

**MATERIALS AND PARTS IN POLYMER
PASSENGER COMPARTMENT INNER AND OUTER
COLOUR FASTNESS TO RUBBING**

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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 : 02/03/2006***FOREWORD**

This document is equivalent to the documents from RENAULT SAS and RENAULT Trucks Groups of reference D45 1010.

The equivalence applies to the first level; it does not concern the reference documents. It must not be modified without prior consultation with the Standards Department of these two Groups.

It is in conformity with the agreement reached between these Groups and PSA PEUGEOT CITROEN in December 2005

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RECORDS

Suffix	Date	Type of modifications
OR	01/10/1978	CREATION OF THE NORME.
A	01/03/1990	COMPLETE REWRITE OF THE NORME.
B	01/07/1995	COMPLETE REWRITE OF THE NORME..
C	09/06/1997	INTRODUCED INTO IDEM (<i>French only</i>)
D	20/01/1999	ADDITION OF § 3.11. MASKS
F	24/02/2006	NORMES D BROUGHT INTO LINE WITH THE NEW FORMATTING. CHANGES TO THE TEST SPECIMEN DIMENSIONS (SEE § 8.).
G	28/02/2006	CORRECTION TO THE RENAULT D NORME REFERENCE QUOTED IN THE FOREWORD

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1.OBJECT AND FIELD OF APPLICATION

The object of this method is to determine the colour fastness to rubbing on all materials and parts in polymer located in the passenger compartment inner and outer.

2.REFERENCE DOCUMENTS

2.1.NORMES

D15 1343	COLOURED MATERIALS - VISUAL COMPARISON OF COLOURS IN A LIGHT CHAMBER
NF EN 20105-A02	TEXTILES – COLOUR FASTNESS TESTS - PART A02 : GREY SCALE FOR THE EVALUATION OF DETERIORATIONS.
NF EN 20105-A03	TEXTILES - COLOUR FASTNESS TESTS - PART A02 : GREY SCALE FOR THE EVALUATION OF COLOUR TRANSFERS.

2.2.REGULATIONS

Not applicable.

2.3.OTHER DOCUMENTS

Not applicable.

2.4.EXPRESSION ON DOCUMENTS

Not applicable.

3.TERMINOLOGY AND DEFINITION

A dictionary (glossary) of the main terms and their definitions used within the "Direction des Plates-formes, des Techniques et des Achats" can be consulted in-house via the DPTA glossary.
([Nectar](http://nectar.inetpsa.com) : <http://nectar.inetpsa.com>). This glossary is constantly up-dated.

3.1.DEFINITIONS

Not applicable.

3.2.ACRONYMS

Not applicable.

4.TEST METHOD PRINCIPLE

The specimens to be tested are rubbed with a non coloured reference textile dry or moistened with certain liquids. Colour transfers onto non coloured reference textiles and deterioration of the test specimen are assessed on the grey scales.

5.EQUIPMENT

5.1.CROCKMETER APPARATUS

(See Appendix 1).

comprising of a cylindrical contact, 16 mm \pm 0,1 mm diameter subjected to a load of 900 g \pm 30 g. This contact produces reciprocating movements of 100 mm \pm 10 mm amplitude, at the frequency of 1 cycle per second.

5.2.NON COLOURED REFERENCE TEXTILE

in cotton lawn fabric, without sizing or any dressing with a surface mass of 105 g/m² \pm 10 g/m² (see note below). Cut out this textile into approximately 50 mm squares.

5.3.GREY SCALE

for assessing deterioration on test specimens and colour transfers onto non coloured reference textiles.

These scales are defined by normes NF EN 20105-A02 and NF EN 20105-A03. Use preferably 9 degrees scales.

Note: *The textile (§ 5.2.) and the grey scales (§ 5.3) may be obtained through ADSOL or ATLAS.*

5.4.BAIZE

100% white wool of approximate surface mass 250 g/m² and 1 mm thick, cut into discs of approximately 16 mm diameter.

5.5.GRADUATED LABORATORY PIPETTE OR SYRINGE

of 0,5 ml capacity.

5.6.SOAPY WATER

with 0,5% household soap and 0,5% sodium carbonate.

5.7.ETHYL ALCOHOL

95% in volume or any other concentration specified in the Manufacturer's documents.

