CI / SfB

(4-) Mh4

Novelis Deutschland GmbH
Werk Goettingen
Hannoversche Strasse 1
37075 Goettingen
Germany
Tel: 00 49 551-304-0 Fax: 00 49 551-304-474
e-mail: sales.goettingen@novelis.com
website: www.novelis-painted.com

Agrément Certificate No 04/4083
*Second issue**

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

Designated by Government to issue European Technical Approvals

NOVELIS PVDF COIL-COATED ALUMINIUM SHEET AND COIL

Bande ou tôles d'aluminium prélaqué
Einbrennlackiertes Aluminiumband

Product

- *THIS CERTIFICATE RELATES TO NOVELIS PVDF COIL-COATED ALUMINIUM SHEET AND COIL AS DESCRIBED IN THE ACCOMPANYING DETAIL SHEETS.*

The products, depending on the thickness and grade of aluminium used, may be:

- *profiled by roll-forming for use as external roofing and cladding*
- *brake-pressed into the associated flashings and fittings*
- *fabricated into discreet wall cladding panels using standard folding and bending techniques, or*
- *used as flat sheet.*

These Front Sheets must be read in conjunction with the accompanying Detail Sheets, which provide information specific to the products.

Regulations — Detail Sheet 1

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 for roofing and cladding with the Building Regulations. In the opinion of the BBA, Novelis PVDF Coil-Coated Aluminium Sheet and Coil, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement:	B2(1)	Internal fire spread (linings)
Comment:		The products meet this Requirement. See the tinted areas in the *Performance in relation to fire* section of the accompanying Detail Sheets.
Requirement:	B3(4)	Internal fire spread (structure)
Comment:		The roof space and concealed cavities should be subdivided in accordance with this Requirement. See the tinted areas in the *Performance in relation to fire* section of the accompanying Detail Sheets.
Requirement:	B4(1)(2)	External fire spread
Comment:		The products meet this Requirement. See the tinted areas in the *Performance in relation to fire* section of the accompanying Detail Sheets.
Requirement:	C2(b)	Resistance to moisture
Comment:		The products meet this Requirement.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The products are acceptable. See the tinted areas in the *Durability* section of these Front Sheets and the accompanying Detail Sheets.

2 The Building (Scotland) Regulations 2004

In the opinion of the BBA, Novelis PVDF Coil-Coated Aluminium Sheet Coil, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Mandatory Standards as listed below.

Regulation:	8	Fitness and durability of materials and workmanship
Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The products can contribute to a construction satisfying this Regulation. See the tinted areas in the *Durability* section of these Front Sheets and the accompanying Detail Sheets and the *Installation* part of the Detail Sheets.
Regulation:	9	Building standards — construction
Standard:	2.1	Compartmentation
Standard:	2.2	Separation
Standard:	2.4	Cavities
Standard:	2.5	Internal linings
Standard:	2.7	Spread on external walls
Standard:	2.8	Spread from neighbouring buildings
Comment:		The products can satisfy these Standards, with reference to clauses 2.1.16(2), 2.2.10(1), 2.4.2(1)(2), 2.4.3(2), 2.4.7(1) and 2.4.9(2), 2.5.1(1)(2), 2.7.1(1)(2) and 2.8.1(1)(2) respectively. See the relevant tinted areas in the *Performance in relation to fire* section of the accompanying Detail Sheets.
Standard:	3.10	Precipitation
Comment:		The products can contribute to satisfying this Standard, with reference to clauses 3.10.1(1)(2), 3.10.5(1)(2) and 3.10.7(1)(2).
Regulation:	12	Building standards — conversions
Comment:		All comments given for these products under Regulation 9, also apply to this Regulation with reference to clause 0.12.1(1)(2) and Schedule 6(1)(2).

