

16<sup>th</sup> February 2019

## SuperWindy® - Product Description

### Prepainted aluminium Novelis for facades and window flashings

PD.06 rev. 05 issued on 19/02/2019

## Introduction

This product description is valid for coil coated aluminium coils and sheets used in the production of façade cladding systems (cassettes, windows flashing, etc.).

The Product is coated on both sides: the top side with an outdoor highly durable polyamide paint system, and the reverse side is a protective lacquer. On customer's request, a strippable protective film can be applied on the top side.

In the following, Novelis Italia S.p.A. will be defined as Novelis.

## 1 Scope

The purpose of this document is to integrate the specifications reported in the applicable EN norms for the aluminum prepainted products and should be a complementary consulting tool for both the designer as well as the customer, by providing useful information for correct processing and installing of the prepainted product.

### 1.1 Normative References

The properties of the aluminum alloys typically utilized for prepainted products are based on the applicable EN norms, wherever explicitly reported.

In addition to the above mentioned norms, Novelis defines internal standards and tolerances related to each specific product: these values are provided as Technical Datasheet and must be regarded as mandatory in order to correctly process and utilize the Product<sup>1</sup>.

## 2 Applications

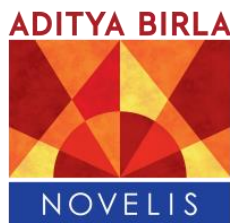
The Product is specifically designed for applications where excellent outdoor resistance, coupled with outstanding work-ability and formability, is requested: it suits for building and construction applications, i.e. facades, wall claddings, building accessories, window flashings...

## 3 Processing

The Product can be processed by cutting, blanking, punching, milling and can be formed by bending. Processing tools should be suited to the material, in order to avoid generating surface defects, and care should be taken in setting tool clearance. Any swarf from cutting should be carefully removed from the surface before further treatment. Laser cutting on the Product should be avoided wherever possible, as

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<sup>1</sup> Novelis issues the Technical Datasheet on customer's request.



it will generate paint burning on the area close to the cutting edges. Welding of the Product should be avoided<sup>2</sup>.

## 4 Storage

Storage of the Product should be designed to avoid both physical damages as well as surface degradation, including corrosion of the base metal, caused by action of external agents or by ageing or discoloration.

To avoid mechanical damages, care must be taken in handling and piling the Product: e.g., placing on the ground or double-stacking of coils are to be avoided wherever possible; when removing sheets from a stack, it is recommended not to drag them off, as this can scratch the sheet underneath.

Care must be taken to avoid any possibility of condensation: the Product must be unloaded, handled and stored indoor, in temperature-controlled environment; attention must always be paid to any rapid temperature change which could lead to condensation on the metal (e.g.: taking a coil from an unheated warehouse at 0°C to a heated one at 20°C or when coils are delivered straight into a heated warehouse). In all these cases, good ventilation must be designed to remove any trace of condensation.

## 5 Manufacturing and Mounting

Only the material with the same identification number (*same batch*) should be used for the same project in order to ensure colour and gloss uniformity. This is mandatory in the case of special effects.

To protect the material against any damage during processing and mounting, the coils and sheets should be covered by a protective film, which may be printed with Novelis logos and can be easily stripped off.

Arrows showing the direction of material flow during the painting process may be printed on the protective film: this direction has to be respected during manufacturing and mounting process, and necessarily, for metallic colours.

To avoid cracking during forming, the material has to be processed with a minimum temperature:

- minimum metal temperature during forming:  $18 \div 20$  [°C]
- typical metal bending radius during forming<sup>3</sup>:  $1T \div 1.5T$

The material has to be used within 6 (*six*) months of delivery; later processing will have to take paint weathering into account.

## 6 Demounting

Air Filtration systems during demounting operations are not necessary.

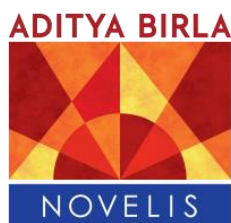
## 7 Maintenance

Regular maintenance extends the useful life of the coated material: regular and effective cleaning of the Product is needed to maintain a proper appearance of the surfaces and to avoid the accumulation of polluting substances too, that can compromise the functional and aesthetical properties.

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<sup>2</sup> Ref. EN 1396, Annex D

<sup>3</sup> The bending performance of the Product (T-value) depends on metal and paint properties; the specific value of each single product is reported on the Technical Datasheet.



Surfaces can be cleaned with neutral detergent (pH = 6 - 7), in case diluted in tepid water. Following the cleaning operations, rinsing with running water will be necessary. The use of solvents cleaners, harsh scrubbing, abrasive detergents or other cleaning tool which may damage the Pre-painted surface, should be avoided.

## 8 Metal Substrate

The following values refer to standard alloy. On customer's request different alloys are available.

