible. The coated product has a Class 0 surface. Both are unrestricted under this Standard. See sections 8.1 to 8.4 of this Certificate.
Regulation:	<b>17</b>	Resistance to moisture
Standard:	G3.1	Resistance to precipitation — Resistance to precipitation
Comment:		The product satisfies the requirements of this Standard provided the installation complies with the conditions set out in this Certificate. See also section 11 of this Certificate.
Regulation:	<b>27</b>	Miscellaneous hazards
Standard:	P2.8	Danger from accident — Roof access
Comment:		When used as a roof covering, a visible warning is required under this Standard.

## 3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, Eurosix Lan Profiled Roof and Wall Cladding, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	<b>B2</b>	Fitness of materials and workmanship
Comment:		The product is an acceptable material. See sections 16.1 to 16.3 of this Certificate.
Regulation:	<b>C4</b>	Resistance to ground moisture and weather
Comment:		The product, installed in accordance with this Certificate, satisfies this Regulation. See also section 11 of this Certificate.
Regulation:	<b>E4</b>	Internal fire spread — Structure
Comment:		Concealed cavities should be sub-divided in accordance with this Regulation.
Regulation:	<b>E5</b>	External fire spread
Comment:		The uncoated product is non-combustible. The coated product has a Class 0 surface. Both are unrestricted under these Regulations. See sections 8.1 to 8.4 of this Certificate.

**4 Construction (Design and Management) Regulations 1994 (as amended)  
Construction (Design and Management) Regulations (Northern Ireland)  
1995 (as amended)**

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections:

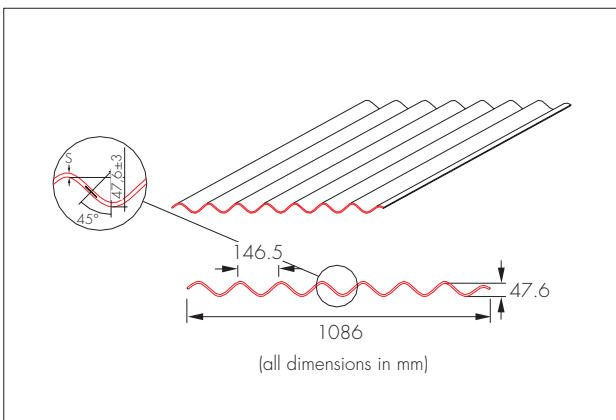
5 Description (5.3), 6 Delivery and site handling (6.3) and 18 Health and safety (18.1 and 18.2).

## Technical Specification

### 5 Description

5.1 Eurosix Lan Profiled Roof and Wall Cladding is manufactured in the profile shown in Figure 1.

Figure 1 Eurosix Lan Profiled Roof and Wall Cladding



5.2 The standard sheet sizes are defined as shown in Table 1.

Table 1 Standard sheet sizes

Dimension	Size (mm)
Length	1525, 1675, 1830, 2000, 2130, 2290, 2440, 2600, 2740, 2900, 3050
Overall width	1086
Effective width	1016
Thickness — minimum	6
Pitch of corrugation	146.5
Overall depth	47.6

5.3 Laid as a single skin, the weight of the corrugated sheets is approximately 15 kgm<sup>-2</sup>.

5.4 The sheets are available with an acrylic or matt coating.

5.5 The sheets are manufactured from cellulose and polymeric fibres, Portland cement and other constituents using the Hatchek process. Polypropylene safety strips are inserted in locations which run the full length of the sheet in each corrugation. Each sheet bears the manufacturer's production code by indent on the upper surface of the overlapping corrugation.

5.6 A range of accessories is available, but is outside the scope of this Certificate.

5.7 Quality control includes checks on density, thickness, dimensions, bending moment and water absorption.

5.8 The sheets are available with either a plain finish or with the acrylic or matt coating in the colour ranges:

- acrylic finish — London Blue (BS18-B-29), Juniper Green (BS12-B-29) and Van Dyke Brown (BS08-B29)
- matt finish — Anthracite, Jasper Brown and Serpentine Green.