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

3 The Building Regulations (Northern Ireland) 2000

In the opinion of the BBA, Novelis PVDF Coil-Coated Aluminium Sheet and Coil, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The products are acceptable. See the tinted areas in the *Durability* section of these Front Sheets and the accompanying Detail Sheets.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		The Certificate the products can be used to satisfy this Regulation.
Regulation:	E3	Internal fire spread — Linings
Comment:		The products have a Class 0 surface as defined in Technical Booklet E : Section 2.4, and are unrestricted under this Regulation. See the relevant tinted areas in the *Performance in relation to fire* section of the accompanying Detail Sheets.
Regulation:	E4	Internal fire spread — Structure
Comment:		The roof space and concealed cavities should be subdivided in accordance with this Regulation. See the relevant tinted areas in the *Performance in relation to fire* section of the accompanying Detail Sheets.
Regulation:	E5	External fire spread
Comment:		The products are unrestricted under this Regulation. See the relevant tinted areas in the *Performance in relation to fire* section of the accompanying Detail Sheets.

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:	7 *Delivery and site handling* (7.3) of these Front Sheets and (2.1) of Detail Sheet 2.

Technical Specification

5 Description

5.1 Novelis PVDF(1) Coil-Coated Aluminium Sheet and Coil are coated on:

- the face side with the coating described in the appropriate Detail Sheet
- the reverse side with a 3 µm lacquer coating.

5.2 Each product is available in its own range of standard colours, details of which can be obtained from the Certificate holder.

(1) Polyvinylidene fluoride.

6 Manufacture

6.1 In a coil-coating process, aluminium coil is degreased, chemically pre-treated and coated on the face side with PVDF paint. Depending on the colour, the

PVDF may be applied in two, three or four coats. The reverse side is coated with lacquer.

6.2 Quality control tests are carried out on incoming paint and tests are carried out on the finished product to determine:

- paint film thickness
- impact resistance
- gloss
- colour and adhesion
- bend flexibility
- hardness
- solvent resistance.

6.3 Reference tests are carried out to determine the resistance to salt spray, water immersion and artificial weathering.

7 Delivery and site handling

7.1 The product is normally delivered to site on trailers and unloaded by crane. The site must have adequate access and a suitable surface for this traffic.

7.2 During transport, the edges and corners of the products must be protected against damage, and the products should be restrained to prevent abrasion.

7.3 On site, the product should be stored on a firm, dry base, on bearers at a maximum spacing of 900 mm, away from the possibility of damage, and covered to prevent the ingress of water. They should be stored as close as possible to the building where they are to be installed and handled in accordance with the Manual Handling Operations Regulations 1992.

7.4 When required for installation, the product should be lifted from the stack, rather than dragged across it.

Design Data

8 General

8.1 Novelis PVDF Coil-Coated Aluminium Sheet and Coil, after forming, is suitable for external use in the situations described in the accompanying Detail Sheets.

8.2 It may be used as plain sheet for such purposes as small infill panels (provided that these are sufficiently robust and properly secured).

9 Workability

9.1 The product can be roll-formed, brake-pressed or folded using conventional plant. Suitable bend radii should be chosen so as not to introduce any cracking or whitening of the paint film at the crown of the bend.

9.2 The product can be bent, drilled, punched and cut using conventional tools in good condition.

10 Compatibility

To prevent electro-chemical corrosion, direct contact with copper, or water run-off from copper, or direct contact with lead in coastal environments, should be avoided. Fixing devices must be of, or compatible with, aluminium. Precautions must also be taken (eg by using a strip sealant) to prevent direct contact with timber preserved with copper or fluoride compounds or treated with a fire retardant.

11 Location

11.1 The product is suitable for use at low level, in areas readily accessible to the public (eg alongside pedestrian thoroughfares and playing fields) where accidental damage is possible. Thus the product is suitable for use in categories B to F, as described in BS 8200 : 1985, Table 2, or in categories E_2 to E_5, as described in MOAT No 43, Table 3.1, which are reproduced (in part) in Table 1.

