

**COATINGS AND PARTS IN THE PASSENGER COMPARTMENT
COLOUR FASTNESS TO WATER, SEA WATER
AND PERSPIRATION**

Page 1/5

Restrictions as described in the norme*This is a translation, the French original shall be used in all cases of litigation**Date of translation : 02/03/2000***USE RESTRICTION**

This norme replaces for **NEW DESIGN** the following normes :

- **D47 1021 TEXTILES – COLOUR FASTNESS TO SEA WATER**
- **D47 1022 TEXTILES – COLOUR FASTNESS TO PERSPIRATION**
- **D47 1023 PASSENGER COMPARTMENT MATERIALS AND PARTS – PLASTIC COATED TEXTILES, PLASTICS, HIDE TRIM – COLOUR FASTNESS TO WATER**
- **D47 1024 PASSENGER COMPARTMENT MATERIALS AND PARTS – PLASTIC COATED TEXTILES, PLASTICS, HIDE TRIM – COLOUR FASTNESS TO SEA WATER**
- **D47 1025 PASSENGER COMPARTMENT MATERIALS AND PARTS – PLASTIC COATED TEXTILES, PLASTICS, HIDE TRIM – COLOUR FASTNESS TO PERSPIRATION**

FOREWORD

This document is equivalent to the RENAULT document D47 1020.

It must not be modified without prior consultation with the Normalisation Services of this Group.

It is in conformity with the agreement reached between this Group and PSA PEUGEOT CITROËN in DECEMBER 1999.

1. OBJECT AND FIELD OF APPLICATION

The object of this méthode is to determine the colour fastness to water, sea water and perspiration of passenger compartment materials and parts.

It applies to materials such as textiles, plastic coated textiles, hide trim, plastics in sheet form as well as plastic parts in the passenger compartment.

2. PRINCIPLE

A test specimen of the material to be tested and a non coloured reference woven textile soaked with water, sea water or perspiration are left in contact under pressure for a given period of time. The test specimen and the non coloured reference woven textile are dried. The deterioration of the test specimen and the dye transfer onto the reference woven textile are assessed against the grey scale.

3. EQUIPMENT AND REAGENT

3.1. RIGID PLATES

in glass or acrylic plastic 115 mm x 60 mm.

3.2. TEST APPARATUS

consisting of a stainless steel frame 115 mm x 60 mm in base dimensions in which a 50 newton load is placed so that a pressure of approximately 12,5 kPa may be applied to the test specimens.

3.3. NON COLOURED REFERENCE WOVEN TEXTILES

Reference textiles in wool or polyacrylic or polyester or polyamide or cotton or acetate 100 mm x 40 mm or reference textiles in multifibres from the same materials (6 times 17 mm) x 40 mm.

Non coloured reference woven textiles must have a canvas backing of 100 g/m² to 125 g/m² in weight and contain no dressing or residual chemical products or chemically damaged fibres, or optical bluing. Cotton must be bleached, other woven textiles must be cleaned but not bleached (see norme NF EN ISO 105-A01).

3.4. GREY SCALE

to assess the deterioration and GREY SCALE to assess dye transfers onto non coloured reference woven textiles in half-point steps in conformity with normes NF EN 20105-A02 and NF EN 20105-A03.

Note : *Textiles (3.3.) and grey scale (3.4.) may be obtained through ADSOL, 37-39 rue de NEUILLY – 92110 CLICHY.*

3.5. MASKING DEVICES

used to assess the contrast in colour on the different aged test specimens. They consist of neutral grey cards in which windows of 30 mm x 30 mm are made; the neutral grey colour is approximately that of the lightest band on the grey scale for the assessment of deterioration (3.4.) (for example CHARTE neutral grey card from KODAK).

3.6. VENTILATED OVEN

to 37°C ± 2°C.

3.7. BALANCE

to the nearest 0,1 gram.

3.8. SOLUTIONS

3.8.1. DISTILLED WATER

3.8.2. SEA WATER

synthetic to 30 g/l of sodium chloride (NaCl) prepared from mineralised or distilled water.

3.8.3. BASIC PERSPIRATION CONTAINING PER LITRE OF DISTILLED WATER

- 5 g of Sodium chloride (NaCl),
- 0,5 g of L(+) – histidine monochlorohydrate to 1 molecule of water (C₆H₁₀ClN₃O₂H₂O),
- 5 g of disodium hydrogenphosphate to 12 molecules of water (Na₂HPO₄12H₂O).

If required, pH will be adjusted to pH 8 using a decinormal solution of sodium hydroxide (NaOH).

3.8.4. ACID PERSPIRATION CONTAINING PER LITRE OF DISTILLED WATER

- 0,5 g of L(+) – histidine monochlorohydrate to 1 molecule of water ($C_6H_{10}ClN_3O_2H_2O$),
- 5 g of Sodium chloride (NaCl),
- 2,2 g of sodium dihydrogenphosphate to 2 molecules of water ($NaH_2PO_4 \cdot 2H_2O$).