5.9 Liquid paint is available for use on site on small damaged areas and exposed cut edges.

5.10 The acrylic coating is applied in a continuous production process in which the uncoated sheet is sprayed with acrylic or matt paint, heat-cured and cooled. The matt finish is applied on the grey sheets, in which the first layer has an integral colour applied during the manufacturing process. Continuous process control checks are conducted on oven temperatures and paint coverage.

5.11 Quality control tests are conducted on the paint for colour and viscosity.

### 6 Delivery and site handling

6.1 Sheets are delivered to site shrink-wrapped in 50 sheets per pallet, bearing identification of sheet profile, length, production date and pack number.

6.2 Sheets may be off-loaded by crane, using over-width spreaders to avoid sling damage to the edges of the sheet, or by hand, lifting sheets individually at each end.

6.3 Sheets must be stored flat in stacks not exceeding 1200 mm in height, on a minimum of three timber cross-bearers for sheets up to 2425 mm long and at least four bearers for longer sheets, on a concrete base or firm, level ground, in a sheltered position and away from the possibility of damage. A separate stack should be made for each length of sheet.

6.4 Sheets must be stacked with the weather (smooth) side upwards and with the small 'under rolls' of the profile all on the same side of the stack. Each corrugation of a sheet should be in intimate contact with the sheet below.

6.5 The shrink wrapping should be cut and folded down as soon as practicably possible and the sheets secured against wind damage. The two top sheets can be left projecting by approximately 200 mm to provide weather protection until required for use.

6.6 The acrylic or matt coated sheets must be stored under cover at all times, preferably in a building, and as described in sections 6.3, 6.4 and 6.5. If a tarpaulin is used provision must be made for effective air circulation around each stack, including spacing the tarpaulin at the top and sides of the stack to avoid condensation. Moisture ingress at this stage may detrimentally manifest itself later by:

- efflorescence staining
- distortion (may be apparent during installation).

6.7 To prevent surface damage during handling, sheets should be lifted clear of the surface of the stack and not dragged across it.

## Design Data

### 7 General

Eurosix Lan Profiled Roof and Wall Cladding is satisfactory for external use as a sheet roof or wall covering, generally in accordance with BS 8219 : 2001, relevant parts of BS 5427-1 : 1996, BS 5502<sup>(1)</sup> and BS 8200 : 1985.

(1) BS 5502-20 : 1990, BS 5502-21 : 1990, BS 5502-22 : 2003, BS 5502-23 : 1990.

### 8 Properties in relation to fire



8.1 The uncoated sheets if tested to BS 476-4 : 1970 will be non-combustible.

8.2 When tested in accordance with BS 476-6 : 1989 and BS 476-7 : 1997, the product achieved a final fire propagation index (I)  $\leq 0.4$  with a sub-index ( $i_1$ )  $\leq 0.1$  and a Class 1 surface spread of flame. Hence they will have a Class 0 surface as defined in the various national Building Regulations.

8.3 Roof structures built from the profiled sheets (uncoated and coated) and when tested to BS 476-3 : 1958 achieve an EXT.S.AA rating.

8.4 The products break up when exposed to intense heat and hence have no fire resistance. Where a given fire resistance is required, it must be achieved from a separate fire-resistant component.

### 9 Water absorption

After 24 hours' immersion in water, the nominal water absorption of the uncoated product is 15% of dry weight.

### 10 Density

When tested in accordance with BS EN 494 : 1994, the product has a nominal density of 1.63 kgm<sup>-3</sup>.

## 11 Watertightness



When tested in accordance with BS EN 494 : 1994, water droplets or dampness was not visible on the underside of the corrugations.

## 12 Strength

12.1 When tested to BS EN 494 : 1994 the minimum breaking load of the product is 4250 Nm<sup>-1</sup> width.

12.2 The impact resistance is at least equivalent to asbestos-cement sheets of similar profile.

12.3 When tested for fragility in accordance with ACR(M) 001 : 2000 *Test for Fragility of Roofing Assemblies*, the product is classified as Class C non-fragile assembly.