5.8.TECHNICAL HEPTANE

5.9.PETROL F OR C

5.10.ACID PERSPIRATION

Containing per litre of distilled water :

- 0.5 g of L(+) – histidine monochlorhydrate to 1 molecule of water (C₆H₁₀ClN₃O₂·H₂O)
- 5 g of sodium chloride (NaCl)
- 2.2 g of disodium hydrogenphosphate to 2 molecules of water (NaH₂PO₄·2H₂O)

If required, the pH shall be adjusted to pH 5.5 by means of a decinormal solution of sodium hydroxide (NaOH).

5.11.BASIC PERSPIRATION

Containing per litre of distilled water :

- 0.5 g of L(+) – histidine monochlorhydrate to 1 molecule of water ($C_6H_{10}ClN_3O_2 \cdot H_2O$)
- 5 g of sodium chloride (NaCl)
- 2.2 g of disodium hydrogenphosphate to 2 molecules of water ($NaH_2PO_4 \cdot 2H_2O$)

If required, the pH shall be adjusted to pH 8 by means of a decinormal solution of sodium hydroxide (NaOH).

Note : *the two solutions (§ 5.10. and § 5.11.) must be kept away from light. The pH of the solutions must be checked before each use. The maximum time for using the solutions is one month after the preparation.*

5.12.DISTILLED WATER

5.13.MASKS

Masks are used to assess the contrast in colour on the test specimens. The masks are made of a neutral grey card (RSA – RT) or black card (PSA) in which apertures of 30 mm x 30 mm are made (identical to the dimensions of the grey scales) spaced at 20 mm or less. The neutral grey colour is approximatively the colour of the lightest band on the grey scale for the assessment of the deterioration (§ 5.3.) (for example CHARTE neutral grey card from KODAK). The colour black is that of the cache of the grey scale (§ 5.3.).

6.PREPARATION OF SOLUTIONS

Not applicable.

7.REPRESENTATIVENESS OF TEST SPECIMENS OR SAMPLES

The test specimens or samples must be representative of the scale to be characterised. To provide this representativeness, it is necessary to find out the basic characteristics of the population studied. The selection criteria for the test specimens or samples must be specified in the Test Report (RE), in conformity with norme A10 0156.

8.PREPARATION OF TEST SPECIMENS

Take from the materials to be tested one specimen per test of approximately 50 mm x 140 mm.

For small dimensional parts from which it is impossible to take test specimens to the dimensions defined above, if possible, carry out the test on specimens taken from slabs or flat samples in the same material, grain and colour as the part concerned.

9.PROCEDURE

In all cases, insert a baize disc (§ 5.4) between the contact on the apparatus (§ 5.1) and the textile (§ 5.2). This disc must be changed for each new test and for each liquid.

9.1.DRY RUBBING

Carry out the test with the apparatus (§ 5.1.). Fix a textile square (§ 5.2.) to the cylindrical contact on the apparatus (§ 5.1.). Carry out 10 reciprocating movements on the specimen to be tested.

If necessary it is possible to modify the number of movements. In this case, the number of reciprocating movements must be indicated in the documents.

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9.2.RUBBING WITH A TEXTILE SOAKED IN A LIQUID

Carry out the same test as in paragraph 5.1, on a new test specimen by wetting the textile (§ 5.2.) at its centre with 0.5 ml of reagent (§ 5.6. or § 5.7. or § 5.8. or § 5.9. or § 5.10., etc.), according to the specifications given in standard documents, using the pipette (§ 5.5.). After rubbing, leave the textile and the test specimen to dry at ambient temperature

In the case of a volatile reagent (§ 5.7., § 5.8., etc.), it is desirable to soak the textile (§ 5.2.) and the baize disc (§ 5.4.) after their positioning on the apparatus (§ 5.1.)

10.REMARKS

Not applicable.

11.TEST REPORT AND EXPRESSION OF RESULTS

11.1.EXPRESSION OF RESULTS

Arrange the tested textiles (§ 5.2.) on a white carton.

Assess the deterioration on the test specimens and the colour transfers onto non coloured reference textiles according to the grey scales (§ 5.3.) in the lighting conditions defined in test method D15 1343 by covering the test specimens and master samples with masks (§ 5.13.) in order to compare identical surfaces and reduce the effect of neighbouring colours.

In the case of materials on which the rubbing would have shown a deterioration (gloss, whitening or mattness), examine if this deterioration is irreversible by wiping manually by means of the dry textile (3.2.) or the textile soaked with water (§ 5.12.).

Take into account any permanent deterioration.

11.2.TEST REPORT

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

- the reference to this method,
- the reference of the product tested and the name of the supplier,
- the operating details not specified in the method as well as any possible incidents likely to have affected the results.

Appendix 1

Example of a crockmeter apparatus (§ 5.1.)

