



# 16th Edition of the QUALICOAT Specifications – Update Sheet – SPEC-US12

**Subject:** Revision of In-House Control

**Proposal/Request:** Ad hoc In-House Control WG (14.05.20)

**QUALICOAT resolutions:** Resolution No. 11/TC 14.05.20  
The TC agreed that an update sheet should be drafted to highlight the changes in frequency proposed by the ad hoc In-House Control WG, considering the remarks made at the meeting.

**Valid from:** 1 JANUARY 2021

**Amendments to the Specifications:**

- 6.1.1 Chemical pretreatment baths
- 6.1.2 Water quality
- 6.1.3 Measuring the temperature of chemical pretreatment (..)
- 6.2.1 Testing the etching degree
- 6.2.2 Testing the weight of the conversion coating
- 6.3.4.1 Dry adhesion
- 6.3.6 Bend test
- 6.3.7 Impact test
- 6.5 Table summarising the specifications for In-House Control
- Appendix A6, Section 9 b

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Document Code: SPEC-US12  
QQM Section: 7.8.2  
Date Approved: 25.06.2020  
Approved by: Executive Committee  
Valid from: 01.01.2021  
Version: 01  
No. of Pages: 8

## 6. Specifications for In-House Control

The aim of in-house control is to give the coating plant a tool to keep control over its own production process. The number of shifts worked, the requirements, the results of the analyses and corrective actions shall be entered in charts or some other records/registration systems readily accessible to the inspector.

The staff responsible for managing in-house control shall follow the training programme stipulated by QUALICOAT.

### 6.1. Controlling the production process parameters

#### 6.1.1 Chemical pretreatment baths

The chemical parameters defined by the manufacturer of the chemical pretreatment materials shall be analysed at least once per bath in every working shift, or according to the chemical supplier's advice, that shall be at least once per day (24 hours). ~~The coating applicator shall increase the frequency of the analyses if required by the chemical supplier.~~

#### 6.1.2 Water quality

The conductivity of the final rinsing preceding the chromate bath and of the demineralised rinsing water shall be measured at least once per bath in every working shift, or according to the chemical supplier's advice, that shall be at least once per day (24 hours). ~~The coating applicator shall increase the frequency of the analyses if required by the chemical supplier.~~

#### 6.1.3 Measuring the temperature of chemical pretreatment and rinsing baths

The temperature of the pretreatment baths and final rinse, if a hot water rinse, shall be measured at least once per bath in every working shift, or according to the chemical supplier's advice, that shall be at least once per day (24 hours).

#### 6.1.4 Recording and measuring the drying temperature

The drying temperature displayed shall be recorded at least once in every working shift.

The temperature should be measured on parts at least once a week using a recording instrument or some other means such as thermochromic pencils or tablets.

#### 6.1.5 Measuring the stoving conditions

The stoving conditions stipulated in § [3.7](#) shall be tested as follows:

- The displayed temperature shall be recorded at least once in every working shift.
- A stoving curve shall be made on profiles at least twice a week.

## 6.2. Quality control of the chemical pretreatment

### 6.2.1 Testing the etching degree

The degree of aluminium removal shall be measured at least once in every working shift, or according to the chemical supplier's advice, that shall be at least once per day (24 hours), using the method described in § 3.2.1.

If a licence has the «SEASIDE» endorsement, the coating applicator shall check the etching degree at least once in every working shift during SEASIDE production.

### 6.2.2 Testing the weight of the conversion coating

The weight of chromate conversion coating shall be tested in accordance with ~~ISO 3892~~ ISO 10546 at least once in every working shift or according to the chemical supplier's advice, that shall be at least once per day (24 hours). ~~This frequency may be higher if required by the pretreatment manufacturer.~~

## 6.3. Quality control of the finished products

During production, test panels shall be prepared at least once in every working shift for each colour shade and approved coating material, with the exception of samples for the wet adhesion test which shall be taken directly from production.

### 6.3.1 Gloss test (ISO 2813)

The gloss of the organic coating on finished products shall be tested at least once in every working shift for each colour shade and each manufacturer.

### 6.3.2 Coating thickness test (ISO 2360)

The coating thickness shall be measured on pieces as specified below:

Lot size (*)	Number of pieces (random selection)	Acceptance limit for rejected pieces
1 - 10	All	0
11 – 200	10	1
201 – 300	15	1
301 – 500	20	2
501 – 800	30	3
801 – 1'300	40	3
1'301 – 3'200	55	4
3'201 – 8'000	75	6
8'001 – 22'000	115	8
22'001– 110'000	150	11

\* Lot: a customer's complete order in one colour or the part of the order that has already been coated.

### 6.3.3 Appearance test

The appearance shall be checked on pieces as specified below:

Lot size (*)	Number of pieces (random selection)	Acceptance limit for rejected pieces
1 - 10	All	0
11 – 200	10	0
201 – 300	15	0
301 – 500	20	0
501 – 800	30	0
801 – 1'300	40	0
1'301 – 3'200	55	0
3'201 – 8'000	75	0
8'001 – 22'000	115	0
22'001– 110'000	150	0

\* Lot: a customer's complete order in one colour or the part of the order that has already been coated.

### 6.3.4 Adhesion test

#### 6.3.4.1 Dry adhesion (ISO 2409)

The dry adhesion test shall be carried out **at least on one panel<sup>1</sup> for every two production hours** ~~on test panels at least once in every working shift for each colour shade and gloss category and for each manufacturer.~~

#### 6.3.4.2 Wet adhesion

The wet adhesion test shall be carried out on finished products at least once in every working shift. All samples from one working day may be tested together.

