Update of QUALIDECO Specifications – Appendix to the QUALICOAT Specifications 2020 QDC-SPEC-US01

applicable from 1 January 2021

Subject:	**Approval of organic coatings for sublimation and licensing of powder suppliers**
QUALICOAT/QUALIDECO Resolution:	**Resolution No. 5/QDC COMMITTEE 12.09.19** The QDC Committee instructed an ad hoc WG (GV, PB, SL, SV) to complete Update Sheet No. 1 with the requirement that organic coatings for sublimation should be tested with a film before being approved by QDC. The final version of the update sheet would be submitted to the QDC Committee by email.
Amendments to the Specifications:	• **Amended § 3.2. "Licensing of powder suppliers"** including flow charts • **New Appendix VI – Approval of organic coatings for sublimation (DP-XXXX)**

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3.2 Licensing of powder suppliers

The procedure for granting and renewing approvals of organic coatings for use in sublimation technology is described in Appendix VI.

3.2.1 Work specifications for powder suppliers (REQUIREMENTS)

3.2.1.1 Traceability

The powder supplier shall have a procedure for monitoring and documenting all manufacturing steps in order to ensure traceability in the production chain. The results of these measures shall be entered in some record (register) readily accessible to the inspector.

3.2.1.2 Laboratory and in-house control

The powder supplier shall have laboratory facilities that are separate from the production facilities. This laboratory shall have all the apparatus and chemicals necessary for testing the manufacturing process and decorated products.

It shall at least be equipped with the following apparatus and reference material:

- a specular glossmeter
- an instrument for measuring coating thickness
- apparatus for the mechanical tests
- a recorder for stoving temperature and time with four different measuring points
- apparatus for testing accelerated weathering resistance and for measuring colour change and gloss retention
- an application booth
- transfer equipment
- a grey scale reference (ISO 105-A02)

Each piece of apparatus shall have a data sheet showing the apparatus identification number and calibration checks.

The powder supplier shall use the following procedure to monitor its manufacturing process and test its coated and decorated products:

- Each production lot shall be tested at least once, and a coated panel shall be prepared to check the visual appearance (gloss and colour) and mechanical properties every 100 to 300 kg depending on the lot size. The results shall be recorded in a register.
- In its laboratory, the powder supplier shall carry out an accelerated weathering test at least once a year on eight different approved decorations. The record of the results obtained shall be shown to the inspector.
- The powder supplier shall provide the decorator with a **system data sheet** for the decoration approved for exterior applications (in particular indicating minimum and maximum curing temperatures and times and the reference to the film and powder codes). A copy shall be available to the inspector during his visit.

- The powder supplier shall test every single new decoration in its laboratory and shall include every satisfactory decoration in a list of self-tested decorations which shall be shown to the inspector upon request.

3.2.2 Granting a licence to a powder supplier[1]

The powder supplier shall submit to the General Licensee (or QUALICOAT in countries where there is no GL) a written application for inspection and testing, using the official form available on the QUALICOAT website (https://www.qualicoat.net/main/about-us/assured-quality/how-to-apply.html).

A licence shall be granted subject to the following conditions:

3.2.2.1 Plant inspection

An inspection of the powder supplier's facility shall be carried out to check that the laboratory is equipped with the minimum apparatus prescribed and that its in-house control meets the requirements specified in § 3.2.1.2.

3.2.2.2 Testing and approval of organic coatings (DP-approval)

Organic coating(s) shall be tested and approved in accordance with Appendix VI.

3.2.2.3 Testing and approval for class 1 (decoration systems)

a) Following acceptance of the powder supplier's application, the laboratory responsible for testing shall ask the film supplier(s) to send a roll of film (film coding according to Appendix II-1) for the following **four basic decorations**:
   - WALNUT and OAK to be applied on a brown base
   - PINE and OAK to be applied on a beige base.

b) Samples of film shall be taken from that part of the roll where the pattern and printing marks appear.

c) The laboratory shall apply the powder coating and the film and perform the following tests:
   - Accelerated weathering test (see § 2.4.)
   - Resistance to humid atmospheres containing sulphur dioxide (see § 2.3.).

d) If the laboratory test results are satisfactory, the decoration system(s) tested shall be approved and a natural weathering test shall be carried out in Florida (see § 2.5.).

