



Update of QUALICOAT Specifications 2022

Update Sheet No. 02

applicable from 1 January 2023

Subject: Introduction of off-site anodic pretreatment

Proposals/Requests: Preanodising WG (1 February 2022)
To introduce offsite anodising conditions and requirements in Section 3.4

QUALICOAT Resolution:

Amendment to the Specifications:

Division of section 3.4 into three subsections:

- 3.4.1. External Anodic Pretreatment
- 3.4.2 Work Specifications for Coating Applicators Using Off-site Pre-anodised Products
- 3.4.3 In-house Anodic Pretreatment

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Document Code: SPEC 2022 – US02

QQM Section: 7.8.2

Date Approved: 20.05.2022

Approved by: Executive Committee

Valid from: 01.01.2023

Version: 01

No. of Pages: 6

3.4. Anodic pretreatment (automatic SEASIDE endorsement)

3.4.1. External Anodic Pretreatment

The anodising plant shall have a QUALANOD licence, and a PRE-OX licence granted by QUALICOAT on the basis of a satisfactory inspection report. It shall be inspected every year.

The following minimum requirements shall be met by the off-site anodiser:

3.4.1.1. Surface Preparation

The aluminium surface shall be treated to eliminate all impurities that could pose problems in the anodic pretreatment.

3.4.1.2. Etching

The aluminium parts (extrusions and sheet, not cast) shall be degreased and etched with a minimum etching rate of 2 g/m². In the case of alkaline etching, desmutting shall be necessary.

3.4.1.3. Thickness of the pre-anodised layer

The anodic pretreatment shall be chosen so as to produce an anodic coating with a thickness of at least 4 µm (not more than 10 µm) without powdering and without surface flaws.

The anodic pretreatment parameters can be as follows:

- Acid concentration (sulphuric acid): 180-220 g/l
- Aluminium content: 5-15 g/l
- Temperature: 20-30°C (± 1°C of the temperature chosen by the anodiser)
- Current density: 0.8-2.0 A/dm²
- Agitation of the electrolyte

3.4.1.4. Rinsing

After anodic pretreatment, the aluminium shall be rinsed for such a time and at such a temperature as is required to remove the acid from the pores.

3.4.1.5. Storage conditions

Pre-anodised aluminium shall never be stored or transported in an atmosphere that is dusty, damp (condensation or similar) and detrimental to it. Good atmospheric and dry conditions shall always be maintained in the storage area and whilst being transported. All workers handling pre-anodised aluminium shall wear clean textile gloves to avoid contamination of the surface.

3.4.1.6. Storage time and transportation

Pre-anodised parts shall not be stored for more than 16 hours. However, the parts may be stored (including transportation, where applicable) for up to 72 hours, provided that additional rinsing and drying has taken place prior to coating (no etching allowed). The risk of insufficient adhesion increases the longer the parts are stored.

3.4.1.7. Record of test results

The anodising plant shall perform and record the following additional tests:

- **Anodising bath**

- The acid concentration and aluminium content of the anodising bath shall be analysed once per day.
- The temperature of the anodising bath shall be checked every 8 hours.
- The etching rate shall be checked once per day.
- The thickness of the anodic coating shall be checked (every ~~flight bar~~ load).

3.4.1.8. Cooperation between external anodiser and coating applicator

External anodisers and coating applicators shall cooperate closely and ensure the test results from the external anodiser shall be delivered to the coating applicator with the delivery note and the following information shall be included where applicable (i.e., if it was not already described in the general agreement between the external anodiser and coating applicator):

- Description of all process steps of pre-anodising (type of surface treatment, chemical composition, temperatures, treatment time)
- Detailed description of rinsing conditions (30 μ S), including information about the usage and the type of hot sealing or approved passivation and including parameters, values, and limits
- Production date and time
- Number of test panels which are produced in the same lot together with the material
- Alloy
- Etching requirements of cast material
- Location of jigging marks

3.4.2. Work Specifications for Coating Applicators Using Off-site Pre-anodised Products

Coating applicators using off-site anodic pretreatment shall have a PRE-OX endorsement granted by QUALICOAT on the basis of a satisfactory inspection report. Unannounced inspections shall be carried out at least once a year (twice a year if the pre-ox production is the main production).

The following minimum requirements shall be met:

3.4.2.1. Rinsing

The pre-anodised aluminium shall be rinsed for such a time and at such a temperature as is required to remove the acid from the pores and to fulfil the requirements of the wet adhesion test.

Enhancing rinsing with a hot sealing step or a passivation step with a QUALICOAT approved chemical pretreatment system is permitted. The conductivity of the dripping water of the last rinse shall not exceed a maximum of 30 μ S/cm at 20°C. The conductivity shall only be measured for open sections and not for hollow sections.

