



# 16th Edition of the QUALICOAT Specifications – Update Sheet – SPEC-US01

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

**Proposal/Request: Ad hoc In-House Control WG (17.09.18)**

**QUALICOAT resolution:**

**Resolution No. 2/TC 22.11.18**

The TC instructed the Specifications WG to draft an update sheet concerning the revision of Chapter 6 (In-House Control).

**Resolution No. 3/TC 15.05.19**

The TC approved the draft Update Sheet “Revision of in-house control” (former draft USD No. 20) to become effective on 1 January 2020 as Update Sheet No. 1 of the 16th Edition.

**Resolution No. 7/EC 22.11.19**

The EC ratified the UDS No. 1 (Revision of in-house control) to become effective on 1 January 2020, with no consequences in case of failures on the revised requirements during 2020. An ad-hoc coaters WG (Belgium, Germany, Holland and UK) will address other solutions to include in the chapter.

**Valid from: 1 JANUARY 2020**

**Amendments to the Specifications:**

- Amendments in the “Final assessment” table of § 2.10.
- Changes in Chapter 6:
  - New paragraph (introduction) added at the beginning of the chapter to summarise common requirements, such as registers and training.
  - Change in frequency of various in-house tests
  - Removal of cupping test from in-house control
  - Updated Summary 6.5

Author: Specifications WG  
Pascale Bellot

Document Code: SPEC-US01  
QQM Section: 7.8.2  
Date Approved: 22.11.2019  
Approved by: Executive Committee  
Valid from: 01.01.2020  
Version: 01  
No. of Pages: 9

## 2.10 Acetic acid salt spray resistance

[...]

### Final assessment of the AASS test:

RATING	CORRECTIVE ACTION	
	APPROVAL (GRANTING/RENEWAL)	LICENCE (GRANTING/RENEWAL)
<b>A</b> satisfactory	No action	No action
<b>B</b> satisfactory	No action	<ul style="list-style-type: none"> <li>▶ <del>The frequency of the wet adhesion test during in-house control shall be increased from once to twice a week for a period of three months.</del></li> <li>▶ Notification to the coater.</li> </ul>
<b>C</b> unsatisfactory	<ul style="list-style-type: none"> <li>▶ Repetition of the acetic acid salt spray resistance test.</li> <li>▶ If the result of this second test is C or D, all tests shall be repeated.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Repetition of the AASS test. If the result of this second test is C or D, the inspection shall be repeated.</li> <li>▶ <del>The frequency of the wet adhesion test during in-house control shall be increased from once to twice a week for a period of three months.</del></li> </ul>
<b>D</b> unsatisfactory	<ul style="list-style-type: none"> <li>▶ All laboratory tests shall be repeated.</li> </ul>	<ul style="list-style-type: none"> <li>▶ The inspection shall be repeated</li> </ul>

## 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 day (24 hours) per bath in every working shift.**

The coating applicator shall increase the frequency of the analyses if ~~necessary~~ required by the chemical supplier.

~~The results of these analyses shall be entered in charts or some other record (register) readily accessible to the inspector. They shall show the nominal values, maximum values not to be exceeded, actual values recorded and the number of shifts worked. A separate record shall be kept for each bath.~~

~~If corrective measures are necessary, they shall be recorded.~~

### 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 day (24 hours) per bath in every working shift.**

The coating applicator shall increase the frequency of the analyses if ~~necessary~~ required by the chemical supplier.

~~The results of these analyses shall be entered in charts or some other record (register) readily accessible to the inspector. They shall show the nominal values, maximum values not to be exceeded, actual values recorded and the number of shifts worked.~~

### 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 day (24 hours) per bath in every working shift.**

~~The results of these measurements shall be entered in charts or some other record (register) readily accessible to the inspector. They shall show the nominal values, maximum values not to be exceeded, actual values recorded and the number of shifts worked.~~

### 6.1.4 Recording and measuring the drying temperature

The drying temperature displayed shall be ~~measured~~ recorded **at least once per day (24 hours) 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.

~~The results of these measurements should be recorded and the drying curves classified on some record (register) readily accessible to the inspector.~~

## 6.1.5 Measuring the stoving conditions

The stoving conditions stipulated in § 3.7 shall be tested as follows ~~at least~~:

- ~~twice per 24 hours~~: 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**.

~~The results of these tests should be recorded and the stoving curves classified on some record (register) readily accessible to the inspector.~~

## 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 per day once in every working shift** 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 per day 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 ~~at least once per day (24 hours)~~ in accordance with ISO 3892 **at least once in every working shift**. ~~and that of other conversion coatings following the chemical manufacturer's instructions (see Appendix A6).~~  
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 8-hour 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 8-hour working shift for each colour shade and each manufacturer**.

~~The results of these analyses shall be entered in some record (register) readily accessible to the inspector, showing the nominal values, maximum values not to be exceeded, the actual values recorded and the number of work shifts.~~



### 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.

~~The results of these measurements (minimum and maximum values) shall be entered on some record readily accessible to the inspector.~~

### 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.

~~The results of these measurements shall be entered on some record readily accessible to the inspector.~~

### 6.3.4 Adhesion test

#### 6.3.4.1 Dry adhesion (ISO 2409)

The dry adhesion test shall be carried out on ~~sample~~ test panels **at least once in every 8-hour working shift** for each colour shade and gloss category and for each manufacturer ~~supplier~~.

#### 6.3.4.2 Wet adhesion

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

~~The frequency of the test shall be changed to twice a week for a period of three months in case of an acetic acid salt spray test result of B, C or D (see 2.10. Final assessment of the AASS test).~~

#### 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.

~~The results shall be entered on some record readily accessible to the inspector.~~

#### ~~6.3.6 Cupping test (ISO 1520)~~

~~The cupping test shall be carried out on test panels.~~

~~The results shall be entered on some record readily accessible to the inspector.~~

#### 6.3.6 Bend test (ISO 1519)

The resistance to cracking on bending shall be tested on test panels **at least once in every working shift for each colour shade and gloss category and for each manufacturer**.

~~The results shall be entered on some record readily accessible to the inspector.~~

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

The impact 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**.

~~The results shall be entered on some record readily accessible to the inspector.~~

### 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)
  - ~~- cupping test~~
  - 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.



#### 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 ~~reference~~,
- 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
	Conductivity of the water	Once per bath in every working shift
	Temperature of chemical pretreatment	Once per bath in every working shift
	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
	Weight of the conversion coating (chromate conversion)	Once in every working shift
	Weight of the conversion coating (chromium-free)	Once in every working shift <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 week may be tested together.</i>
<b>Panels</b> (6.4)	Dry adhesion	Once in every working shift for each colour shade and gloss category and for each manufacturer
	Polymerisation (optional for powder coatings)	Once in every working shift for each colour shade and gloss category and for each manufacturer
	Bend test	Once in every working shift for each colour shade and gloss category and for each manufacturer
	Impact test	Once in every working shift for each colour shade and gloss category and for each manufacturer