



# 16th Edition of the QUALICOAT Specifications – Update Sheet– SPEC-US02

**Subject:** Revision of Appendix A6

**Proposal/Request:** Pretreatment WG

**Resolution No. 18/TC 22.11.18**

The TC requested the Pretreatment WG to remove the requirement for the chemical manufacturers to perform the wet adhesion test every two months when revising Appendix A6, as proposed by VOA.

**QUALICOAT resolutions:**

**Resolution No. 7/TC 15.05.19**

The TC endorsed Proposals Nos. 3/PRETREAT WG/23.01.19 and 4/PRETREAT WG/23.01.19 regarding the tests to be carried out and the device to be prescribed by the chemical manufacturers. These proposals would be included in the revised Appendix A6, which would be submitted to the Committees for ratification as a draft update sheet.

**Valid from:** 1 JANUARY 2020

**Amendments to the Specifications:**

- “Alternative” deleted in §§ 2.19., 3.3.2, 3.6., 5.1.1 and Appendix A1
- Revised Appendix A6 (see following pages)

Author: Specifications WG  
Pascale Bellot

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## 2.19 Filiform corrosion test

[...]

### Final assessment of the FFC test:

RATING	GRANTING/RENEWAL OF	
	APPROVAL OF <b>ALTERNATIVE</b> PRETREATMENT SYSTEMS	SEASIDE ENDORSEMENT

### 3.3.2 ~~Alternative conversion coatings~~ Chemical pretreatments

~~Alternative~~ Chemical pretreatment processes are treatments other than the ~~pretreatments~~ chromate conversion coatings described above.

Such ~~alternative~~ chemical pretreatments may not be used until they have been approved by QUALICOAT, following a test programme.

## 3.6 Drying

[...]

~~Alternative~~ Chemical pretreatment systems other than chromate conversion coatings should be dried following the manufacturer’s specifications.

### 5.1.1 Inspection of materials

The inspector shall check that the coating plant uses organic coating materials approved by QUALICOAT for exterior architectural applications. If ~~alternative~~ chemical materials other than the chromate conversion coating described in § 3.3.1 are used, he shall also check that these chemical materials are approved by QUALICOAT.

## A1 – Regulations for use of the QUALICOAT quality label for liquid and powder organic coatings on aluminium for architectural applications

### 5.3 Use of the logo by manufacturers (coating manufacturers and manufacturers of ~~alternative~~ pretreatment systems)[...]

## 7. Conditions for granting and renewing approvals and licenses

As stipulated in [Chapter 4](#) for coating manufacturers.

As stipulated in [Chapter 5](#) for coating applicators.

As stipulated in [Appendix A6](#) for manufacturers of ~~alternative~~ chemical pretreatment materials

The granting of an approval or licence shall require payment of an annual fee.

## A6 – Procedure for evaluating ~~alternative~~ chemical pretreatment processes

### 1. INTRODUCTION

This Appendix specifies the procedure for granting and renewing an approval for pretreatment processes, with the exception of chromate conversion coatings (as specified in § 3.3.1 of the QUALICOAT Specifications). It also describes the testing programme to be followed by the laboratories involved and the requirements for every test.

### 2. FORMAL APPLICATION PRIOR TO TESTING

Chemical manufacturers who plan to submit a pretreatment system for testing shall send a formal request to the General Licensee or to QUALICOAT in countries without a national association.

If the pretreatment system is manufactured at several production plants, the applicant shall name the main production site and/or technical service centre and indicate all other production sites.

Basic documentation (TDS), a safety data sheet and detailed instructions on treatment cycles shall be submitted to an approved QUALICOAT laboratory selected in agreement with the General Licensee and/or QUALICOAT.

