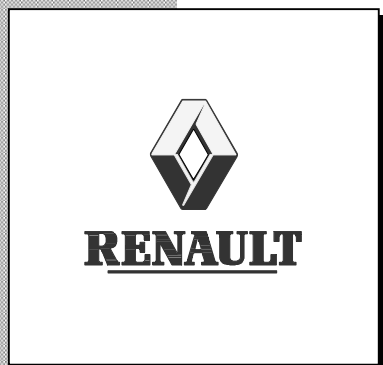


# TEST METHOD



D45 1010 / - - G

**POLYMER MATERIALS AND PARTS**  
**INSIDE AND OUTSIDE PASSENGER COMPARTMENT**  
**COLOURFASTNESS TO RUBBING**

**Normalisation Renault Automobiles**  
**DMC / Service 65810**

This document is to be considered as a whole, the parts of which shall not be separated.

"Seul le texte français fait foi, les traductions n'étant faites que pour en faciliter l'emploi".

"The French text alone is valid. The translations are provided to assist the reader in understanding the standards".

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## FIRST ISSUE

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## REVISIONS

October 1998	- - E	Modifications to paragraphs 3.3., 5.. and 6. Addition of paragraph 3.11. This issue originates from draft NC 98 351 / - - -.
Avril 2004	- - F	Wording changes. This issue originates from draft NC 2004 0294 / - - -.
March 2006	- - G	Wording changes to paragraphs 3.2 ; 3.7 et 3.13 This issue originates from draft NC 2006 0160 / - - -.

## REFERENCED DOCUMENTS

Test Method : D15 1343.

AFNOR Standards : NF EN 20105-A02 (12/1994, classification index G07 010 2).  
NF EN 20105-A03 (12/1994, classification index G07 010 3).

## FOREWORD

*This document is the equivalent of PSA PEUGEOT CITROEN and RENAULT V.I. document D45 1010.*

*It shall not be modified without first notifying the Standardization Department of PSA PEUGEOT CITROEN and RENAULT V.I..*

*It is in conformity with the agreement concluded between PSA PEUGEOT CITROEN and RENAULT V.I. and RENAULT in April 2005.*

### 1. SCOPE AND FIELD OF APPLICATION

This analysis method determines the colourfastness to rubbing on all the materials and on all the parts made of polymer inside and outside the passenger compartment.

### 2. PRINCIPLE

The specimens to be tested are rubbed with a non-coloured reference fabric dry or moistened with certain liquids.

Colour discharges onto non-coloured reference fabrics and degradations of the specimen are assessed using the grey scales.

### 3. APPARATUS AND REAGENTS

**3.1. CROCKMETER APPARATUS** (See annex) containing a cylindrical pad, 16 mm  $\pm$  0.1 mm in diameter subjected to a load of 900 g  $\pm$  30 g. This pad completes reciprocating movements with an amplitude of 100 mm  $\pm$  10 mm, at a frequency of 1 cycle per second.

**3.2. NON-COLOURED REFERENCE FABRIC** made of cotton with canvas backing, without sizing or dressing. the weight per unit area is 105 g/m<sup>2</sup>  $\pm$  10 g/m<sup>2</sup> (see note below). cut this fabric into about 50 mm side squares.

**3.2. 3.3. GREY SCALES** for the assessment of degradations on the specimens and of colour discharges on non-coloured reference fabrics

These scales are defined in Standards NF EN 20105-A02 and NF EN 20105-A03. It is recommended to use 9-degree scales.

**NOTE :** The fabric (3.2.) and grey scales (3.3.) may be obtained through ADSOL, 37 rue de Neuilly, 92110 CLICHY CEDEX.

**3.3. LIGHTWEIGHT FELT**, 100 % white wool, of approximate weight per unit area 250 g/m<sup>2</sup> and 1 mm thick, cut into discs about 16 mm in diameter.

**3.4. GRADUATED PIPETTE OR LABORATORY SYRINGE, 0.5 ML.**

**3.5. SOAPY WATER WITH 0.5% HOUSEHOLD SOAP AND 0.5 % SODIUM CARBONATE.**

**3.6. 3.11. BASIC SWEAT** containing by litre of distilled water :

- 0,5 g de L(+) – histidine monochlorhydrate by 1 molecule of water (C<sub>6</sub>H<sub>10</sub>ClN<sub>3</sub>O<sub>2</sub>,H<sub>2</sub>O),
- 5 g Sodium chloride (NaCl),

- 5 g de di-sodium hydrogenophosphate by 12 molecules of water ( $\text{Na}_2\text{HPO}_4, 12\text{H}_2\text{O}$ ).