### 6.3.5 Polymerisation test

This test is used to check that the organic coating polymerisation is good. In in-house control, this test is optional for powder coatings.

The polymerisation test shall be carried out on test panels at least once in every working shift for each colour shade and gloss category and for each manufacturer.

### 6.3.6 Bend test (ISO 1519)

The resistance to cracking on bending shall be tested **at least on one panel<sup>1</sup> for every two production hours** ~~on test panels at least once in every working shift for each colour shade and gloss category and for each manufacturer.~~

<sup>1</sup> **The same panel to be chosen for dry adhesion test; bend test and impact test.**

### 6.3.7 Impact test (ISO 6272 / ASTM D 2794)

The impact test shall be carried out at least on one panel<sup>1</sup> for every two production hours ~~on test panels at least once in every working shift for each colour shade and gloss category and for each manufacturer.~~

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## 6.4. Quality control registers

### 6.4.1 Control register for the production process

This control register is either a bound register with numbered pages, or a computer listing.

It shall show the following information:

- the temperature of the baths,
- the chemical parameters specified by the manufacturers,
- the results of the etching degree test,
- the results of the tests of the conversion coating weight,
- the results of the water conductivity tests,
- the results of the tests of the drying and stoving conditions,
- the drying and stoving temperature curves.

### 6.4.2 Control register for test panels

This control register is either a bound register (not a spiral binding) with numbered pages, or a computer listing.

It shall show the following information:

- the production date,
- the references of the organic coating material used: RAL or some other reference for identification, lot number, manufacturer's name,
- the following results:
  - gloss test
  - thickness test
  - adhesion test
  - = polymerisation test (optional for powder coatings)
  - bend test
  - impact test
  - colour shade inspection (visual inspection to compare the actual colour with the colour shade required by the customer).

### 6.4.3 Control register for finished products

This is either a bound register (not a spiral binding) with numbered pages, or a computer listing.

It shall show the following information:

- the customer's name and the order or lot identification data,



- the production date,
- the reference of the organic coating material used,
- the following results:
  - coating thickness test
  - inspection of the colour shade and its gloss
  - appearance
  - wet adhesion test.
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#### **6.4.4 Control register for tests carried out by the chemical manufacturer**

This is either a bound register (not a spiral binding) with numbered pages, or a computer listing.

It shall show the following information:

- sample reference,
- date of sampling and dispatch/collect,
- chemical manufacturer's testing report,
- test results (see [Appendix A6](#)),
- remarks and/or corrective action.

## 6.5. Table summarising the specifications for In-House Control

CONTROL	OBJECT TESTED	FREQUENCY
<b>Process</b> (6.1)	Chemical pretreatment baths, degreasing, pickling, chromating, rinsing	Chemical Parameters Once per bath in every working shift, or according to the chemical supplier's advice, that shall be at least once per day (24 hours).
	Conductivity of the water	Once per bath in every working shift, or according to the chemical supplier's advice, that shall be at least once per day (24 hours).
	Temperature of chemical pretreatment	Once per bath in every working shift, or according to the chemical supplier's advice, that shall be at least once per day (24 hours).
	Drying temperature	<ul style="list-style-type: none"> <li>Once in every working shift: record the displayed temperature</li> <li>Once a week: make one recording of the temperature using strips or some other means</li> </ul>
	Stoving conditions	<ul style="list-style-type: none"> <li>Once in every working shift: record the displayed temperature</li> <li>Twice a week: make 1 stoving curve on profiles</li> </ul>
<b>Conversion coating</b> (6.2)	Etching degree	Once in every working shift, or according to the chemical supplier's advice, that shall be at least once per day (24 hours).
	Weight of the conversion coating (chromate conversion)	Once in every working shift, or according to the chemical supplier's advice, that shall be at least once per day (24 hours).
	Weight of the conversion coating (chromium-free)	Once in every working shift, or according to the chemical supplier's advice, that shall be at least once per day (24 hours). <i>The frequency may be higher if required by the pretreatment manufacturer.</i>
<b>Finished products</b> (6.3)	Gloss	Once in every working shift for each shade and manufacturer
	Coating thickness	According to the order lot size
	Appearance	According to the order lot size
	Wet adhesion	Once in every working shift <i>All samples from one day may be tested together.</i>
<b>Panels</b> (6.4)	Dry adhesion	Minimum of 1 x sample* for every two production hours. <i>Once in every working shift for each colour shade and gloss category and for each manufacturer</i>
	Polymerisation (optional for powder coatings)	Once in every working shift for each colour shade and gloss category and for each manufacturer
	Bend test	Minimum of 1 x sample* for every two production hours. <i>Once in every working shift for each colour shade and gloss category and for each manufacturer</i>
	Impact test	Minimum of 1 x sample* for every two production hours. <i>Once in every working shift for each colour shade and gloss category and for each manufacturer</i>

\* The same panel to be chosen for dry adhesion test; bend test and impact test



## A6 – Procedure for evaluating chemical pretreatment materials

[...]

### 9. RESPONSIBILITY

#### a) Manufacturer's responsibility

[...]

The following tests shall be performed with the following frequency:

- The coating weight shall be measured analytically by the coater once in every working shift, or according to the chemical manufacturer's advice, that shall be at least once per day.
- 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.