[1] See flow charts at the end of § 3.2.

3.2.2.4 Testing and approval for class 2 (single decorations)

a) Following acceptance of the powder supplier's application, the laboratory responsible for testing shall ask the film supplier(s) to send a roll of film (film coding according to Appendix II-1) for the **two basic class 2 decorations** clearly identified by the powder suppliers on the application form.

b) The laboratory shall apply the powder coating and the film and perform the following tests:

- Accelerated weathering test (see § 2.4.)
- Resistance to humid atmospheres containing sulphur dioxide (see § 2.3.).

c) If the laboratory test results are satisfactory for both decorations, these class 2 basic decorations shall be approved, and a natural weathering test shall be carried out in Florida (see § 2.5.).

3.2.2.5 Conformity assessment

A licence shall be granted if the inspection and at least one decoration system (class 1) or both class 2 basic decorations are satisfactory.

TABLE 4: PROCEDURE FOR GRANTING A LICENCE TO A POWDER SUPPLIER

INSPECTION RESULT	ACTIONS			
SATISFACTORY	▸ LABORATORY TESTS for a DP-XXXX approval and approval of a decoration system (class 1) or two basic class 2 decorations	TEST RESULTS SATISFACTORY	**LICENCE GRANTED for the tested decoration system(s) (class 1) or the tested basic class 2 decorations**	▸ FLORIDA TEST
		TEST RESULTS UNSATISFACTORY	**LICENCE NOT GRANTED (1)**	
UNSATISFACTORY	**LICENCE NOT GRANTED (1)**			

FLORIDA TEST RESULTS	FINAL ASSESSMENT
ALL DECORATIONS SATISFACTORY	LICENCE CONFIRMED – DECORATION SYSTEM APPROVAL CONFIRMED
1 OR MORE BASIC CLASS 1 DECORATION(S) UNSATISFACTORY	LICENCE CONFIRMED – DECORATION SYSTEM APPROVAL WITHDRAWN (2)
1 OR 2 CLASS 2 BASIC DECORATIONS UNSATISFACTORY	LICENCE WITHDRAWN FOR THE BASIC CLASS 2 DECORATIONS (3)

(1) A new application may be made only when the company has given notification that it has rectified the deficiencies recorded.
(2) If the powder supplier has only one decoration system approved, the PS-licence itself shall be cancelled.
(3) If the powder supplier has no approved decoration system and no other approved class 2 decoration, the PS-licence itself shall be cancelled.

3.2.3 Renewing a powder supplier's licence

After a powder supplier has been granted a licence to use the quality label, its plant shall be inspected every three years.

[…]

3.2.4 Approval of a new decoration system

After a powder supplier has been granted a PS-licence, new decoration systems shall be approved as prescribed in:

- § 3.2.2.3 for an existing DP-XXXX No. with a new film supplier
- §§ 3.2.2.2 and 3.2.2.3 for a new organic coating (without a DP-XXXX No.).

3.2.5 Approval of new class 2-decorations

After a powder supplier has been granted a PS-licence, class 2 decorations shall be approved subject to the following conditions:

a) The powder supplier shall submit to the laboratory responsible for testing a written application identifying the decoration(s) to be tested (reference codes of both the film and the base coating). The film supplier shall be notified of this written application.

b) All data pertaining to the named decoration shall be available to allow correct application of the powder and film:
   - Designation
   - Decoration reference code
   - DP-XXXX approval for class 2 and reference code of the powder coating
   - Film reference complying with the procedure for film coding described in Appendix II-1
   - Technical data sheets for the film and powder coating

c) The laboratory shall perform the tests prescribed in § 3.2.2.4.

An approval shall be granted for every single decoration if all the laboratory tests are satisfactory. A list of approved class 2 decorations shall be appended to the powder supplier's certificate.

If one or more tests are unsatisfactory, the laboratory shall inform both the powder supplier and the film supplier of the unsatisfactory results.

The approval shall be confirmed if the result of the natural weathering test (Florida exposure) is satisfactory.

3.2.6 Withdrawal of a decoration system approval

The approval of a decoration system (base coating + film) shall be withdrawn in the following cases:

- If one or more basic decoration(s) do not meet the requirements after the Florida test.
- If the DP-XXXX approval related to the decoration system approval is cancelled.
- As soon as four decorations are banned.