If necessary, adjust the pH to pH 8 using a decinormal solution of sodium hydroxide (NaOH).

**NOTE :** Both solutions (3.10.) and (3.11.) shall be kept sheltered from light. The pH of the solutions shall be verified before each utilization. The maximum duration of utilization is one month after preparation.

**3.7. ETHYL ALCOHOL**, 95 % in volume or any other concentration specified in manufacturer's documents.

**3.8. TECHNICAL HEPTANE.**

**3.9. PETROL, F or C.**

**3.10. ACID SWEAT containing by litre of distilled water :**

- 0,5 g of L(+) – histidine monochlorhydrate by 1 molecule of water ( $\text{C}_6\text{H}_{10}\text{ClN}_3\text{O}_2, \text{H}_2\text{O}$ ),
- 5 g of sodium chloride (NaCl),
- 2,2 g of sodium dihydrogenophosphate by 2 molecules of water ( $\text{NaH}_2\text{PO}_4, 2\text{H}_2\text{O}$ ).

If necessary, adjust the pH to pH 5.5 using a decinormal solution of sodium hydroxide (NaOH)

**3.12. DISTILLED WATER.**

**3.13. MASKS**

Masks are used for evaluating the colour contrast on the specimens. These consist of neutral grey cardboard sheets (RSA – RT) or black cardboard sheets (PSA), on which windows of dimensions 30 mm × 30 mm have been cut (identical to dimensions of grey scale) separated by a distance equal to or less than 20 mm; the neutral grey colour is approximately that of the clearest band in the grey scale for evaluation of the degradations.) (for example, neutral grey CHARTE card from KODAK). The black colour is that on the grey scale screen (3.3).

#### **4. SPECIMEN PREPARATION**

For each test, take a specimen of approximate size 50 mm x 140 mm, from the materials to be tested.

For small parts from which specimens with the above-mentioned dimensions cannot be taken, conduct where possible the test on specimens taken from slabs or plane samples of the same material, grain and colour as that of the part considered.

## 5. METHOD

In all cases, insert a disc of lightweight felt (3.4.) between the pad of apparatus (3.1.) and the fabric (3.2.). This disc shall be renewed between each test and for each fluid.

### 5.1. DRY RUBBING

Conduct the test using apparatus (3.1.). Secure a square of fabric (3.2.) on the cylindrical pad of apparatus (3.1.). Carry out 10 reciprocating movements on the specimen to be tested.

The number of movements may be modified if necessary. In this case, specify the number of reciprocating movements in the normative documents.

### 5.2. RUBBING WITH FLUID IMPREGNATED FABRIC

Conduct the test of 5.1. on a new specimen, moistening the fabric (3.2.) in its centre with 0.5 ml of reagent (3.6.) or (3.7.) or (3.8.) or (3.9.) or (3.10.), etc. according to the specifications of the normative documents, using pipette (3.5.). After rubbing, dry the fabric and the specimen at ambient temperature.

In the case of a volatile reagent (3.7.), (3.8.) etc., it is desirable to soak up the fabric (3.2.) and disc (3.4.) after their positioning on apparatus (3.1.)

## 6. EXPRESSION OF RESULTS

Place tested fabrics (3.2.) on white cardboard sheet.

Evaluate the degradation on the specimens and the bleeding on non-coloured reference fabrics according to grey scales (3.3.) under the lighting conditions defined in Test Method D15 1343 while covering the specimens and standards using masks (3.13.) in order to compare identical surfaces and reduce the effect of nearby colours.

In the case of materials on which rubbing results in a degradation (brilliance, whitening or mattness), examine its irreversibility by manually wiping it using fabric (3.2.) wet or soaked in water (3.12.).

Take account of any permanent degradation.

## 7. TEST REPORT

In addition to the results obtained, the test report shall include:

- the reference of this analysis method,
- the reference of the product under test and the Supplier's name,
- procedural details not specified in this analysis method, together with any incidents which might have affected the results.

EXAMPLE OF CROCKMETER APPARATUS (3.1.)

