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Agrément Certificate No 01/3858
*Second issue**

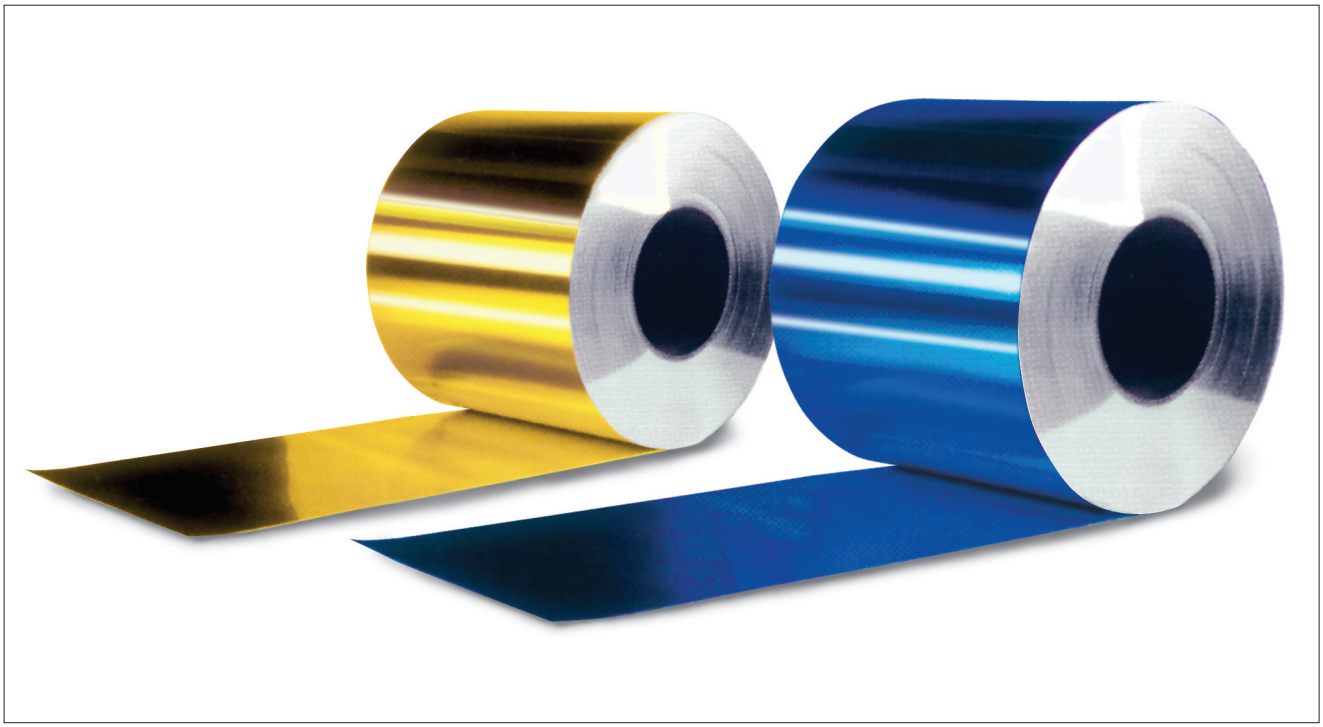
BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

Designated by Government to issue European Technical Approvals

NOVELIS GLOBALCOLOR COIL-COATED ALUMINIUM ALLOY COIL AND SHEET

Plaque en alliage d'aluminium
Legierungsblech auf Aluminiumgrundlage

Product



- *THIS CERTIFICATE OF CONFIRMATION RELATES TO NOVELIS GLOBALCOLOR COIL-COATED ALUMINIUM ALLOY COIL AND SHEET.*
- *The product may be:*
  - *profiled by roll-forming for use as external roofing, cladding or internal lining in accordance with the documents listed in section 14 of this Certificate*
  - *brake-pressed into the associated flashings and fittings, or*
  - *used as flat sheet*
  - *roll-formed in situ into gutter and downpipe profiles, in accordance with the appropriate Agrément Certificate for the gutter system.*