3.2.7 Withdrawal of a class 2 decoration approval

Every decoration that does not meet the requirements after two consecutive unsatisfactory laboratory test results or after the natural weathering test shall have its approval withdrawn and be included in a list published on the QUALICOAT website along with the powder supplier's certificate.

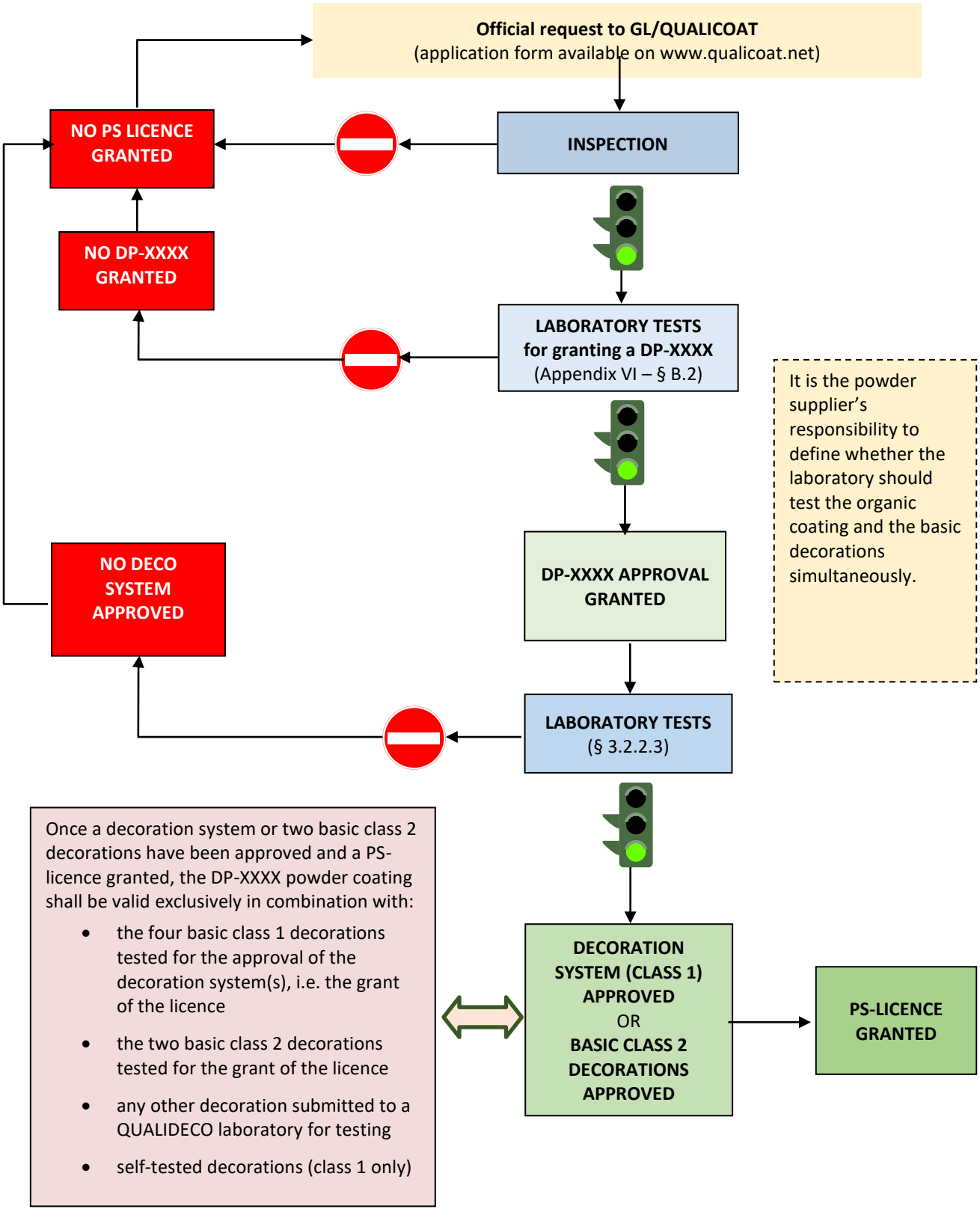
3.2.8 Withdrawal of a powder supplier's licence

A powder supplier's licence shall be cancelled if two consecutive inspections are unsatisfactory.