11.2 The impact resistance of the product is determined by the impact resistance of the aluminium on which it is based. No adhesion failure of the coating will occur although hairline cracks may occur in areas of high stress.

Table 1 Categories — BS 8200 and MOAT No 43

Category BS 8200	Description	Examples	Category MOAT 43
B	Readily accessible to public and others with little incentive to exercise care. Chances of accidents occurring and of misuse	Walls adjacent to pedestrian thoroughfares or playing fields when not in category A	E_2
C	Accessible mainly 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 m above pedestrian or floor level E_3
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_4
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	E'_2
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	E_5

12 Maintenance

12.1 In some areas (eg industrial areas and where cladding is sheltered directly beneath a soffit) it may be necessary to clean the installation periodically, both to restore its appearance and to remove potentially corrosive deposits. This can be done by hosing with water, using a neutral detergent.

12.2 Damaged panels may be replaced using normal installation techniques.

13 Durability

13.1 The aluminium substrate is durable. Although it may be exposed (eg at cut edges, through impact damage, or at hairline cracks at the crown of the profile), it will perform satisfactorily in all normal atmospheric conditions (including marine and industrial, but excluding areas where there are sources of abnormal corrosive contaminants, eg chemical works, cement works, copper foundries).

13.2 The coatings are colour-fast and have the durability described in the accompanying Detail Sheets.

13.3 The performance of the coating will depend upon the colour chosen, the environment, location, aspect, fall and use (ie roofing or cladding). Colour changes will be slight and uniform on any one elevation.

Technical Investigations

The following is a summary of the technical investigations carried out on Novelis PVDF Coil-Coated Aluminium Sheet and Coil.

14 Tests

Tests were carried out in accordance with MOAT No 34 : 1986 to determine:

- impact resistance
- scratch resistance
- abrasion resistance
- resistance to marking and staining
- surface spread of flame
- fire propagation
- fire roof exposure rating
- effect of artificial weathering
- effect of salt spray
- ease of forming
- resistance to sulphur dioxide
- adhesion of paint layer
- adhesion of sound-dampening film to FF2 plus product.

15 Investigations

15.1 Factory visits were made to examine the manufacturing process and obtain details of the raw material specifications and quality control procedures.

15.2 Visits were made to established sites to determine the performance of the products in use.

15.3 A visit was made to a site-in-progress to witness the installation of Falzonal roofing using the Lock-Welt system.

Bibliography

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

MOAT No 34 : 1986 *Precoated metal sheet roofing and cladding*

Conditions of Certification

16 Conditions

16.1 This Certificate:

(a) relates only to the product that is named, 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.

16.2 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.

16.3 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.

16.4 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.

16.5 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.

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

In the opinion of the British Board of Agrément, Novelis PVDF Coil-Coated Aluminium Sheet and Coil is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 04/4083 is accordingly awarded to Novelis Deutschland GmbH.

On behalf of the British Board of Agrément

Date of Second issue: 20th September 2005

Chief Executive

**Original Certificate issued 9th March 2004. This amended version includes a change of Certficate holder and product names, revised national Building Regulations and new* Conditions of Certification.

British Board of Agrément
P O Box No 195, Bucknalls Lane
Garston, Watford, Herts WD25 9BA
Fax: 01923 665301