The following minimum technical information shall also be provided to the QUALICOAT laboratory in charge on a separate sheet (General Technical Information):

APPLICATION METHOD (1) (2)	
PROCESS CYCLE (2)	
FINAL RINSE	
ANALYTICAL METHODS FOR BATH	
FILM WEIGHT (3)	
OTHER ANALYSES	
OTHER RECOMMENDATIONS (EQUIPMENT, HANDLING, STORAGE ETC.) (4)	
COLOURLESS CONVERSION COATING?	
DRYING CONDITIONS	
<p>(1) Spraying and/or immersion.</p> <p>(2) The manufacturer is responsible for ensuring that the cycle used by the coating applicator is suitable for obtaining a coated product conforming to the QUALICOAT Specifications. What are the limits for demineralised water before conversion coating?</p> <p>(3) Method for in-house control and laboratory tests (limits and frequency).</p> <p>(4) The technical specifications shall make it clear which items are compulsory, for instance does “recommended” mean compulsory or not?</p>	

### 3. PRELIMINARY CONDITIONS (minimum equipment)

The chemical manufacturer shall have the following minimum equipment available at least at one location (main production site and/or technical service centre):

- analytical instruments for testing the quality of the conversion coating;
- cutting tools and instruments necessary for performing the adhesion test;
- apparatus for testing dry and wet adhesion and elasticity (cupping test);
- impact tester (ISO 6272);
- apparatus for testing resistance to cracking on bending;
- apparatus to carry out the following corrosion tests:
  - constant climate condensation water
  - resistance to humid atmospheres containing sulphur dioxide
  - acetic acid salt spray resistance
  - ~~○ equipment to perform the wet adhesion test~~
  - filiform corrosion test<sup>1</sup>

At all other locations (not being the main production site and/or technical service centre), the following requirements shall be met:

- A method for testing the quality of the conversion coating shall be available.
- Tests that cannot be carried out on-site shall be performed by the laboratory at the main production site and/or technical service centre or outsourced to any QUALICOAT approved laboratory.

### 4. QUALICOAT TESTING LABORATORIES

Before an approval is granted for a new pretreatment system, the laboratory in charge shall carry out the testing programme specified in the following section. Corrosion tests shall also be performed by a second laboratory under the responsibility of the laboratory in charge.

For renewal of an approval, the full testing programme shall be carried out only by the laboratory in charge.

### 5. TESTING PROGRAMME

Approval is based on the following testing programme to ensure conformity with the requirements prescribed by QUALICOAT.

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<sup>1</sup> This test may be outsourced and carried out by a QUALICOAT approved laboratory or another laboratory accredited for this specific test according to ISO 17025.

### a) PANEL PREPARATION

For every corrosion test, six extruded samples shall be evaluated (three samples in each of the two laboratories involved).

Special attention shall be paid to the preparation of samples. The final results of corrosion and exposure tests depend not only on the treatment but also on the aluminium composition and the reaction between the aluminium surface and chemical products.

The manufacturers shall indicate the complete pretreatment cycle to be used (degreasing etc.), and the laboratory responsible for preparing the samples shall strictly follow these instructions.

The samples may be prepared:

- either in the QUALICOAT approved laboratory under the supervision of a representative of the applicant company;
- or in the laboratory of the chemical manufacturer under the supervision of a representative of the laboratory in charge.

### Samples

The following alloys shall be used:

- panels for mechanical tests (thickness of 0.8 or 1 mm): AA 5005-H24 or -H14 (AlMg 1 - semihard);
- extruded samples for corrosion tests and outdoor exposure: AA 6060 or 6063.

The chemical composition of the samples has an influence on the final results, especially in corrosion tests. For this reason, all laboratories shall use an alloy from the same batch to prepare the samples.

QUALICOAT shall provide every laboratory with enough test samples having a chemical composition specified by the Technical Committee.

The laboratory's final report shall always indicate the chemical composition.

### Pretreatment

The laboratory in charge of preparing the samples shall take into account the following parameters:

- **Etching degree**  
The total etching degree shall be between 1.0 g/m<sup>2</sup> and 2.0 g/m<sup>2</sup> on samples for all tests.
- **Weight of the conversion coating**
  - close to the system's lower limit for corrosion test samples;
  - close to the upper limit for mechanical test samples, especially for the adhesion test.

### Anodic pretreatment

If **an alternative** a pretreatment system is proposed to be used in combination with pre-anodised substrates, the necessary test samples shall be prepared according to the requirements specified by QUALICOAT in § 3.4. After this, the proposed **alternative** pretreatment shall be applied to the

pre-anodised panels as specified by the chemical supplier of the ~~alternative~~ pretreatment system.

A specific numbering system shall be applied to these anodic pretreatment processes.