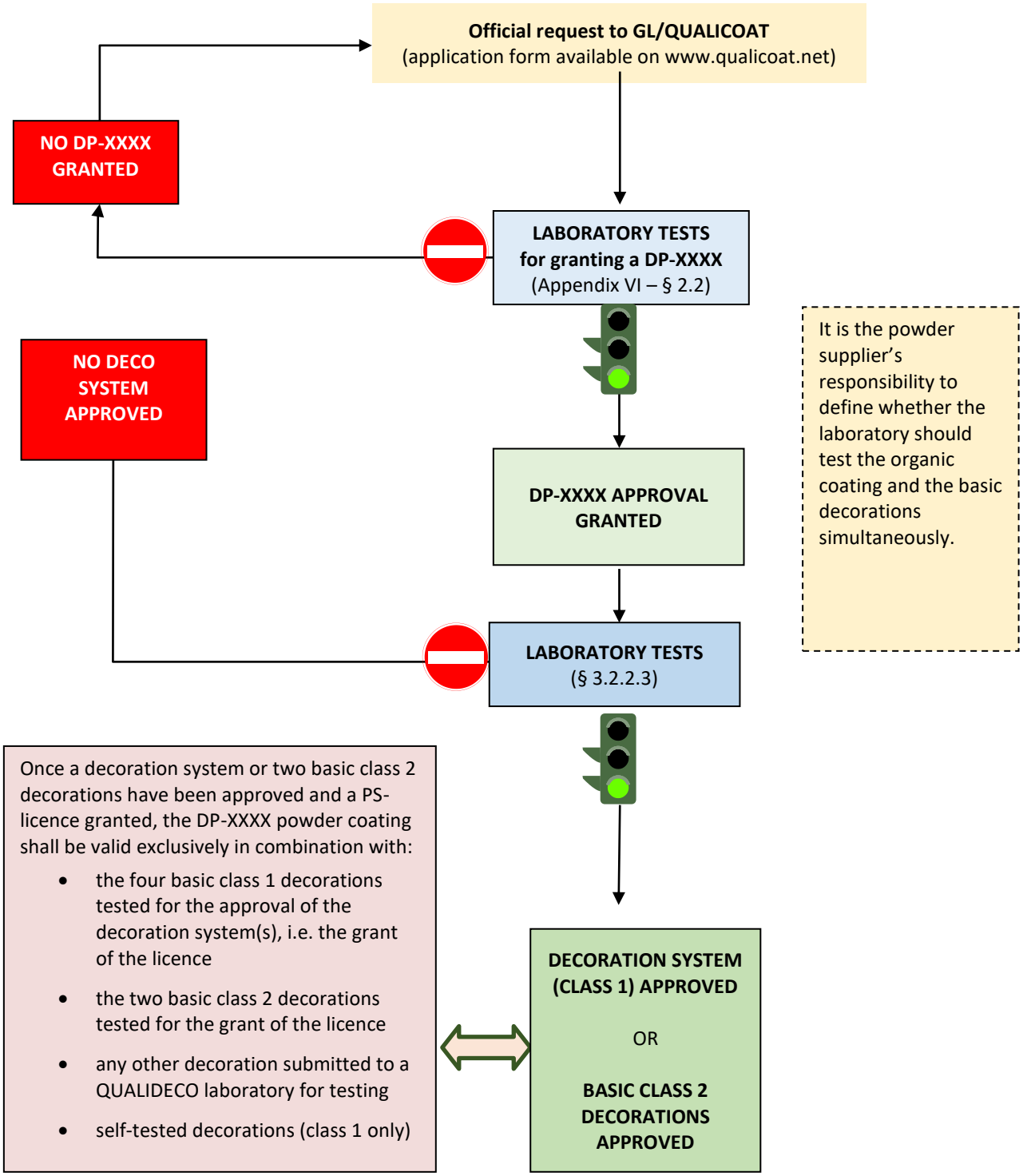
A powder supplier's licence covering only one decoration system (class 1) shall be cancelled if the approval of that decoration system is withdrawn as stipulated in § 3.2.6.

