

QUALITY CONTROL PLAN ANODIZED ALUMINIUM

Certifications

Coil is certified ISO 9001:2015.

Certificate of Compliance

For Architectural Applications, a Certificate of Compliance may be requested. This Certificate provides you with all production measurements, documented and certified as mentioned below.

Gloss measurement

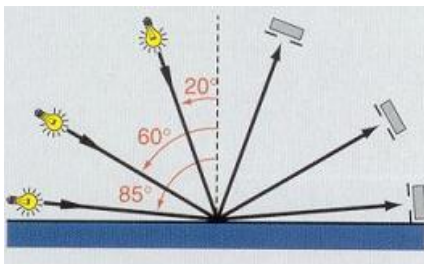
The measurement of gloss is important in projects where a lot of anodised sheets are mounted together (e.g. Facades).

The gloss value is mainly determined by the substrate, and our process can adjust this value only within a certain range and with approved substrates.

Product segment	C-Bond; C-Bond Brush C-Bond Brite; C-Iconic	C-Wall; C-Wall Brush; C-Wall Brite; C-Deco	C-Flex
Frequency	3 times over the width, every 100lm.		

Measurement principle:

- The measurement is done by the reflection of light. Light will fall on the metal under a certain angle (20°, 60° or 85° parallel with the rolling direction) and the reflected light will be measured. The gloss is expressed in gloss units.
- With Coil's continuous anodising process, measurement angles of 20°, 60° or 85° are used.
- *The gloss is measured with a Multigloss 268 measurement device according to the ISO 7688 Norm.*



Anodic layer thickness

The anodic layer thickness is measured with an isoscope (EN ISO 2360), based on the principle of Eddy Currents. These currents are created through electromagnetic induction. When an alternating current (AC) is applied to a conductor, a magnetic field is developed in and around this conductor.

- When another conductor is brought into the proximity of this magnetic field, a current will be induced in this conductor.
- To measure the anodic layer thickness (which is non-conductive) a conductor is used to setup an alternating magnetic field at the surface of the instrument's probe.
- If the probe is brought near a conductive surface (the aluminium substrate), the alternating magnetic field will setup eddy currents on it. The distance of the probe from the substrate affects the magnitude of the Eddy Currents. This distance is the thickness of the non-conductive anodic layer thickness.

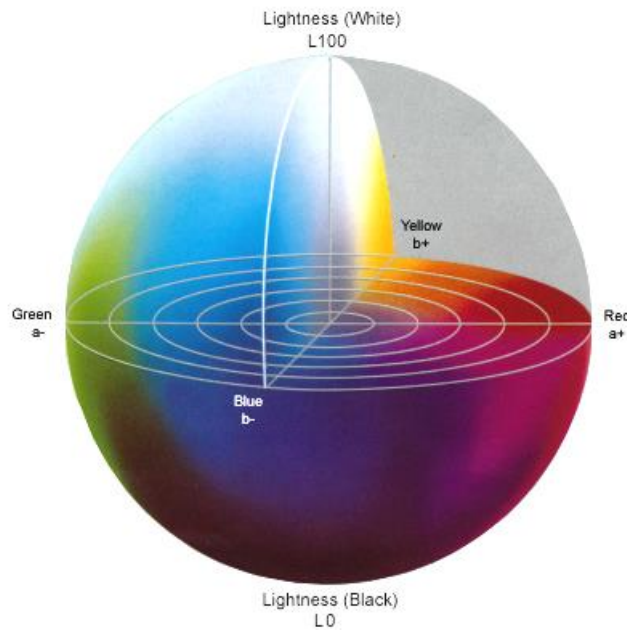
The nominal anodic layer thickness will be the minimum anodic layer thickness.

Product segment	C-Bond; C-Bond Brush C-Bond Brite; C-Iconic	C-Wall; C-Wall Brush; C-Wall Brite; C-Deco	C-Flex	C-Tech (only layer thickness guaranteed)
Frequency	3 times over the width, every 100lm.			3 times over the width, begin / middle / end of each coil



Color measurement

- A color can be expressed in a 3-dimensional system, based on 3 axes :
 - L*-axis : black – white
 - a*-axis : green – red
 - b*-axis : blue – yellow
- The color measurement point will be expressed by a combination of L*, a* and b*.
- A color difference between 2 measurements can be expressed as a delta E value in accordance with the formula : $\Delta E^2 = \Delta L^{*2} + \Delta a^{*2} + \Delta b^{*2}$



Product segment	C-Bond; C-Bond Brush C-Bond Brite; C-Iconic	C-Wall; C-Wall Brush; C-Wall Brite; C-Deco	C-Flex
Frequency	5 times over the width, every 100lm.		

Sealing

The sealing quality is very important as a good sealing will determine various characteristics of the anodic layer such as:

- abrasion resistance
- anti-fingerprint behavior
- hardness
- corrosion resistance
- non-fading of the color
- light stability

Mass loss test (in case of Certificate of Compliance one guaranteed test performed per order)

The sealing quality will be expressed by a mass loss test in accordance with the standard ISO3210.

- With this test, a test piece of 1 dm² will be immersed in an aqueous phosphoric acid / chromic acid solution for 15 minutes.
- This solution will dissolve any unsealed anodic layer. This will result in a loss of weight and the well-sealed anodic layer will be left.
- The bare aluminium will not be attacked as the Cr⁶⁺ will passivate the aluminium.
- The test piece will be weight before and after the immersion. The loss of mass is calculated and will be expressed in mg/dm².

Guarantee for General purpose and architectural applications

C-Bond; C-Bond Brush C-Bond Brite; C-Iconic	C-Wall; C-Brush; C-Brite C-Deco;	C-Flex	C-Tech	Qualanod
15 mg/dm ²	20 mg/dm ²	25 mg/dm ²	30 mg/dm ²	30 mg/dm ²



Dye spot test (one test per coil performed)

The sealing quality can also be expressed by the dye spot test, in accordance with standard ISO 2143.

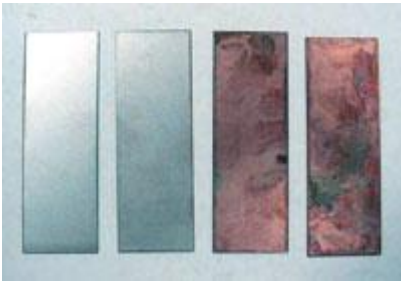
- Information on the sealing quality will be given by testing the resistance of the anodic layer to the absorption of dyes.
- A drop of a specified acid solution will attack the test surface. After that the test surface will be washed and dried.
- Consecutively, a drop of a specified dye is allowed on the same spot. After washing and slightly whitening the surface with a light abrasive, the test area is examined to assess the intensity of the stain.
- The intensity will be compared with a standard, and the loss of absorptive power is expressed as a numerical value : an excellent sealing quality will result into a loss of absorptive power whilst a poor sealing quality will not have a loss in absorptive power.

Continuity of the anodic layer

The continuity of the anodic layer is evaluated with a Copper Sulfate Test in accordance with Standard ISO2085.

Measurement principle:

- Drops of copper sulfate reagent are put on surface areas of about 100 mm².
- If the area includes points where the metal is bare or poorly covered by an anodic layer, a chemical deposition of copper takes place on the aluminium, accompanied by a release of gas (H₂).
- After the test, black and / or dark reddish spots can be seen where the coating is not continuous.



Frequency of measurement: in case of Certificate of Compliance one guaranteed test performed per order.