### Coating material to be applied

The coating system material shall have a QUALICOAT approval.

Each system shall be tested with the following organic coating materials:

- class 1 powder, metallic colour (RAL 9006 or RAL 9007)
- class 2 powder, category 1, RAL 9010
- class 3 powder (when requested by the supplier).
- liquid coating (when requested by the supplier)

### **b) LABORATORY TESTS**

The following tests shall be performed

- Dry adhesion ([2.4.1](#))
- Cupping ([2.6](#))
- Bend ([2.7](#))
- Impact ([2.8](#))
- Resistance to humid atmospheres ([2.9](#))
- Acetic acid salt spray ([2.10](#))
- Wet adhesion ([2.4.2](#))
- Condensation water ([2.17](#))
- Filiform corrosion ([2.19](#))

The acceptable limits are the same as those prescribed in the QUALICOAT Specifications.

### Evaluation of laboratory test results

The final evaluation shall be as follows:

#### • Result of one laboratory

POSITIVE 0 or 1 unsatisfactory panel

NEGATIVE 2 or more unsatisfactory panels.

#### • Results of two laboratories

- If the results in both laboratories are positive, the system is satisfactory.
- If the results in both laboratories are negative, the system is unsatisfactory.
- If the results are positive in one laboratory and negative in the other, the tests shall be repeated in a third laboratory.

**c) OUTDOOR EXPOSURE**

- **Exposure site**

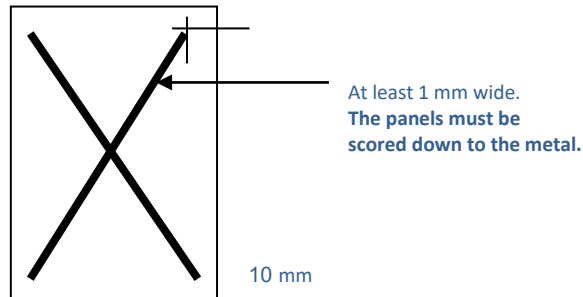
Two years in Genoa starting in September.

- **Number of panels**

All tests shall be made in triplicate.

Fig. 1 Scratches for outdoor exposure

(panel dimensions: length 200 mm, width 70 – 100 mm)



- **Evaluation of exposure test results**

After two years of exposure, a final evaluation shall be made, applying the following criteria:

POSITIVE	0 or 1 unsatisfactory panel
NEGATIVE	2 or more unsatisfactory panels

**6. CONFORMITY ASSESSMENT**

~~A QUALICOAT working group shall evaluate the laboratories' test results and take a decision, also in writing.~~

~~If necessary, the chemical manufacturer of the system tested shall be invited to a meeting to discuss the results.~~

The testing laboratory shall submit the test report and the basic documentation (TDS, safety data sheet and detailed instructions on treatment cycles) to the General Licensee or to QUALICOAT in countries where there is no General Licensee.

Under the supervision of QUALICOAT, the General Licensee shall decide whether or not to grant or renew an approval.

The results shall be communicated to the chemical manufacturers in writing.

If the results do not meet the requirements, full details and reasons shall be given. The chemical manufacturer shall be entitled to appeal within 10 days to the General Licensee or to QUALICOAT in countries where there is no General Licensee.

## 7. GRANTING OF AN APPROVAL

If all the results meet the requirements, QUALICOAT shall issue an approval with a validity of three years. The certificate shall be issued every year.

After the exposure tests, the working group shall evaluate the results and take a decision on confirmation of the approval. The manufacturer shall be informed of the results and decisions.

## 8. RENEWAL OF PRETREATMENT SYSTEM APPROVALS

### a) Renewing pretreatment system approvals

Approvals shall be renewed every three years, with the full testing programme including outdoor exposure (see § 5 of this Appendix) carried out by one laboratory. Once a system has been approved for six consecutive years, the renewal interval shall be extended to five years.

If an approved system identified by a single approval number is manufactured at different production sites of the same company, the full testing programme (including the exposure test) shall be carried out for the main production site and/or technical service centre. At the other production sites indicated by the chemical manufacturer, the approved pretreatment system shall be checked only with corrosion tests.

An approval shall be renewed if the results of the laboratory and exposure tests conform to the Specifications.