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 for roofing and cladding with the Building Regulations. In the opinion of the BBA, Novelis Globalcolor Coil-Coated Aluminium Alloy Coil and Sheet, 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 product meets this Requirement. See sections 10.2 and 10.3 of this Certificate.
Requirement:	B3(4)	Internal fire spread (structure)
Comment:		The roof space and concealed cavities should be subdivided in accordance with this Requirement. See sections 10.1 to 10.4 of this Certificate.
Requirement:	B4(1)(2)	External fire spread
Comment:		The product meets this Requirement. See sections 10.1 to 10.3 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		When installed in accordance with this Certificate, the product meets this Requirement.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is acceptable. See section 13.1 of this Certificate.

continued

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Confirmation of Certificate No 550/00 issued by ICITE (Istituto Centrale per l'Industrializzazione e la Tecnologia Edilizia) to Novelis Italia S.p.A.

2 The Building (Scotland) Regulations 2004

In the opinion of the BBA, Novelis Globalcolor Coil-Coated Aluminium Alloy Coil and Sheet, 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 product can contribute to a construction satisfying this Regulation. See section 13.1 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards — construction**
Standard:	2.1	Compartmentation
Comment:		The product can contribute to satisfying this Standard with reference to clause 2.1.16[2]. See sections 10.1 and 10.3 of this Certificate.
Standard:	2.2	Separation
Comment:		The product can contribute to satisfying this Standard with reference to clauses 2.2.7[2] and 2.2.10[1]. See sections 10.1 and 10.3 of this Certificate.
Standard:	2.4	Cavities
Comment:		The product can contribute to satisfying this Standard with reference to clauses 2.4.2[1][2], 2.4.3[2], 2.4.7[1] and 2.4.9[2]. See section 10.4 of this Certificate.
Standard:	2.5	Internal linings
Comment:		The product can contribute to satisfying this Standard with reference to clause 2.5.1[1][2]. See sections 10.2 and 10.3 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The product is not classified as non-combustible and is, therefore, restricted under this Standard, with reference to clauses 2.6.0[1][2] and 2.6.4[1][2] to 2.6.6[1][2]. See sections 10.2 and 10.3 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		The product can contribute to satisfying this Standard with reference to clause 2.7.1[1][2]. See sections 10.2 and 10.3 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		The product can contribute to satisfying this Standard with reference to clause 2.8.1[1][2]. See sections 10.1 and 10.3 of this Certificate.
Standard:	3.10	Precipitation
Comment:		When installed in accordance with this Certificate, the product can contribute to satisfying this Standard with reference to clauses 3.10.1[1], 3.10.5[1][2] and 3.10.7[1][2].
Regulation:	**12**	**Building standards — conversions**
Comment:		All comments given for this product 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 Globalcolor Coil-Coated Aluminium Alloy Coil and Sheet, 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 product is acceptable. See section 13.1 of this Certificate.
Regulation:	**C4**	Resistance to ground moisture and weather
Comment:		When installed in accordance with this Certificate, the product can be used to satisfy this Regulation.
Regulation:	**E3**	Internal fire spread — Linings
Comment:		The product has a Class 0 surface as defined in Technical Booklet E, Section 2.4, and is unrestricted under this Regulation. See sections 10.2 and 10.3 of this Certificate.
Regulation:	**E4**	Internal fire spread — Structure
Comment:		The roof space and concealed cavities should be subdivided in accordance with this Regulation. See sections 10.1 to 10.4 of this Certificate.

Regulation:	E5	External fire spread
Comment:		The product is unrestricted under this Regulation. See sections 10.1 to 10.3 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 section: *5 Description* (5.3).