e-mail: mail@bba.star.co.uk
website: www.bbacerts.co.uk

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

CI / SfB
(4-) Mh4

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

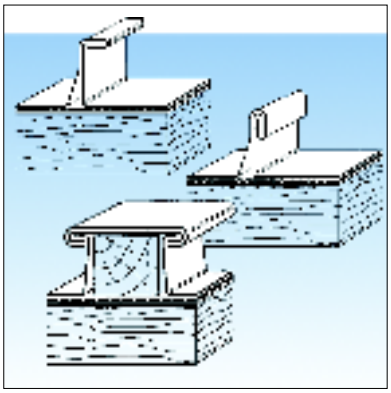
Novelis Deutschland GmbH

FALZONAL PVDF COIL-COATED ALUMINIUM COIL AND SHEET

Certificate No 04/4083

DETAIL SHEET 2
*Second issue**

Product



- *THIS DETAIL SHEET RELATES TO FALZONAL PVDF COIL-COATED ALUMINIUM COIL AND SHEET, PRODUCED IN LOCK-WELT QUALITY FOR USE AS EXTERNAL ROOFING OR CLADDING.*
- *The product is available in a range of colours and two gloss levels (20 units and 40 units).*

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations, general information relating to the system, and the Conditions of Certification.

Technical Specification

1 Description

1.1 Falzonal PVDF Coil-Coated Aluminium Coil and Sheet is manufactured from 0.7 mm thick aluminium alloy of grade AW-3005 to BS EN 573-3 : 1995, temper designation H41 to BS EN 515 : 1993. Therefore the product meets the material requirements for fully-supported aluminium sheet for roofing specified in BS EN 507 : 2000.

1.2 The product is coil-coated with a primer and PVDF topcoat to a total thickness of 24 µm (or 40 µm for selected metallic colours). A lacquer coat 3 µm thick is applied to the reverse side.

1.3 The product is available in a range of metallic and non-metallic colours at gloss levels of 40 and 20 units respectively.

1.4 A protective polyethylene film is applied to the top surface of the product, printed with the Novelis and Falzonal logos.

2 Delivery and site handling

2.1 Coils are normally supplied at a width of 600 mm and a variety of lengths, resulting in coil weights from 120 kg to 1000 kg. Other widths can be supplied on request.

2.2 The product may be delivered to site either in coils for on-site roll-forming, or as preformed sheets, formed by a third party and cut to specified lengths.

Design Data

3 General

3.1 Falzonal PVDF Coil-Coated Aluminium Coil and Sheet after roll-forming or brake pressing, is suitable for use as fully-supported roofing or cladding using the Lock-Welt system.

3.2 The metallic coatings are directional. To avoid contrast all sheets should be fixed in the same (machine) direction, using the information printed on the protective film as a guide. Each elevation should be clad with material from the same batch.

4 Workability

The product can be worked and folded into the shapes and configurations described in CP 143-15 : 1973 without damage to the substrate or coating. The correct tools, in good condition, are used to prevent damage to the coating, and swarf should be removed. The protective film should be left on the product as long as possible to prevent scuffing or scratching of the paint finish.

5 Performance in relation to fire

5.1 When tested to BS 476-6 : 1989, a sample of the product with colour reference 1775 achieved an index performance I=0 with sub-index (i_1=0) and to BS 476-7 : 1997, achieved a Class 1 surface. This product, therefore, has a Class 0 or low risk' surface as defined in the national Building Regulations.

5.2 A sample of colour reference 17H8 of the product, when tested to BS 476-3 : 1958 had an EXT.S.AA rating.

5.3 This performance may not be achieved by other colours of the product. The designations of other colours should be confirmed by:

England and Wales

Test or assessment in accordance with Approved Document B, Appendix A, clause 1

Scotland

Test to conform with Table to Annex 2C(1) or 2E(2) of Regulation 9

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland

Test or assessment by a UKAS accredited laboratory or an independent consultant with appropriate experience.

5.4 The reverse side's lacquer coating is also a Class 0 or low risk' surface.

6 Durability

6.1 The product will perform effectively as a cladding or roofing, with an ultimate life of at least 30 years.

6.2 In some industrial environments, maintenance painting to restore the sheet's appearance may be necessary after 20 years.

6.3 A planned maintenance cycle should be introduced if an extended design life is required.

Installation

7 General

7.1 The installation of Falzonal PVDF Coil-Coated Aluminium Coil and Sheet is designed and carried out in accordance with CP 143-15 : 1973 and the Certificate holder's installation instructions.