### 8.1 Alloy

EN AW 5005 [AlMg1 (B)]

(rif. UNI EN 573-3)

AA 5005

(The Aluminium Association)

### 8.2 Temper

H42

(ref. EN 515)

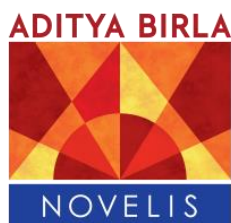
### 8.3 Mechanical Properties<sup>4</sup>

	H42	
	min	Max
Ultimate Tensile Strength – R <sub>m</sub> [MPa]	125	165
Proof Stress – R <sub>p0,2</sub> [MPa]	80	
Elongation – A <sub>50</sub> [%]	5	-

## 9 Dimensions and Tolerances (ref. EN 485-4)

The below reported values refer to standard ranges. Special specifications may be evaluated on customer's request.

<sup>4</sup> Mechanical characteristics are measured orthogonal than rolling direction at room temperature (ref. EN 1396, gauge ≤ 1,5 mm). For gauges (T) >1.5 mm, the Elongation (A<sub>50</sub> [%]) minimum value is 6 [%].



## 9.1 Metal Gauge

Gauge	Width <sup>5</sup>		
	<i>Width ≤ 1.000 mm [mm]</i>	<i>1.000 mm &lt; Width ≤ 1.250 mm [mm]</i>	<i>1.250 mm &lt; Width ≤ 1.500 mm [mm]</i>
From 1,0 mm to 1,2 mm	± 0,04	± 0,07	± 0,09
Over 1,2 mm to 1,5 mm	± 0,05	± 0,09	± 0,10
Over 1,5 mm to 1,8 mm	± 0,06	± 0,10	± 0,11
Over 1,8 mm to 2,0 mm	± 0,06	± 0,11	± 0,12

## 9.2 Width<sup>6</sup>

### 9.2.1 Tolerances for Coil

	<i>1000 mm &lt; width ≤ 1250 mm [mm]</i>		<i>1250 mm &lt; width ≤ 1500 mm [mm]</i>	
WIDTH	min	MAX	min	MAX
min 1.000 mm – Max 1.500 mm	- 0	+ 2	- 0	+ 2,5

### 9.2.2 Tolerances for Sheet

	<i>1000 mm &lt; width ≤ 1250 mm [mm]</i>		<i>1250 mm &lt; width ≤ 1500 mm [mm]</i>	
WIDTH	min	MAX	min	MAX
min 1.000 mm – Max 1.500 mm	- 0	+ 3	- 0	+ 4

## 9.3 Length

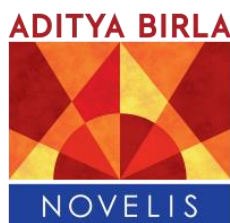
Gauge	Length (l) [mm]		
	<i>1000 &lt; l ≤ 2.000 [mm]</i>	<i>2000 &lt; l ≤ 3.000 [mm]</i>	<i>3000 &lt; l ≤ 5.000 [mm]</i>
From 1,0 mm up to 2,0 mm	+ 4 / - 0	+ 6 / - 0	+ 8 / - 0

## 9.4 Other dimensions

All other dimensions are in accordance with EN 485 – 4.

<sup>5</sup> The tolerances refer to rolled material prior to painting and cutting.

<sup>6</sup> The tolerances refer to finished goods.



## 10 Coating Characteristics

### 10.1 Fabrication

The Product is fabricated on a coil coating line: this process enables to apply different liquid paint layers, on an adequately pretreated metal substrate.

Process parameters on Novelis paint and finishing lines are continuously developed and monitored in order to ensure consistency of the surface quality and the functionalities of the Product.

### 10.2 Chemical Pre-treatment

The Product is chemically degreased and converted with a fully Chromium-free technology on both sides before coating.

### 10.3 Top Side

The top side of the Product is painted with an outdoor highly durable Polyamide paint system.

A wide color range is available both as Novelis standard as well as customer's specific design.

#### 10.3.1 Pastello Colours

Typical thickness<sup>7</sup>: 24 [µm]

Typical gloss<sup>8</sup>:

	<b>Semi Gloss</b>	<b>Full Gloss</b>
<b>Gloss Range [gloss units]</b>	30 ÷ 40	> 80
<b>Tolerance</b>	± 7	

#### 10.3.2 Metallic Colours

Typical thickness<sup>7</sup>: 20 [µm]

Typical gloss<sup>8</sup>:

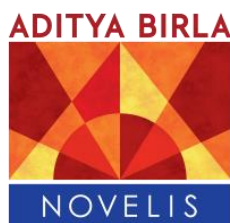
<b>Gloss Type</b>	<b>Semi Gloss</b>	<b>Full Gloss</b>
<b>Gloss Range [gloss units]</b>	40 ÷ 50	> 80
<b>Tolerance</b>	± 7	

#### 10.3.3 Transparent Coats

Transparent coats with different color shades are also available, whose specifications strongly vary depending on color itself.

<sup>7</sup> The paint thickness is measured according to EN 13523 - 1.

<sup>8</sup> The specular gloss is measured according to EN 13523 - 2.



## 10.4 Back Side

Back side is protected by an alchidic backing coat (semitransparent) suitable for adhesive bonding with most available glues and foams.