3.4.2.2. Storage conditions

Pre-anodised aluminium shall never be stored or transported in an atmosphere that is dusty, damp (condensation or similar) and detrimental to it. Good atmospheric and dry conditions shall always be maintained in the storage area and whilst being transported. All workers handling pre-anodised aluminium shall wear clean textile gloves to avoid contamination of the surface.

3.4.2.3. Storage time and transportation

Pre-anodised parts shall not be stored for more than 16 hours. However, the parts may be stored (including transportation, where applicable) for up to 72 hours, provided that additional rinsing and drying has taken place prior to coating (no etching allowed). The risk of insufficient adhesion increases the longer the parts are stored.

3.4.2.4. Record of test results

Coating applicators using this type of anodic pretreatment shall perform and record the following additional tests:

- **Testing of the coated finished products**

- Before application, each coating (of a system and/or a manufacturer) shall be tested for resistance to boiling water, followed by an adhesion test (see § 2.4).
- During application, resistance to boiling water shall be tested, followed by an adhesion test every 4 hours.

Coating applicators using anodic pretreatment, as specified above, shall ask their coating suppliers to confirm in writing the compatibility of their coating system with this type of pretreatment.

3.4.2.5. Cooperation between coating applicator and external anodiser

External anodisers and coating applicators shall cooperate closely and ensure the test results from the external anodiser shall be delivered to the coating applicator with the delivery note and the following information shall be included where applicable (i.e., if it was not already described in the general agreement between the external anodiser and coating applicator):

- Description of all process steps of pre-anodising (type of surface treatment, chemical composition, temperatures, treatment time)
- Detailed description of rinsing conditions (30 µS), including information about the usage and the type of hot sealing or approved passivation and including parameters, values, and limits
- Production date and time
- Number of test panels which are produced in the same lot together with the material
- Alloy
- Etching requirements of cast material
- Location of jigging marks

3.4.3. In-house Anodic Pretreatment

Coating applicators using internal anodic pretreatment shall have a PRE-OX endorsement granted by QUALICOAT on the basis of a satisfactory inspection report. Unannounced inspections shall be carried out at least once a year (twice a year if the pre-ox production is the main production).

The following minimum requirements shall be met:

3.4.3.1. Surface Preparation

The aluminium surface shall be treated to eliminate all impurities that could pose problems in the anodic pretreatment.

3.4.3.2. Etching

The aluminium parts (extrusions and sheet, not cast) shall be degreased and etched with a minimum etching rate of 2 g/m². In the case of alkaline etching, desmutting shall be necessary.

3.4.3.3. Thickness of the pre-anodised layer

The anodic pretreatment shall be chosen so as to produce an anodic coating with a thickness of at least 4 µm (not more than 10 µm) without powdering and without surface flaws.

The anodic pretreatment parameters can be as follows:

- Acid concentration (sulphuric acid): 180-220 g/l
- Aluminium content: 5-15 g/l
- Temperature: 20-30°C (± 1°C of the temperature chosen by the coater)
- Current density: 0.8-2.0 A/dm²
- Agitation of the electrolyte

3.4.3.4. Rinsing

After anodic pretreatment, the aluminium shall be rinsed for such a time and at such a temperature as is required to remove the acid from the pores and to fulfil the requirements of the wet adhesion test.

Enhancing rinsing with a hot sealing step or a passivation step with a QUALICOAT approved chemical pretreatment system is permitted. The conductivity of the dripping water of the last rinse shall not exceed a maximum of 30 µS/cm at 20°C. The conductivity shall only be measured for open sections and not for hollow sections.

3.4.3.5. Storage conditions

Pre-anodised aluminium shall never be stored in an atmosphere that is dusty, damp (condensation or similar) and detrimental to it. Good atmospheric and dry conditions shall always be maintained in the storage area. All workers handling pre-anodised aluminium shall wear clean textile gloves to avoid contamination of the surface.

3.4.3.6. Storage time

Pre-anodised parts shall not be stored for more than 16 hours. However, the parts may be stored) for up to 72 hours, provided that additional rinsing and drying has taken place prior to coating (no etching allowed). The risk of insufficient adhesion increases the longer the parts are stored.

3.4.3.7. Record of test results

Coating applicators using this type of anodic pretreatment shall perform and record the following additional tests:

- **Anodising bath**

- The acid concentration and aluminium content of the anodising bath shall be analysed once per day.
- The temperature of the anodising bath shall be checked every 8 hours.
- The etching rate shall be checked once per day.
- The thickness of the anodic coating shall be checked (every **flight bar** load).

- **Testing of the coated finished products**

- Before application, each coating (of a system and/or a manufacturer) shall be tested for resistance to boiling water, followed by an adhesion test (see § [2.4](#)).
- During application, resistance to boiling water shall be tested, followed by an adhesion test every 4 hours.

Coating applicators using anodic pretreatment, as specified above, shall ask their coating suppliers to confirm in writing the compatibility of their coating system with this type of pretreatment.