7.2 Traditional bending and folding techniques are employed using either hand or power-operated tools.

7.3 The protective film covering the product has a perforated strip running down each edge. This is removed immediately prior to the folding of standing seam joints to prevent the trapping of the film within the fold.

Bibliography

BS 476-3 : 1958 *Fire tests on building materials and structures — External fire exposure roof test*
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 EN 507 : 2000 *Roofing products from metal sheet — Specification for fully supported roofing products of aluminium sheet*

BS EN 515 : 1993 *Aluminium and aluminium alloys — Wrought products — Temper designations*

BS EN 573-3 : 1995 *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Chemical composition*

CP 143-15 : 1973 *Code of practice for sheet roof and wall coverings — Aluminium. Metric units*

BBA BRITISH BOARD OF AGRÉMENT TECHNICAL APPROVALS FOR CONSTRUCTION

On behalf of the British Board of Agrément

Date of Second issue: 20th September 2005

Chief Executive

**Original Detail Sheet issued 9th March 2004. This amended version includes a change of name of Certificate holder and product name.*

British Board of Agrément
P O Box No 195, Bucknalls Lane
Garston, Watford, Herts WD25 9BA
Fax: 01923 665301

e-mail: mail@bba.star.co.uk
website: www.bbacerts.co.uk

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

CI / SfB
(4-) Mh4

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

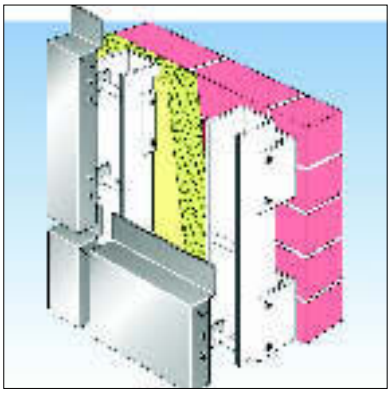
Novelis Deutschland GmbH

FF2 and FF2plus PVDF COIL-COATED ALUMINIUM COIL AND SHEET

Certificate No 04/4083

DETAIL SHEET 3
*Second issue**

Product



- *THIS DETAIL SHEET RELATES TO FF2 AND FF2plus PVDF COIL-COATED ALUMINIUM COIL AND SHEET, FOR USE AS EXTERNAL CLADDING.*
- *The product is available in a range of colours and two gloss levels (20 units and 40 units).*
- *FF2plus is the same product as FF2, with the application of a sound-deadening film to the reverse side.*

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations, general information relating to the system, and the Conditions of Certification.

Technical Specification

1 Description

1.1 FF2 and FF2plus PVDF Coil-Coated Aluminium Coil and Sheet is manufactured from 2 mm thick aluminium alloy of grade AW 5754 to BS EN 573-3 : 1995, temper designation H42 to BS EN 515 : 1993.

1.2 The product is coil-coated with a primer and PVDF topcoat to a total thickness of 25 µm (or from 35 µm to 40 µm for metallic colours). A lacquer coat 3 µm thick is applied to the reverse side.

1.3 The product is available in a range of metallic and non-metallic colours at gloss levels of 40 and 20 respectively.

1.4 A protective polyethylene film, printed with the Novelis and FF2 logos, is applied to the top surface of the product.

1.5 The FF2plus product is made by the application of 0.14 mm thick aluminium foil to the reverse side of the FF2 product using a sound-dampening adhesive. No assessment has been made by the BBA of the effectiveness of the sound dampening properties of the FF2plus product.

2 Delivery and site handling

FF2 and FF2plus are supplied in sheet form (FF2 can also be supplied in coil form) to specialist companies who form façade elements using a variety of folding, bending and roller curving machines. These façade elements are then delivered directly to site.

Design Data

3 General

3.1 FF2 and FF2plus PVDF Coil-Coated Aluminium Coil and Sheet, after fabrication into façade elements, is suitable for use as non-loadbearing cladding.