If required, pH will be adjusted to pH 5,5 using a decinormal solution of sodium hydroxide (NaOH).

Note : *The two solutions (3.8.3.) and (3.8.4.) must be kept away from light. The solution pH must be checked each time before it is used. The maximum time of use is one month after preparation.*

4. PREPARATION OF TEST SPECIMENS

4.1. FOR WOVEN OR KNITTED TEXTILES, THEIR COMPOSITES AND MATERIALS IN SHEET FORM

- Take a test specimen 100 mm x 40 mm.
- The test specimen thickness is that of the material.

Note : *Cut out the test specimens without marking them so that the marker ink does not bleed onto the textile during the test.*

4.2. FOR THREADS

- Knit the thread and proceed as indicated in § 4.1. or form a layer of parallel threads between two textiles (3.3.) and sew along the two opposite sides to maintain the thread in position and form a composite test specimen.

4.3. FOR SOLID MATERIALS

- Cut out the test specimen over a thickness of 1 mm to 2 mm so that the reverse side is flat and parallel to the right side.

5. METHOD OF OPERATION

- Place the test specimen on a plate (3.1.) the right side facing upwards.
- Using the balance (3.7.), weigh the reference textile which will be immersed in one of the solutions (3.8.) Calculate the volume of solution (3.8.) required to obtain a bath ratio 50/1, which is the ratio between the volume of liquid used in millilitres and the weight of the reference textile in grams.
- Immerse the reference textile in one of the solutions (3.8.) at ambient temperature for at least 5 min.
- Remove the reference textile piece (3.3.) from the solution and place at the centre of the test specimen taking care not to wet the reverse side of the material (textile support, cellular material, etc.).
- Place the assembly on a second plate (3.1.) then the 50 N load.
- Place the assembly in an oven (3.6.) for 4 hours \pm 15 minutes.
- Remove the composite test specimen from the oven, separate the test specimen from the reference textile (3.3.) and dry in the air at a temperature below 60°C.
- Repeat the test with each solution.

6. EXPRESSION OF RESULTS

- Assess the deterioration of the test specimen and the dye transfer onto the non coloured reference woven textile by means of the grey scale (3.4.) according to the details given in normes NF EN 20105-A02 and NF EN 20105-A03, in the lighting conditions defined in méthode d'essai D15 1343. To assess the differences in colour, cover the test specimens and master samples using the masking devices (3.5.) in order to compare identical surfaces and tone down the effect of neighbouring colours.
- Express :
 - the colour fastness index for the deterioration of the various dyes or prints on each type of non coloured reference woven textile used,
 - the colour fastness index for the dye transfer from the various dyes or prints onto each type of non coloured reference woven textile used; any intermediate index allocated by means of the grey scale in half-point steps must be indicated by two figures separated by a slash / (for example 4/5).
- For the test with the non coloured reference multifibre woven textile, take the worst result. If in doubt, carry out a test for confirmation with a non coloured reference woven textile (100 mm x 40 mm) of the same composition as the fibre on which an anomaly has been detected.

7. TEST REPORT

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

- the reference to this méthode,
- the material references and the name of the Supplier,
- the special conditions of the test,
- the operating details not specified in the method as well as any incidents likely to have affected the results.

8. RECORDS AND REFERENCE DOCUMENTS

8.1. RECORDS

8.1.1. CREATION

- OR : 01/10/1979 – CREATION OF THE PSA NORME.

8.1.2. SUBJECT OF THE MODIFICATION

- E : 16/02/2000 : REWRITE OF § 4., 5. AND DELETION OF THE APPENDIX.
- D : 27/05/1999 : THIS TEST METHOD REPLACES METHODS D47 1021 to D47 1025 FOR ALL NEW DESIGN

8.2. REFERENCE DOCUMENTS

8.2.1. PSA DOCUMENTS

8.2.1.1. Normes

D15 1343 COLOURED MATERIALS – VISUAL COMPARISON OF COLOURS IN A LIGHT CHAMBER

8.2.1.2. Others

8.2.2. EXTERNAL DOCUMENTS

NF EN ISO 105-A01 TEXTILES – COLOUR FASTNESS TESTS – PART A01 :
GENERAL PRINCIPLES FOR CARRYING OUT THE TESTS
NF EN 20105-A02 TEXTILES – COLOUR FASTNESS TESTS – PART A02 :
GREY SCALE FOR ASSESSING DETERIORATIONS
NF EN 20105-A03 TEXTILES – COLOUR FASTNESS TESTS – PART A03 :
GREY SCALE FOR ASSESSING DYE TRANSFERS

8.3. EQUIVALENT TO :

REN D47 1020

8.4. CONFORMS TO :

8.5. KEY-WORDS