Technical Specification

5 Description

5.1 Novelis Globalcolor Coil-Coated Aluminium Alloy Coil and Sheet are coated on one or both sides, in accordance with BS EN 1396 : 1997, with paint finishes of:

- Lamcolor 600 — polyester basecoat, plus polyester topcoat to a final thickness range of 20 to 30 µm, and gloss value from 20 to 80 µm
- Lamcolor 900 — polyurethane basecoat, plus polyamide topcoat to a final thickness range of 22 to 30 µm
- Lamcolor 1200 — epoxy basecoat, plus one, two or three coats of PVF_2 to nominal final thicknesses of 25, 35 and 45 µm respectively, and a gloss value from 20 to 45 µm.

5.2 The reverse side is coated with either the top side specification or a polyester or epoxy coat of thickness 3 to 4 µm.

5.3 Each paint finish is available in a range of colours.

5.4 The product is available in the dimensions given in Table 1.

Table 1 Dimensions

Type	Thickness (mm)	Width (mm)	Length (metres)
Coil	0.25–3	25–1650	—
Sheet	0.25–3	231–1650	0.3–6.0

6 Manufacture

6.1 In a coil-coating process, aluminium coil to BS EN 573-3 : 2003, alloys EN AW 3005, EN AW 3004, EN AW 3103, EN AW 3105 and EN AW 5754 is degreased, chemically pre-treated and coated to the specification described in section 5.1.

6.2 Quality control tests are carried out on incoming paint. Tests on the finished products are carried out to determine:

- paint film thickness
- impact resistance
- gloss
- colour
- bend/flexibility
- pencil hardness
- solvent resistance
- adhesion
- tensile properties.

6.3 Reference tests are carried out regularly to determine the resistance to:

- salt spray — to ASTM G 85 : 1994 or ECCA-T8 (1996)
- humidity — to ASTM D 2247 : 1994
- artificial weathering — to ASTM G 154 : 2000 or BS EN 13523-10 : 2001.

7 Delivery and site handling

7.1 The product is formed into profiled sheets and flashings by specialist forming companies.

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

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

7.4 On site, sheets 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.

7.5 When required for installation the sheets should be lifted from the stack rather than dragged across it.

Design Data

8 General

8.1 Novelis Globalcolor Coil-Coated Aluminium Alloy Coil and Sheet, after roll-forming or brake-pressing, is suitable for external use as roofing or cladding, or for internal use as a lining.

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

8.3 The metallic coatings are directional. To avoid contrast it should be ensured that all sheets

are fixed in the same (machine) direction. Each elevation should be clad with material from the same batch.

9 Workability

9.1 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 is removed.

9.2 The coatings are able to withstand a 2T[1] bend through 180° without damage. Lower T bends are possible by the selection of specific substrate alloys and tempers. The Certificate holder should be contacted for further details.

(1) BS EN 13523-7 : 2001.

9.3 Some care is necessary when handling the product to prevent damage to the coating.

10 Properties in relation to fire

10.1 Samples of Lamcolor 600 (white), Lamcolor 900 (grey) and Lamcolor 1200 (grey) were assessed as achieving an EXT.AA rating as defined in BS 476-3 : 1958.

10.2 When tested to BS 476-6 : 1989, samples of Lamcolor 600 (white), Lamcolor 900 (grey) and Lamcolor 1200 (grey) achieved an index of performance (I) of 0 with sub-index (i_2) of 0, and, when tested to BS 476-7 : 1997, achieved a Class 1 designation. The products, therefore, have a Class 0 or 'low risk' surface as defined in the national Building Regulations.

10.3 The performances stated in 10.1 and 10.2 may not be achieved by other colours in the range. The performance 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 of Regulation 9

Northern Ireland

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

10.4 The reverse side specification is also a Class 0 or 'low risk' surface.

11 Location

The product is suitable 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. These are as described in categories C to F of BS 8200 : 1985, Table 2, and as categories E'_2 to E_5 of MOAT No 43 : 1987, which are reproduced (in part) in Table 1.

Table 1 Categories — BS 8200 and MOAT No 43

Category BS 8200	Description	Examples	Category MOAT No 43
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	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 or floor	E_4
		Zone of wall up to 1.5 m above pedestrian or floor level	
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 A planned maintenance cycle should be introduced if an extended design life is required.

