

	TECHNICAL ACCEPTANCE CONDITIONS	Identifier	WTO
	ANODISING TREATMENT SERVICE	Date of issue	05-11-2019
		Page / of pages	1 of 5

1. PURPOSE OF ANODIC OXIDATION (ANODISING)

The purpose of anodic oxidation is to create an oxide layer showing increased resistance to corrosion on the aluminium surface. Anodic oxidation can also give a decorative appearance to some alloys.

2. ANODIC OXIDATION

2.1 General information

Type of material should be precisely specified before placing an order for an anodising treatment service.

The Customer Service Department can provide the customer with information on the type of alloys to be anodised and coloured and the effects that can be expected for a given alloy.

Recommended alloys for protective and decorative anodising:

- section: EN AW 6060, EN AW 6063 alloys
- plate: alloys of the 1000, 3000, 5000 series
- pure aluminium.

Raw products can be supplied to the anodising process in two grades:

- a) material in quality for anodising,
- b) normal quality material

Semi-finished product in case of which decorative appearance may be required after anodising process should be ordered from the aluminium products manufacturer in a quality suitable for anodising.


2.2. Pretreatment

The purpose of the (mechanical or chemical) pretreatment of components to be anodised is decorative surface preparation.

Appropriate treatment makes it possible to achieve various surface effects, which should be agreed between the Ordering Party and the Contractor.

Table No. 1 contains the abbreviations for anodic oxidation depending on the pretreatment

Abbreviation	Type of treatment		Guidelines and explanations
	pretreatment	main treatment	
E0	without significant pretreatment removing surface layer	anodised and fixed	anodic oxidation is carried out after degreasing and etching (removal of naturally formed oxide layer) without further pretreatment. The surface appearance obtained after the anodising process is maintained as on a raw section. The surface is glossy. Scars, scrapes, abrasions, file marks, scratches, longitudinal streaks that occurred during the section extrusion process remain visible. Traces of corrosion, previously invisible, become clearly visible.

	TECHNICAL ACCEPTANCE CONDITIONS	Identifier	WTO
	ANODISING TREATMENT SERVICE	Date of issue	05-11-2019
		Page / of pages	2 of 5

E6	chemical treatment in special etching baths - satinizing	anodised and fixed	<p>After degreasing and etching in a special bath, a satin matt surface is obtained. Streaks and defects created during production and treatment may not disappear completely but they are largely removed.</p> <p>Some traces of corrosion that are not very clear before etching may now become visible.</p>
ES	shot blasting	anodised and fixed	<p>Shot blasting makes it possible to obtain a uniform matt surface that does not require satinizing in the anodising process. This treatment eliminates surface defects with a limited depth (minor scratches, abrasions). The treatment designed mainly for decorative and furniture profiles as well as aluminium joinery.</p> <p>The standard length for shot blasting is from 4 to 7 m, smaller lengths require consultation.</p>

3. REQUIREMENTS FOR ANODISED COATINGS.

3.1. Oxide coating thickness.

Depending on the purpose of the material, sealed anodised oxide coatings on aluminium and aluminium alloys are recommended in accordance with Table No. 2.

<i>Use conditions</i>	<i>Minimum coating thickness "u"- sealed</i>
W - extremely difficult	Al/An 25 u
C - difficult	Al/An 20 u
U - moderate	Al/An 15 u
L - light	Al/An 10 u
B - very light	Al/An 5 u

W - very difficult conditions with a strong corrosive action, correspond to extremely difficult conditions of use

C - difficult environment with a strong corrosive action corresponding to difficult conditions of use

U - environment with a moderate corrosive action corresponding to moderate conditions of use

L - conditions with a light corrosive action corresponding to light conditions of use

B - environment with a very mild corrosive action corresponding to the lightest conditions of use.

3.2. Quality of oxide layer

The oxide layer must meet the control method conditions specified by the following standards: PN-801H-97023, PN- EN 12373 parts 1, 2, 3, 4, 5, 6.


3.3. External surface appearance

The appearance and colour of the semi-finished product required by the Ordering Party must be determined before the anodising process. The Contractor shall agree acceptable colour deviations with the Ordering Party.

Deviations shall be in accordance with "The standard for colour-standard anodising" used in the company.

ATTENTION!

Small shade deviations due to technological reasons are unavoidable. The Ordering Party should be informed about the necessity of using technological supports (applies to low stiffness, strip-type profiles) due to the formation of small uncoloured marks.

	TECHNICAL ACCEPTANCE CONDITIONS	Identifier	WTO
	ANODISING TREATMENT SERVICE	Date of issue	05-11-2019
		Page / of pages	3 of 5

Applicable symbols are described in [Table No. 3](#)

No.	Symbol.	Colour
1	C-0	natural aluminium-standard
2	C-31	light champagne-standard
3	C-32	champagne-standard
4	C-33	olive-standard
5	C-34	brown-standard
6	C-35	dark brown (close to black)-standard

The surface effects after individual treatments are shown in [Table No. 4](#) .