A powder supplier's licence covering only two class 2 decorations and no decoration system shall be cancelled if the approval of those class 2 decorations has to be withdrawn as stipulated in § 3.2.7.

FLOW CHART No. 2 – GRANT OF A LICENCE TO A POWDER SUPPLIER



FLOW CHART No. 3 – GRANT OF APPROVALS TO A LICENSED POWDER SUPPLIER



APPENDIX VI – Approval of organic coatings for sublimation (DP-XXXX)

A. Basic principles

Organic coating materials have a reference identifying a specific chemical formulation. Every organic coating material can have a variety of gloss categories (matt, satin or gloss) and appearances.

Approvals are granted for each powder coating material, gloss level category and appearance.

Approvals are requested by the powder suppliers themselves. If the powder supplier hasn't been granted yet a licence, an inspection of the plant shall be carried out to check that its in-house control meets the requirements specified in § 3.2.1.2.

An approval is granted for one single production site. If an approval holder changes their source, they shall advise the General Licensee and/or QUALICOAT and have the new organic coating materials approved.

Any modification of the chemical composition of the binder (the resins and/or hardening agents) is tantamount to a new product and absolutely requires a new approval. Furthermore, if the physical appearance of the final coating is modified, a new specific approval shall be required[2].

After an approval of organic coating has been granted, the powder manufacturer shall apply for a decoration system within one month. If this is not the case, the approval of the organic coating will be cancelled after three months.

B. Granting of an approval[3]

B.1. Technical data sheet

The powder manufacturer shall send coating materials and reference coated samples (for colour visual information) to a laboratory approved for QUALIDECO testing (hereafter called "laboratory responsible for testing" or "laboratory"), together with the relevant technical data sheet and MSDS.

The data sheet shall include at least the following information:

- Product description including reference powder code
- Colour shade, gloss category and appearance
- Curing conditions including a curing window with a minimum of 2 temperatures and minimum and maximum time for each temperature.

  E.g.: - 12 min. to 30 min at 180°C
  - 7 min. to 20 min at 190°C
  - 5 min. to 15 min at 200°C
- Shelf life and maximum storage temperature (XX months <YY°C)

[2] See Section E - Compulsory declaration of changes in formulation for organic coating materials

[3] See flow charts at the end of this appendix

B.2. Basic colours

Laboratory tests shall be carried out as prescribed in the QUALICOAT Specifications (§ 4.1.3), on the following colours:

- **BEIGE** with a specific reference powder code provided by the powder supplier
- **BROWN** with a specific reference powder code provided by the powder supplier

B.3. Sampling and testing

The laboratory responsible for testing shall prepare the test samples using approved non-chromate chemical pre-treatment and selecting always the minimum curing time and temperature specified by the manufacturer.

After checking the colour and gloss, the laboratory shall perform laboratory tests on the coated samples as specified in the QUALICOAT Specifications.

For the natural weathering test, the panels shall be sent before 1st March of the year in which the exposure is starting to the laboratory responsible for the coordination of the Florida test.

B.4. Assessment of test results

The laboratory submits the test report to the General Licensee or to QUALICOAT in countries where there is no General Licensee.

The laboratory test report is assessed by the General Licensee. Under the supervision of QUALICOAT, the General Licensee decides whether to grant an approval.

- If the results of any laboratory tests do not meet the requirements for one basic colour, the manufacturer of the organic coating material tested will be informed that no DP-XXXX can be granted for the time being, stating the details and reasons.
- If the results of all the laboratory tests meet the requirements for the basic colours a DP-XXXX will be granted, and the powder supplier shall have the powder coating tested with a film.
- The DP-XXXX approval shall be confirmed if the results of the natural weathering test in Florida are satisfactory for both basic colours. Otherwise the DP-XXXX will be withdrawn.

B.5. Numbering of approvals

After an approval has been granted to an organic coating for sublimation, it shall be allocated an identification number as follows: **DP-XXXX (**XXXX being a progressive number given to a single specific approval)**.**

C. Renewal of DP-XXXX approvals

After an approval has been granted, laboratory tests and natural weathering test shall be performed annually on two colours with a specific reference powder code provided by the powder supplier.

C.1. Sampling and testing

The manufacturer shall send organic coating materials and coated panels to the laboratory in charge by end of June, together with the relevant technical data sheet and MSDS (see § 3.2.2).

