

PAINT COATINGS RESISTANCE TO A HIGH PRESSURE WASH

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NO USE RESTRICTION*This is a translation, the French original shall be used in all cases of litigation**Date of translation : 23/05/2002*

1. OBJECT AND FIELD OF APPLICATION

The object of this méthode is to characterise the resistance of decorative coatings (paints, decorative films and others) to the action of a high pressure wash.

It applies to decorative coatings on sheet metal or plastic supports, test specimens or complete parts.

2. PRINCIPLE

The test consists of subjecting a paint film or a decorative film with or without damage, to the action of a high pressure wash.

The possible detachment observed is comparable to that met on vehicles during the use of commercial high pressure wash installations or domestic high pressure cleaners.

3. EQUIPMENT AND REAGENT

3.1. HIGH PRESSURE WASH

providing an operation at the temperature of $70^{\circ}\text{C} \pm 10^{\circ}\text{C}$, with a delivery of 750 litres/hour \pm 50 litres/hour, for a stabilised effective pressure of 65 bar \pm 2 bar (6,5 Mpa \pm 0,2 MPa).

3.2. FLAT JET NOZZLE

forming a jet angle of 25° (reference WASHJET EG 25065 or EG 2506 from SPRAYING SYSTEMS EMANI, 71 avenue Aristide Briand 94118 ARCUEIL CEDEX), as per Figure 1 in Appendix 1.

The choice of nozzle must provide the desired delivery.

The nozzle service life is 500 tests or one year maximum.

3.3. SUPPORT

produced so that a constant distance of 100 mm \pm 5 mm is maintained between the nozzle outlet (3.2.) and the test specimen and a normal angle between the nozzle axis and the test specimen.

3.4. CUTTER,

with a single blade and a cutting edge of 20° to 30° , according to Appendix 2.

3.5. CHRONOMETER.

3.6. CHECKING DEVICE

for checking the pressure and temperature parameters at the quasi nozzle outlet (for example : device with the reference PPC04 from TRANSFLEX 9, rue Edouard NIEUPORT 92150 SURESNES).

4. PREPARATION OF TEST SPECIMENS

- 4.1. The dimensions of the test specimens or parts must be 150 mm x 100 mm minimum (non restrictive optimum conditions).
- 4.2. The test specimens must be conditioned at $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and ambient humidity for approximately 24 hours before carrying out the tests.
- 4.3. For curable paints at temperatures lower than 120°C , carry out the same conditioning as in § 4.2. but for approximately 168 hours, unless otherwise specified in the documents.

5. METHOD OF OPERATION

The test must be carried out at ambient temperature and humidity. The temperature must be between 15°C and 30°C .

5.1. CLEANER SETTINGS (3.1.)

- Pressure : $65 \text{ bar} \pm 2 \text{ bar}$, read off the checking device (3.6.).
- Delivery : 750 litres/hour \pm 50 litres/hour.
- Temperature : $70^{\circ}\text{C} \pm 10^{\circ}\text{C}$, measured with the checking device (3.6.).
- Distance between nozzle and test specimen : $100 \text{ mm} \pm 5 \text{ mm}$.
- The nozzle axis must be perpendicular to the test specimen.

5.2. TEST WITHOUT PAINT FILM DAMAGE (ON PARTS ONLY)

- Slowly sweep the whole surface of the area to be tested (example : adhesion to tape limit, air intake grille, gouge or styling line, return arm, sharp edges, ...) at the speed of approximately 1 metre/minute.
- Measure the surface area of possible detachments and specify their location.

5.3. TEST WITH PAINT FILM DAMAGE (PARTS AND TEST SPECIMENS)

The test with paint film damage is to be carried out on an area that has not been subjected to the sweep stipulated in the previous § 5.2.

- Make an incision into the paint film as far as the substrate, using the cutter (3.4.) to form a cross with arms 100 millimetres long (Non restrictive optimum condition as per Appendix 1).
These incisions must be at least 10 millimetres from all the edges of the test specimen or the part.
On large parts, carry out as many crosses as possible on the whole surface (for example : at least five crosses for one bumper).

Note : *For parts with smaller dimensions than those mentioned above, the lengths of the cross branches are proportionally adapted.*

- Position the nozzle (3.2.) at the centre of the cross, with the jet parallel to one branch (as per Figure 2 in Appendix 1), start the wash (3.1.) maintaining the position for $60 \text{ seconds} \pm 2 \text{ seconds}$.
- Measure the surface for possible detachments specifying at which interface these are located and their location when parts are concerned.

Note. *By interface it is understood : surface separation between two distinct conditions of the material. In this case, surface separation between two paint film layers or between the paint film and the substrate.*

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6. EXPRESSION OF RESULTS

- For each test specimen or part tested, measure the surface, expressed in square centimetres (cm²) of detached paint and its location.

Express the result by two figures corresponding to the tests without paint film damage then with paint film damage according to the grading below :

TEST WITHOUT PAINT FILM DAMAGE :

Grading 0 = detachment less than 1 cm² over the whole test area.

Grading 1 = detachment greater than or equal to 1cm² and less than 3 cm² over the whole test area.

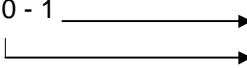
Grading 2 = detachment greater than or equal to 3 cm² over the whole test area.

TEST WITH PAINT FILM DAMAGE :

Grading 0 = detachment less than 1 cm² per cross.

Grading 1 = detachment greater than or equal to 1cm² and less than 3 cm² per cross.

Grading 2 = detachment greater than or equal to 3 cm² per cross.