3.2 Some coloured coatings are directional. To avoid contrasts all sheets should be fixed in the same (machine) direction, using the information printed on the protective film as a guide. Each elevation should be clad with material from the same batch.

4 Workability

4.1 The product may be worked by conventional techniques including brake-pressing, roll forming, bending, drilling and punching. It is essential that the correct tools, in good condition, are used, to prevent any damage to the coating, and that any swarf should be removed.

4.2 To avoid cracking during forming, bends should be preformed at a minimum temperature of 20°C and at a minimum bending radius of 5 mm (equivalent to 2.5T, according to BS EN 13523-7 : 2001).

5 Performance in relation to fire

5.1 When tested to BS 476-6 : 1989, a sample of the product with colour reference 1775 achieved an index performance I=0 with sub-index (i_1=0) and to BS 476-7 : 1997, achieved a Class 1 surface. This product,

therefore, has a Class 0 or low risk' surface as defined in the national Building Regulations.

5.2 A sample of colour reference 17H8 of the product, when tested to BS 476-3 : 1958 had an EXT.S.AA rating.

5.3 This performance may not be achieved by other colours of the product. The designations of other colours should be confirmed by:

England and Wales

Test or assessment in accordance with Approved Document B, Appendix A, clause 1

Scotland

Test to conform with Table to Annex 2C(1) or 2E(2) of Regulation 9

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland

Test or assessment by a UKAS accredited laboratory or an independent consultant with appropriate experience.

5.4 The reverse sides of FF2 and FF2plus (ie incorporating the sound deadening film) are also Class 0 or low risk' surfaces.

6 Durability

6.1 The product will perform effectively as a cladding, with an ultimate life of at least 30 years.

6.2 In some industrial environments, maintenance painting to restore the sheet's appearance may be necessary after 20 years.

6.3 A planned maintenance cycle should be introduced if an extended design life is required.

Installation

7 General

The installation of FF2 and FF2plus PVDF Coil-Coated Aluminium Coil and Sheet façade elements is carried out in accordance with BS 8200 : 1985 and the Certificate holder's installation instructions.

Bibliography

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

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

BS EN 515 : 1993 *Aluminium and aluminium alloys — Wrought products — Temper designations*

BS EN 573-3 : 1995 *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Chemical composition*

BS EN 13523-7 : 2001 *Coil coated metals — Test methods — Resistance to cracking or bending (T-bend test)*

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

On behalf of the British Board of Agrément

Date of Second issue: 20th September 2005

Chief Executive

**Original Detail Sheet issued 9th March 2004. This amended version includes a change of name of Certificate holder and product name.*

British Board of Agrément
P O Box No 195, Bucknalls Lane
Garston, Watford, Herts WD25 9BA
Fax: 01923 665301

e-mail: mail@bba.star.co.uk
website: www.bbacerts.co.uk

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

CI / SfB
(4-) Mh4

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

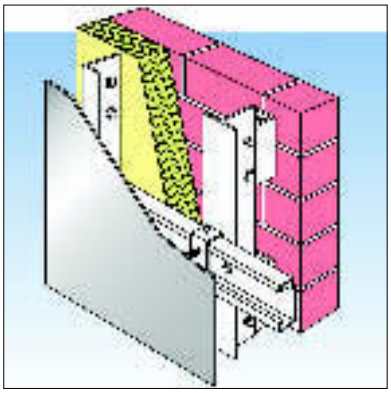
Novelis Deutschland GmbH

FF3 PVDF COIL-COATED ALUMINIUM COIL AND SHEET

Certificate No 04/4083

DETAIL SHEET 4
*Second issue**

Product



- *THIS DETAIL SHEET RELATES TO FF3 PVDF COIL-COATED ALUMINIUM COIL AND SHEET, FOR USE AS EXTERNAL CLADDING.*
- *The product is available in a range of colours at a gloss level of 20 units.*

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations, general information relating to the system, and the Conditions of Certification.