12.4 The pull-through strength of fixings is approximately 70% of that of asbestos-cement, and some compensation for this (by a greater number of fixings) may be necessary in some circumstances (eg low pitched roofs in severely exposed locations).

12.5 In an installation designed in accordance with BS 8219 : 2001, relevant parts of BS 5427-1 : 1996, and BS 8200 : 1985, with proper precautions against high local snow loads (as defined in BRE Digest 290 : 1984 *Loads on roofs from snow drifting against vertical obstructions and in valleys*), the sheets have adequate resistance against uniformly-distributed wind and snow loads. Where wind suction loadings may exceed 1500 Nm<sup>-2</sup>, the manufacturer's advice should be sought regarding the need for extra fixing or reduced purlin spacings.

## 13 Location

The product is satisfactory for use in areas where there is little possibility of impact or abrasion damage, ie at low levels in areas with restricted access or at higher levels in public areas (the areas are described in categories C to F of Table 2 in BS 8200 : 1985, which is reproduced in part in Table 1).

Table 1 Extract from BS 8200 : 1985, Table 2

Category <sup>(1)</sup>	Description	Examples	
C	Accessible primarily to those with some incentive to exercise care. Some chance of accident occurring and of misuse	Walls adjacent to private open gardens. Back walls of balconies	} Zone of wall up to 1.5 above pedestrian
D	Only accessible, but not near a common route, to those with high incentive to exercise care. Small chance of accident occurring or of misuse	Walls adjacent to small fenced decorative gardens with no through paths	
E	Above zone of normal impacts from people but liable to impacts from thrown or kicked objects	1.5 m to 6 m above pedestrian or floor level in public areas	
F	Above zone of normal impacts from people and not liable to impacts from thrown or kicked objects	Wall surfaces at higher positions than those defined in E above	

(1) Categories associated with impacts on surfaces of the vertical enclosure to buildings.

## 14 Maintenance of sheets

14.1 The sheets should not require routine maintenance but fixing accessories should be inspected at intervals and should be replaced as necessary.

14.2 Acrylic or matt coated sheets may be replaced when damaged using normal installation techniques, or recoated over an abraded area. The difference in colour between new and existing sheets should be acceptable under normal circumstances, but the difference between an existing sheet and a recoated area may be more obvious.


14.3 Maintenance painting will be required to restore the appearance of the cladding/roofing, and should be envisaged in 10 to 15 years. During this period, the colour stability is good, but there may be a noticeable colour difference between the sheet and fittings as new, or a colour difference may develop on exposure.

14.4 If maintenance painting is not carried out before the fibre-reinforced cement substrate has become exposed, the product will weather by attracting dirt and organic growth in the same way as uncoated material. The acrylic coating will delay the onset of erosion or organic growth.

## 15 Colour stability

The coated (matt or acrylic), fibre-reinforced cement sheets have good colour stability. However, a colour difference may exist between the coating when new, or may develop on weathering. In most circumstances, the difference in colour will be acceptable, but a perfect colour match between the two paints cannot be assured.

## 16 Durability

 16.1 Accelerated ageing tests conducted on the uncoated sheet show no significant evidence of deterioration, and indicate a performance similar to that of asbestos-cement.

16.2 The matrix material will carbonate and embrittle with time, and the uncoated product's appearance will change in the same way as asbestos-cement.

16.3 For the same conditions of use, it is expected that the products will remain serviceable for as long as equivalent asbestos-cement products.

## Installation

### 17 General

17.1 The sheets can be drilled and sawn by hand, or by power-operated reciprocating saw.

17.2 The precautions required during the limited working of Eurosix Lan products are described in section 18.

## 18 Health and safety

18.1 No specific exposure limit exists for the dust produced when the products are sawn or drilled, but there is a general duty (defined in HSE Guidance Note EH44) to reduce exposure to the minimum reasonably practicable. This can be achieved most easily by careful selection of sheet sizes. If cutting is required and excessive concentrations of dust are produced (eg by power sawing in a confined area), the measures defined in EH44 should be followed.