Example : 0 - 1 

7. TEST REPORT

As well as the results obtained, the test report must indicate :

- the reference to this méthode,
- the complete identification of the test specimen or the part tested (name of the supplier, substrate reference, surface treatment and paint range),
- the operating details not specified in the method as well as any incidents likely to have affected the results.

APPENDIX 1

FLAT JET NOZZLE

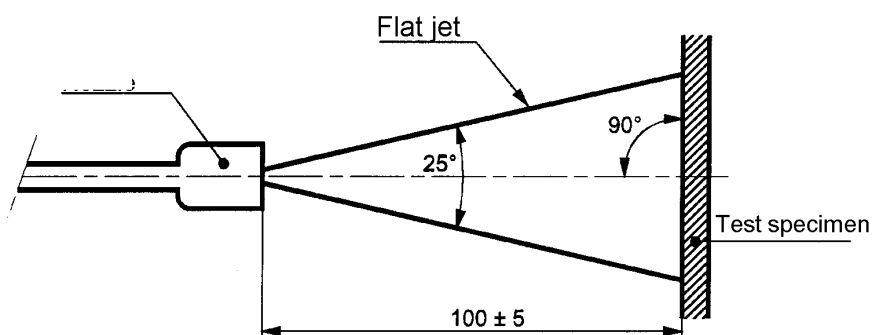


Figure 1

TEST SPECIMEN WITH PAINT FILM DAMAGE

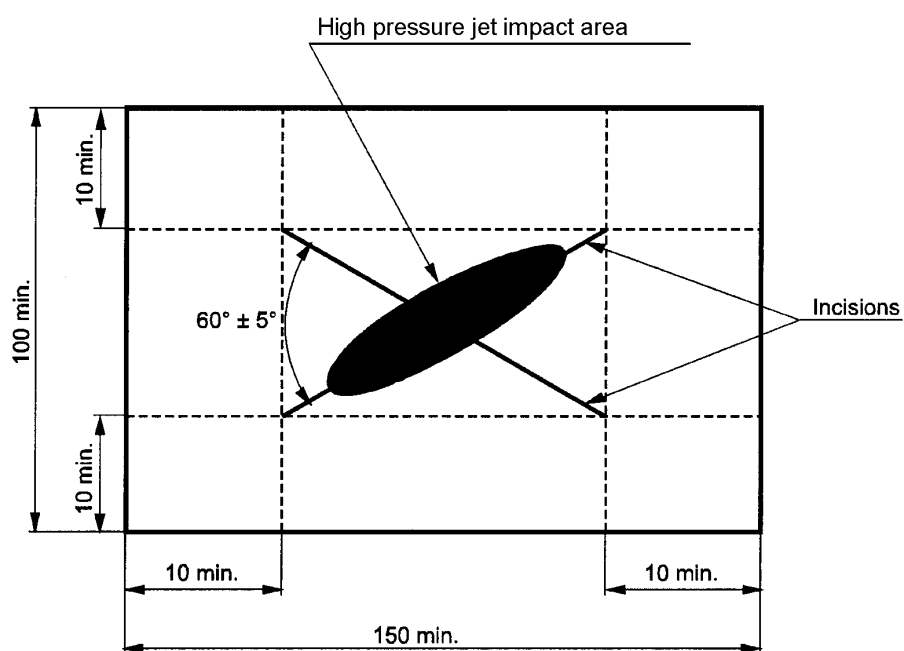
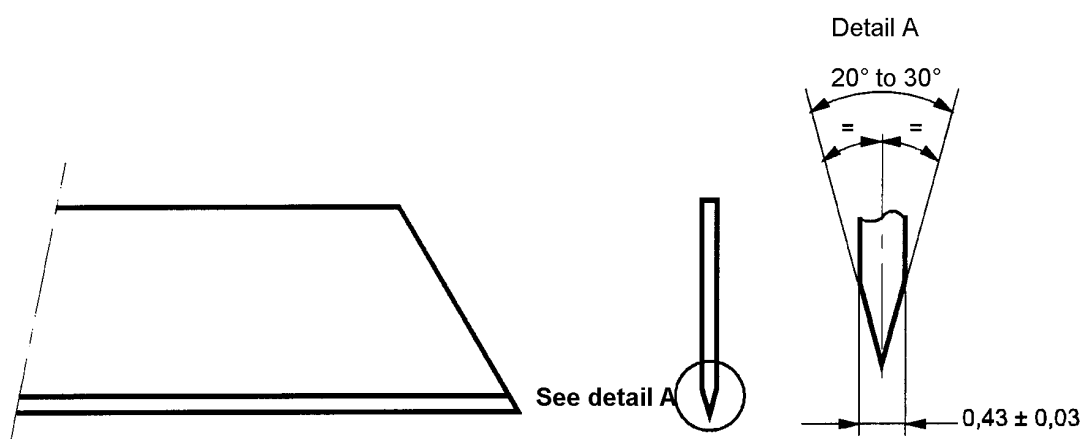


Figure 2

APPENDIX 2

CUTTER



8. RECORDS AND REFERENCE DOCUMENTS

8.1. RECORDS

8.1.1. CREATION

- OR : 01/04/1995 – CREATION OF THE NORME.

8.1.2. OBJECT OF THE MODIFICATION

- B : 14/11/2000 – UP-DATE OF THE METHODE D'ESSAI
- A : 15/05/1997 - INTRODUCED INTO IDEM (*French only*).

8.2. REFERENCES DOCUMENTS

8.2.1. PSA DOCUMENTS

8.2.1.1. Normes

8.2.1.2. Others

8.2.2. EXTERNAL DOCUMENTS

8.3. EQUIVALENT TO :

8.4. CONFORMS TO:

8.5. KEY-WORDS