12.2 In some areas (eg coastal and industrial areas, and where cladding is sheltered directly beneath a soffit) it will 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.

12.3 Damaged panels may be replaced using normal installation techniques.

13 Durability

13.1 Novelis Globalcolor Coil-Coated Aluminium Alloy Coil and Sheet will perform effectively as a cladding or roofing with an ultimate life of at least 40 years.

13.2 The products are resistant to all normal atmospheric corrosive agencies (including coastal and industrial) and will withstand considerable distortion of the metal without the coating losing adhesion.

13.3 The performance of the coating will depend on 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.

13.4 Recoating of the product should be considered at the service life of the coating stated in Table 2.

Table 2 Service life of coatings (years)

Paint finish	Industrial or coastal environment	Rural or urban environment
Lamcolor 600	10	15
Lamcolor 900	15	20
Lamcolor 1200	15	20

13.5 If the building has an exposed eaves detail, in an aggressive environment, or if there are internal corrosive conditions, the specification of the reverse side coating should be discussed with the Certificate holder.

Installation

14 Procedure

14.1 The installation of Novelis Globalcolor Coil-Coated Aluminium Alloy Coil and Sheet is designed and carried out in accordance with CP 143-1 : 1958, or with the relevant parts of:

- BS 5427-1 : 1996
- BS 8200 : 1985
- National Federation of Roofing Contractors *Profiled sheet metal roofing and cladding — A guide to good practice (Third Edition)*
- MCRMA[1] Technical Paper No 5 — *Metal Wall Cladding Detailing Guide*
- MCRMA[1] Technical Paper No 6 — *Profiled Metal Roofing Design Guide.*

(1) The Metal Cladding and Roofing Manufacturers' Association.

14.2 Guttering systems should be designed and installed in accordance with BS EN 12056-3 : 2000 and the appropriate Agrément Certificate.

Technical Investigations

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

15 Tests

An examination was made of independent test reports relating to:

- fire propagation
- surface spread of flame
- fire roof exposure rating.

16 Investigations

The technical data contained in ICITE Certificate No 550/00 was examined in the context of UK practice.

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

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

BS EN 573-3 : 2003 *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Chemical composition*

BS EN 1396 : 1997 *Aluminium and aluminium alloys — Coil coated sheet and strip for general applications — Specifications*

BS EN 12056-3 : 2000 *Gravity Drainage Systems inside Buildings — Roof drainage, layout and calculation*

BS EN 13523-7 : 2001 *Coil coated metals — Test methods — Resistance to cracking or bending (T-bend test)*
BS EN 13523-10 : 2001 *Coil coated metals — Test methods — Resistance to fluorescent UV light and water condensation*

CP 143-1 : 1958 *Code of practice for sheet roof and wall coverings — Aluminium, corrugated and troughed*

MOAT No 43 : 1987 *UEAtc Directives for Impact Testing Opaque Vertical Building Components*

ASTM D 2247 : 1994 *Practice for testing water resistance of coatings in 100% relative humidity*

ASTM G 85 : 1994 *Practice for modified salt spray (fog) testing*

ASTM G 154 : 2000 *Practice for operating fluorescent light apparatus for UV exposure of nonmetallic materials*

Conditions of Certification

17 Conditions

17.1 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.

17.2 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.

17.3 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) remain covered by a valid Italian Agrément; and

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

17.4 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.

17.5 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 Globalcolor Coil-Coated Aluminium Alloy Coil and Sheet is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 01/3858 is accordingly awarded to Novelis Italia S.p.A.

On behalf of the British Board of Agrément

Date of Second issue: 16th August 2005

Chief Executive

**Original Certificate issued on 31st October 2001. This amended version includes a change of Certificate holder's and product name, revised national Building Regulations, amended statements in respect of* Properties in relation to fire *and new* Conditions of Certification.

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