No.	Symbol	Type of pretreatment	Surface effect
1	E0	without pretreatment	raw material surface
2	E6	satining	matt, satin
3	ES	shot blasting	homogeneous, matt, satin

4. INFORMATION FOR CUSTOMER

Before placing an order for an anodising treatment service, the required pretreatment (Table No. 1), which has a direct impact on the decorative appearance of the final product, should be described in detail as well as detailed drawings showing the area and length of the components to be anodised should be submitted. Semi-finished products in normal quality can be anodised, however no requirements concerning their decorative appearance may be imposed as for the sections in quality for anodising, even if E6 or ES + E6 pretreatment is used. When ordering aluminium products, one should specify their manufacturing quality and future use, because these factors determine decorative appearance of the component after the anodising process. The anodised coating on the product will be of good quality regardless of the decorative appearance. After the anodising process, traces of fixing may be visible at each end of the profile, at a section up to 5 cm. In the case of aluminium plates, this trace may remain in each of the component corners, up to 5 cm wide.

The most common material defects of raw aluminium sections, aluminium plates and products, also visible after the anodising process, include:

1. Convexity over the entire cross section.
2. Transverse cracks on the edges.
3. Abrasions, burrs.
4. Small burrs and convexities more or less concentrated.
5. Linear scratches of the drawn material.
6. Surface bubbles along the drawing direction. Small surface bulges. This defect is visible after brushing and etching.
7. Deep bubbles (visible to the naked eye) are much more visible after the anodising process.
8. Traces of straightening, rows of parallel, very shiny sections, arranged obliquely to the material drawing axis.
9. Traces of smoke, stripes and streaks. This defect is not visible on the raw section, after anodising it is particularly visible in the form of darker or lighter bands.
10. Abrasions occurring in the places of friction of sections during transport, mechanical damage, burrs, scratches. The defects remain after anodizing.

	TECHNICAL ACCEPTANCE CONDITIONS	Identifier	WTO
	ANODISING TREATMENT SERVICE	Date of issue	05-11-2019
		Page / of pages	4 of 5

11 Material after anodising has a grey colour. The reason is the excessive amount of metals (silicon, magnesium, iron, manganese) in the aluminium alloy. The components of these metals tend to remain entirely in the oxide layer. The alloy is not suitable for obtaining decorative surface appearance after anodising.

12. Stains of varying shade, shape and size arranged on the anodised component with certain regularity are the result of heterogeneous distribution of the raw material.

13. Corrosion visible on the raw section is also visible after the anodising process. This defect is often not visible on the raw material, while it is clearly visible after anodising. Corrosion can be local, extensive, surface or deep.

14. In the case of bridged profiles, soiling is often caused by inaccurately clamped a-thermal spacers, which make rinsing of the technological solutions much more difficult. Consequently, the residues contaminate the finished product after completed process.

Anodising of welded parts

1. The following defects and threats may occur when anodising parts made from welded open profiles:

- a) due to structural changes and discontinuities within the weld, changes occur in the current flow causing defects in the anodised coating within this weld, in extreme cases the coating does not form at all.
- b) due to its chemical composition, the weld has a different colour than the base material (chemical composition of the welding wire must be as close as possible to the chemical composition of the welded parts)
- c) wrong weld penetration may cause permanent damage to the weld during etching process, which may result in permanent damage to the welded part
- d) in micro-gaps, which act as capillaries, bath residues produce crystalline bloom in later operation, which proves that bath residues are permanently there and cause damage to the part.

2. The following defects and threats may occur when anodising parts made from welded closed profiles , in addition to those mentioned above:

- a) leaky weld - due to its penetrating properties, the etching bath based on sodium hydroxide enters the welded part. In the absence of technological openings that enable thorough rinsing after the etching process, the anodising bath based on sulfuric acid is trapped inside the part and its action is intensified in the next process stages. The bath residues inside the part destroy the welded part and weaken its mechanical strength.
- b) in addition, chemical substances inside the part pose a threat to people who assemble and use such a component.

The location and size of technological openings must be determined individually for each shape of the welded part.

Cleaning and maintenance

Indoor applications


In general, components mounted indoors should be simply wiped regularly with a soft cloth. If components have not been cleaned for some time, you can clean them using an inert cleaning liquid and a soft cloth, and then rinse them with clean cold water. You can then polish the components with a soft, dry cloth to make them look like new ones.

Outdoor applications

In practice, the frequency of cleaning the structural components exposed to the atmospheric conditions depends on the type of component and the aggressiveness of the environment.

Weekly cleaning is recommended for outdoor applications where the decorative appearance and protective function are particularly important, e.g. portals, entrances, shop fronts, etc. In this case, i.e. for regular cleaning, you can use water and chamois leather, and then wipe the components from top to bottom with a soft dry cloth.

Window frames, window sills and facades must be cleaned regularly, the frequency depends on aggressiveness of the environment and facade construction. You can preferably use a neutral, synthetic cleaning liquid and a cloth, sponge, chamois leather or a soft brush. Then rinse the component with clean water and wipe until completely dry.

	TECHNICAL ACCEPTANCE CONDITIONS	Identifier	WTO
	ANODISING TREATMENT SERVICE	Date of issue	05-11-2019
		Page / of pages	5 of 5

Stubborn dirt can be removed with a slightly abrasive cleaning agents or a cloth with fine polishing powder.

If you use a protective agent after cleaning the structural components, ensure that a thin film of residual water is removed before using the agent. This agent must not cause yellowing, attract dust and dirt or cause opalescence effect. Waxes, petroleum jelly, lanolin and similar agents are not suitable.

Universal cleaning agents must meet the same requirements.

Alkaline and acidic solutions should always be avoided. Also, do not use aggressive abrasive materials, scouring pads, wire brushes, etc.

ALIPLAST Sp. z o.o. is not responsible for defects in anodised products that are caused by inadequate quality of the material supplied for anodising.