Typical paint thickness<sup>5</sup>: 4 [µm]

Brilliance<sup>6</sup>:

- 30 [gloss units] (*coupled with top sides < 60 units*)
- 80 [gloss units] (*coupled with top sides ≥ 60 units*)

## 10.5 Colour tolerances<sup>9</sup>

The colour refers to Novelis master colour and is measured as ΔE value, following CIELAB<sup>10</sup> system. This method does not apply to transparent and metallic colours nor special effects, nor for embossed surfaces.

## 10.6 Coating Hardness

Hardness: ≥ pencil Hardness F (*ref. EN 13523-4*)

## 10.7 Coating Durability (*ref. EN 1396*)

The Product has been tested in accordance with EN 1396, C.6 and suitable for application in outdoor applications as “3a”.

However, improved index can be achieved by adapting metal substrate.

## 11 Protective film

The protective film must always be removed in accordance with indications declared on the film itself, wherever applicable; elsewhere, when properly stored, within 6 (*six*) months from delivery date, with uniform stripping force at room temperatures (above 10 ÷ 15°C, below 60°C):

- chemical composition: polyethylene
- typical thickness: 75 ÷ 80 [µm]
- adhesive: acrylic

## 12 Surface Quality

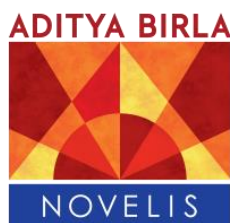
The visual inspection has to be done under sunlight and from a distance of 5 (*five*) meters, at least.

## 13 Fire Reaction

The Product in relation to its Fire Reaction properties is classified as “**A1**” in accordance to EN 13501 – 1.

<sup>9</sup> The color measurement is based on EN 13523-3. The tolerances depend on the color and reported in the “Technical Datasheet”.

<sup>10</sup> Measure according to ISO 7724:1984



## 14 Health and Safety

The Product in all its components – metal substrate, chemical pre-treatment, paints - is fully free from any heavy metal compounds in accordance with applying regulations; the paints, in fact, are fully free from any Chromium and Lead.

The Product does not represent any danger to health and is suitable for applications in food processing locations, hospitals, public areas, etc.

## 15 Recycling<sup>11</sup>

The Product is fully recyclable without any loss of properties. As it is painted, the Product must be properly recycled by processing it first to remove the organic coating from the metal substrate and then to remelt the metal.

The required energy to recycle the Product and its related emissions are very small compared to the production for primary aluminum (from the alumina through electrolytic process): these amount to approx. 5% and provide significant ecological benefits.

## 16 Quality Control

Quality control is carried out in accordance with Novelis internal standards, the EN and ASTM applicable references and the guidelines of the ECCA (*European Coil Coating Association*).

The following parameters are tested according to the corresponding standard:

### 16.1 Metal

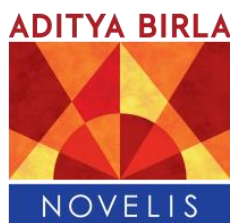
<b>Test</b>	<b>Standard</b>
Alloy	EN 573-3
Mechanical properties	<i>Measures:</i> EN 10002-1, UNI EN 1396 <i>Tolerance:</i> EN 1396
Dimensions and tolerances	EN 485-4

### 16.2 Coating

<b>Test</b>	<b>Norm/Standard</b>
Pre-treatment	internal std.
Coating thickness	EN 13523 - 1
Specular gloss	EN 13523 - 2
Colour difference	internal std. <sup>12</sup>
Pencil hardness	EN 13523 - 4
Resistance to rapid deformation	EN 13523 - 5
Adhesion after indentation	EN 13523 - 6
Resistance to cracking on bending	EN 13523 - 7
Adhesion of compound	internal std.

<sup>11</sup> EPD certification based on ISO standards is available on request.

<sup>12</sup> Based on UNI EN 13523-3



### 16.3 Resistance tests

- Accelerated tests

#### **Test**

Acetic acid salt spray test

UV-test

#### **Norm/Standard**

internal std. (*ref. to ASTM G85-94*)

internal std., QUV

- Outdoor exposure tests

#### **Test**

Hoek van Holland

Florida

#### **Standard**

EN 13523 – 19, EN 1396

EN 13523 – 19, EN 1396

## 17 Certifications

17.1 Quality Management System	UNI EN ISO 9001: 2015
17.2 Environment Management System	UNI EN ISO 14001:2015
17.3 Health & Safety Management System	BSI OHSAS 18001:2007
17.4 Energy Management system	ISO 50001:2011
17.5 Certificate of Factory Production Control	EN 15088:2005 <sup>13</sup>

## 18 Others

Novelis maintains the right to update and modify the contents of this product description at any time. Any deviation from this product description is subject to a special agreement.

Novelis is not responsible for the incorrect technical applications of its products.

This product description is the property of Novelis and is regarded as confidential. Information contained herein must not be divulged to other parties without the written consent of Novelis.

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<sup>13</sup> In compliance with the Directive 89/106/CEE, amended by the Directive 93/68/CEE of the Council of European Communities (Construction Products Directive - CPD)