18.2 Care is required when walking on a roof constructed from profiled sheets and the precautions detailed in BS 8219 : 2001 regarding permanent walkways, roof boards, cat ladders and roof notices should be followed.

## 19 Procedure

The corrugated sheets are installed generally in accordance with BS 8219 : 2001, the relevant parts of BS 5427-1 : 1996 and BS 8200 : 1985.

## Technical Investigations

The following is a summary of the technical investigations carried out on Eurosix Lan Profiled Roof and Wall Cladding.

### 20 Tests

20.1 Tests were carried out in relation to:

- fixing pull-through strength
- water absorption
- coating thickness
- alkali immersion and adhesion
- water vapour permeability (coated and uncoated)
- algal growth
- accelerated artificial weathering and colour stability
- cyclic humidity.

20.2 An assessment was made of existing data to BS EN 494 : 1994 in relation to:

- dimensions
- density
- bending strength/moment
- water impermeability
- warm water
- soak/dry
- freeze/thaw
- heat/rain.

20.3 An assessment was made of test data from independent laboratories relating to the following:

- fire test to BS 476-3 : 1958
- fire test to BS 476-6 : 1989
- fire test to BS 476-7 : 1997
- Impact test to ACR[M]001 : 2000, 2nd Edition.

## 21 Investigations

The manufacturing process was examined, including the methods adopted for quality control.

### Bibliography

BS 476-3 : 1958 *Fire tests on building materials and structures — External fire exposure roof test*

BS 476-4 : 1970 *Fire tests on building materials and structures — Non-combustibility test for materials*

BS 476-6 : 1989 *Fire tests on building materials and structures — Method of test for fire propagation for products*

BS 476-7 : 1997 *Fire tests on building materials and structures — Method of test to determine the classification of the surface spread of flame of products*

BS 5427-1 : 1996 *Code of practice for the use of profiled sheet for roof and wall claddings on buildings — Design*

BS 5502-20 : 1990 *Buildings and structures for agriculture — Code of practice for general design considerations*

BS 5502-21 : 1990 *Buildings and structures for agriculture — Code of practice for selection and use of construction materials*

BS 5502-22 : 2003 *Buildings and structures for agriculture — Code of practice for design, construction and loading*

BS 5502-23 : 1990 *Buildings and structures for agriculture — Code of practice for fire precautions*

BS 8200 : 1985 *Code of practice for design of non-loadbearing external vertical enclosures of buildings*

BS 8219 : 2001 *Installation of sheet roof and wallcoverings — Profiled fibre cement — Code of practice*

BS EN 494 : 1994 *Fibre-cement profiled sheets and fittings for roofing — Product specification and test methods*

## Conditions of Certification

### 22 Conditions

22.1 This Certificate:

- (a) relates only to the product that is described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) is valid only within the UK;
- (d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (e) is copyright of the BBA;
- (f) is subject to English law.

22.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

22.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabrication including all related and relevant processes thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine; and

(c) are reviewed by the BBA as and when it considers appropriate.

22.4 In granting this Certificate, the BBA is not responsible for:

- (a) the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the actual works in which the product is installed, used and maintained, including the nature, design, methods and workmanship of such works.

22.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.



In the opinion of the British Board of Agrément, Eurosix Lan Profiled Roof and Wall Cladding is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 03/4059 is accordingly awarded to Landini SpA.

On behalf of the British Board of Agrément

Date of issue: 16th November 2004

A handwritten signature in black ink, appearing to read 'P. C. Hewitt', is written over a light grey background.

Chief Executive

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**British Board of Agrément**

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For technical or additional information,  
contact the Certificate holder (see  
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Certificate, including validity and  
scope, tel: Hotline 01923 665400,  
or check the BBA website.