Technical Specification

1 Description

1.1 FF3 PVDF Coil-Coated Aluminium Coil and Sheet is manufactured from 3 mm thick aluminium alloy of grade AW 5754 to BS EN 573-3 : 1995, temper designation H42 to BS EN 515 : 1993.

1.2 The product is coil-coated with a primer and PVDF topcoat to a total thickness of 25 µm. A lacquer coat 3 µm thick is applied to the reverse side.

1.3 The product is available in a range of colours at a gloss level of 20 units.

1.4 A protective polyethylene film, printed with the Novelis and FF3 logos, is applied to the top surface of the product.

2 Delivery and site handling

FF3 is supplied in sheet form to specialist companies who form façade elements using a variety of folding, bending and roller curving machines. These façade elements are then delivered directly to site.

Design Data

3 General

3.1 FF3 PVDF Coil-Coated Aluminium Coil and Sheet, after fabrication into façade elements, is suitable for use as non-loadbearing cladding.

3.2 Each elevation should be clad with material from the same batch.

4 Workability

4.1 The product can be worked by conventional techniques including break-pressing, roll forming, bending, drilling and punching. It is essential that the correct tools, in good condition, are used, to prevent any damage to the coating, and that any swarf is removed.

4.2 To avoid cracking during forming, bends should be preformed at a minimum temperature of 20°C and at a minimum bending radius of 7.5 mm (equivalent to 2.5T, according to BS EN 13523-7 : 2001). Tighter bends may be achieved by routing out where the material is to be bent, in accordance with the Certificate holder's instructions.

4.3 The material may be stud-welded in accordance with the Certificate holder's instructions.

5 Performance in relation to fire

5.1 When tested to BS 476-6 : 1989, a sample of the product with colour reference 1775 achieved an index performance I=0 with sub-index (i_1=0) and to BS 476-7 : 1997, achieved a Class 1 surface. This product, therefore, has a Class 0 or 'low risk' surface as defined in the national Building Regulations.

5.2 A sample of colour reference 17H8 of the product, when tested to BS 476-3 : 1958 had an EXT.S.AA rating.

5.3 This performance may not be achieved by other colours of the product. The designations of other colours should be confirmed by:

England and Wales

Test or assessment in accordance with Approved Document B, Appendix A, clause 1

Scotland

Test to conform with Table to Annex 2C(1) or 2E(2) of Regulation 9

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland

Test or assessment by a UKAS accredited laboratory or an independent consultant with appropriate experience.

5.4 The reverse side's lacquer coating is also a Class 0 or low risk' surface.

6 Durability

6.1 The product will perform effectively as a cladding, with an ultimate life of at least 30 years.

6.2 In some industrial environments, maintenance painting to restore the sheet's appearance may be necessary after 20 years.

6.3 A planned maintenance cycle should be introduced if an extended design life is required.

Installation

7 General

The installation of FF3 PVDF Coil-Coated Aluminium Coil and Sheet façade elements is carried out in accordance with BS 8200 : 1985 and the Certificate holder's installation instructions.

Bibliography

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

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

BS EN 515 : 1993 *Aluminium and aluminium alloys — Wrought products — Temper designations*

BS EN 573-3 : 1995 *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Chemical composition*

BS EN 13523-7 : 2001 *Coil coated metals — Test methods — Resistance to cracking or bending (T-bend test)*

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

On behalf of the British Board of Agrément

Date of issue: 20th September 2005

Chief Executive

**Original Detail Sheet issued 9th March 2004. This amended version includes a change of name of Certificate holder and product name.*

British Board of Agrément
P O Box No 195, Bucknalls Lane
Garston, Watford, Herts WD25 9BA
Fax: 01923 665301

e-mail: mail@bba.star.co.uk
website: www.bbacerts.co.uk

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