### b) Repetition of unsatisfactory laboratory tests

If the laboratory test results are unsatisfactory, all corrosion tests shall be repeated in two laboratories. Renewal shall be confirmed if the results are satisfactory in both laboratories.

If the results are unsatisfactory in one of the two laboratories, the approval shall be cancelled. If the result of outdoor exposure is unsatisfactory, the approval shall then be cancelled.

### c) Withdrawal of an approval

The AASS results obtained on samples taken during the annual inspections carried out at the licensed coaters' plants shall be compiled by the QUALICOAT Secretariat by 31 March of the following year.

#### **"15+3" rule:**

15% of failures in the AASS test and at least three C+D values classified as unsatisfactory shall lead to an unsatisfactory assessment. If only one or two C+D AASS test results are obtained, the pretreatment system shall be considered satisfactory.

The QUALICOAT Secretariat shall determine all the systems falling under the "15+3 rule". The General Licensees and suppliers concerned shall be informed by the QUALICOAT Secretariat before 30 June.

If a system fails in two consecutive years, it shall be cancelled by 30 June of the second year.



## 9. RESPONSIBILITY

### a) Manufacturer's responsibility

The manufacturers shall be responsible for all cycles used by coating applicators. The coating applicator is expected to use the products as instructed by his supplier.

Manufacturers and customers (coating applicators) already cooperate closely. For all systems, there shall be technical data sheets, also giving information about other products with which a system may or may not be used.

To take into account the particular conditions in each plant, the system manufacturer shall also provide specific instructions to be followed by the persons in charge of the plant. These instructions or requirements shall be consistent with the general technical data sheets. The QUALICOAT inspector may request these instructions to ensure that the coating applicator is using the correct method.

The manufacturer shall indicate how the quality of the chromium-free conversion coating shall be monitored during in-house control. The methods for assessing the conversion coating may differ from one system to the next since there is not a pertinent standard. ~~QUALICOAT shall send these data sheets to the General Licensees (national associations) and recognised testing laboratories.~~

The device prescribed by the chemical manufacturer to check the coating weight shall be included in the technical information supplied to the coater and in the inspection report as one of the instruments that needs to be checked.

The following tests shall be performed with the following frequency:

- The coating weight shall be measured once in every shift by the coater (analytically).
- The manufacturer shall measure the coating weight every two months when the samples for the AASS test are sent in.

The results shall be entered and retained in records readily accessible to the inspector.

### b) Coating applicator's responsibility

The coating applicator shall be responsible for the quality of the coated products. Only the user is able to control all the parameters in his plant. However, the manufacturers shall be prepared to check more frequently whether their customers adhere to the specifications stipulated on the technical data sheets. During their regular visits, they shall also verify the values recorded by the licensed plants during their in-house control.

### c) Cooperation between the coating applicator and chemical manufacturer

Every two months, the coater shall send a production sample to the chemical manufacturer who shall carry out the following tests:

- acetic acid salt spray resistance
- coating weight measurement.

Details shall be entered and retained in records readily accessible to the inspector in the coating applicator's plant and the chemical manufacturer's facilities. Unsatisfactory values shall have no influence on the result of a QUALICOAT inspection.

## 10. COMPULSORY DECLARATION OF CHANGES IN FORMULATION OF **ALTERNATIVE** PRETREATMENTS

In principle, if the chemical composition of the conversion coating remains the same, it shall not be necessary to apply for a new approval. In practice, this means accepting all the variations specified on the technical data sheet to adjust the system to a specific application line in order to achieve the specified coating weight. The chemical product may be supplied as a two-component or single-component system. The chemical manufacturers shall guarantee that the chemical composition of the working solution is essentially the same as that approved by QUALICOAT.

Any change in formula that can result in significant changes in the composition of the conversion coating represents a new product and requires a new QUALICOAT approval.

To give a few examples of such changes, we would like to mention some clear-cut cases:

- Any change in the metal content of the coating through substitution, addition, removal, etc. of the approved metal system when the products are based on transition metals replacing chrome.
- Any change in the polymer composition and, by extension, in the organic components through substitution, addition, removal etc. when they are present in the approved formula.

Any change in the typical appearance of the conversion coating, for example from colourless to colour.