The colours to be sent for renewal shall be different from those of the previously granted approval (one shade for every basic colour beige and brown) and codified with a specific reference powder code provided by the powder supplier.

The laboratory in charge shall apply the coating material and perform the same tests as those prescribed for granting.

For the natural weathering test, the panels shall be sent before 1st March of the year in which the exposure is starting to the laboratory responsible for the coordination of the Florida test.

C.2. Assessment of laboratory test results

The laboratory submits the test report to the General Licensee or to QUALICOAT in countries where there is no General Licensee.

The laboratory test reports are assessed by the General Licensee. Under the supervision of QUALICOAT, the General Licensee decides whether to renew an approval.

- If the results of the laboratory tests meet the requirements for the colours sent for renewal the approval will be renewed.
- If the results of any of the laboratory test(s) do not meet the requirements for a colour, all the tests on this colour shall be repeated within one month, using new samples.
- If the results of this second series of tests are again unsatisfactory, the colour shall be banned.

C.3. Assessment of the Florida test results

- If the results of the natural weathering test in Florida are satisfactory, the approval shall be renewed.
- If the results of the natural weathering test in Florida are unsatisfactory for one colour, the colour shall be banned.

C.4. Procedure regarding banned colours

The manufacturers shall have banned colours tested again as soon as possible after having received notification.

Colours with unsatisfactory results that are undergoing re-testing shall be considered as suspended.

A list of all colours (currently) banned including suspended colours shall be published.

D. Withdrawal of an approval

All classes

A DP-XXXX shall be withdrawn if the results of a basic colour are unsatisfactory after the natural weathering test or as soon as three colours are banned. In applying this rule suspended colours will not be considered.

E. Compulsory declaration of changes in formulation for organic coating materials

Any modification of the chemical composition of the binder (the resins and/or hardening agents) is tantamount to a new product and absolutely requires a new approval. Furthermore, if the physical appearance of the final coating is modified, a new specific approval shall be required.

Organic coating materials essentially consist of 4 kinds of components:

- binder
- pigments
- extenders
- additives

These are the organic coating material's components that determine the organic coating's characteristics.

E.1. Binder

The binder consists of resin(s) + hardening agent together; it imparts the principal characteristics to the organic coating material (reactivity, application properties, mechanical properties etc.). The main types of resins used in Europe are:

- saturated carboxylated polyester
- saturated hydroxylated polyester
- epoxy
- acrylic

These different types of resins can be used with several different kinds of hardeners.

It is quite obvious that variations in the chemical composition of the different resins or changes in the chemical molecular structure of the hardening agent can bring about modifications in the properties or characteristics of the organic coating and require a new approval.

E.2. Pigments

Pigments can be organic, inorganic or metallic; they impart colour, appearance and opacity to the organic coating.

E.3. Extenders

Extenders improve the rheological or chemical properties of the organic coating.

E.4. Additives

These are substances added to the organic coating material in small quantities to improve certain characteristics of the organic coating (vapour relief, gloss etc.).

These other components (pigments, extenders or additives) of organic coating material can also have some influence on the film properties and characteristics controlled within the quality label. Nevertheless, as these constituents can be numerous and varied, it is up to the organic coating manufacturers to control their formulations so that they comply with the quality label.

E.5. Appearance of the final organic coating

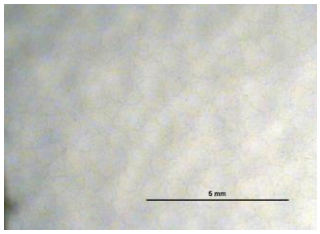
Like all other coatings, organic coating materials – after curing – can give the final organic coating different appearances, for example a smooth appearance or a structured appearance.

A structured appearance cannot be treated like a smooth appearance. Even if the change in formulation is based on special additives, an organic coating imparting an uneven appearance, which does not involve colour gloss or metallic effect, needs a special approval in a different category from the approvals granted for smooth organic coatings.

Definition criteria for structured finishes

These finishes can be split into the following three types. An approval is necessary for each type.

a) **Leathered or orange-peel appearance (waves)**



b) **Textured or sandpaper appearance (sharp edges)**

c) **Wrinkled or vein appearance** (heterogeneous)