Author Stanciu Sorina - ss1923@chrysler.com
Supervisor PETERSON DOUGLAS - douglas.peterson@fcagroup.com
Author Department FCA US -- ORGANIC MATERIALS - 5840
Supervisor department FCA US -- ORGANIC MATERIALS - 5840

FIAT CHRYSLER AUTOMOBILES

FLEX AND FOLD TEST OF LEATHER, POLYMERIC COATED FABRICS, AND OTHER TRIM MATERIALS

LP-463LB-09-01

FCA US Doc. Type: LP

Date: 19-OCT-2015

Change level	Date	Description of change
D	10-AUG-2015	Updated test procedure in harmonized format
E	19-OCT-2015	Pressure load correction.

FLEX AND FOLD TEST OF LEATHER, POLYMERIC COATED FABRICS, AND OTHER TRIM MATERIALS

TABLE OF CONTENTS

1 GENERAL 3
1.1 Purpose 3
1.2 Coverage of this Standard (Applicability) and Limitations on Usage 3
2 REFERENCES 3
3 DEFINITIONS/ABBREVIATIONS/ACRONYMS/SYMBOLS 3
4 SIGNIFICANCE OF THE ITEMS UNDER TEST 3
5 TEST EQUIPMENT AND INSTRUMENTATION 3
5.1 Test Facilities 3
5.2 Test Equipment 3
5.3 Test Instrumentation 3
6 DESCRIPTION OF ITEMS UNDER TESTING 4
7 EFFORT (Time Needed to Carry out the Test) 4
8 SAFETY PRECAUTIONS 4
9 SAMPLE DEFINITION, PREPARATION AND CONDITIONING 4
9.1 Sample Definition 4
9.2 Preparation 4
9.3 Conditioning 4
10 ENVIRONMENTAL CONDITIONS 4
11 TEST DESCRIPTION 4
12 TEST EXECUTION 5
12.1 Post-Testing Procedure 5
13 DATA PROCESSING / EVALUATION CRITERIA / TEST REPORT 5
13.1 Data Processing 5
13.2 Evaluation Criteria 5
13.3 Test Reports 5
Annex A 6

1 GENERAL

This procedure is used to determine the resistance to flexing of automotive trim materials such as polymeric film coated fabric and/or leather.

1.1 Purpose

This procedure describes a test method which can be used to indicate the degree of anchorage of the coating material to the backing fabric as related to polymeric coated fabrics and leather. It also indicated the degree of cracking, whitening, crazing, separation of plies, etc. of polymeric coated fabrics, leather, unsupported vinyl, and other soft trim materials.

1.2 Coverage of this Standard (Applicability) and Limitations on Usage

This method applies to polymeric film coated fabrics, leather, unsupported vinyl, and other soft trim materials.

2 REFERENCES

Not applicable.

3 DEFINITIONS/ABBREVIATIONS/ACRONYMS/SYMBOLS

Not applicable.

4 SIGNIFICANCE OF THE ITEMS UNDER TEST

Not applicable.

5 TEST EQUIPMENT AND INSTRUMENTATION

5.1 Test Facilities

See Annex A for test equipment.

5.2 Test Equipment

Flex and Fold Test machine capable of running 35 cycles/min (70 double flexes/min, 35 folds/min)

Source: Standard Scientific, P O Box 484, Bethlehem PA 18016-0484,
Phone: (610) 838-7500
info@standardscientific.com

Bull Dog clamps for holding the specimens

5.3 Test Instrumentation

Not applicable.

6 DESCRIPTION OF ITEMS UNDER TESTING

One flex test specimen 76 mm x 203 mm.
Two fold test specimens 129 mm x 129 mm.

7 EFFORT (TIME NEEDED TO CARRY OUT THE TEST)

Not applicable.

8 SAFETY PRECAUTIONS

Not applicable.

9 SAMPLE DEFINITION, PREPARATION AND CONDITIONING

9.1 Sample Definition

One flex as two fold test tested at the same time.

9.2 Preparation

Prepare the flex test specimen (76 mm x 203 mm) with the longitudinal direction parallel to the warp direction of the material.

Prepare the fold test specimens (129 mm x 129 mm), one in which the fold will be in the parallel to the warp direction of the specimen and one in which the fold in the specimen will be parallel to the filling direction of the specimen.

9.3 Conditioning

Test results indicated here are based on material conditioned in a controlled atmosphere of 23°C ± 2°C and 50 % ± 5 % relative humidity for not less than 24 hours prior to testing and tested under the same conditions unless otherwise specified.

10 ENVIRONMENTAL CONDITIONS

Same as above.

11 TEST DESCRIPTION

1. Set the clamps of the Flex and Fold Test Machine for the flex test 152 mm apart. This can be accomplished by means of a space gauge to set the clamps at 152 mm distance.
2. Insert the specimen in the clamps and tighten securely. The clamps grip the specimen the same distance at each end when the specimen is inserted properly. Make certain that the specimen is lined up properly with the clamp so that the weight is evenly distributed on the specimen.

3. Remove the gauge and allow the tension arm to hang against the specimen. The weight on the tension arm is adjusted to 36 N load on the specimen.
4. Insert the fold specimen between the pressure plates located at the end of the movable bar. Fold the specimen with the backing to the outside so that the material folds face to face. The pressure plates are adjusted to 53 N total pressure. Be certain that the spring clips are adjusted so that the specimen cannot move.
5. Start the test machine by throwing the starting switch. Allow the machine to run for the number of cycles specified in the Material Standard for the material being tested. A counter register the number of cycles operated. The flex and fold specimens are tested at the same time.
6. Remove the flex and fold specimens and examine them visually for cracking, whitening, crazing, separation of pile, etc. On polymeric coated fabrics, poor anchorage of the coating material to the backing fabric will probably give a blistered appearance to the surface of the material. Some coating materials tend to craze, flake or whiten at the fold or stress lines if not properly formulated and fused. The crazed condition may not be obvious at first glance due to the irregularity of the surface caused by stress or folding, but may become apparent by a flaking of the surface coat when scraped by the fingernail.

12 TEST EXECUTION

Same as section 11.

12.1 Post-Testing Procedure

Not applicable.

13 DATA PROCESSING / EVALUATION CRITERIA / TEST REPORT

13.1 Data Processing

Record the results.

13.2 Evaluation Criteria

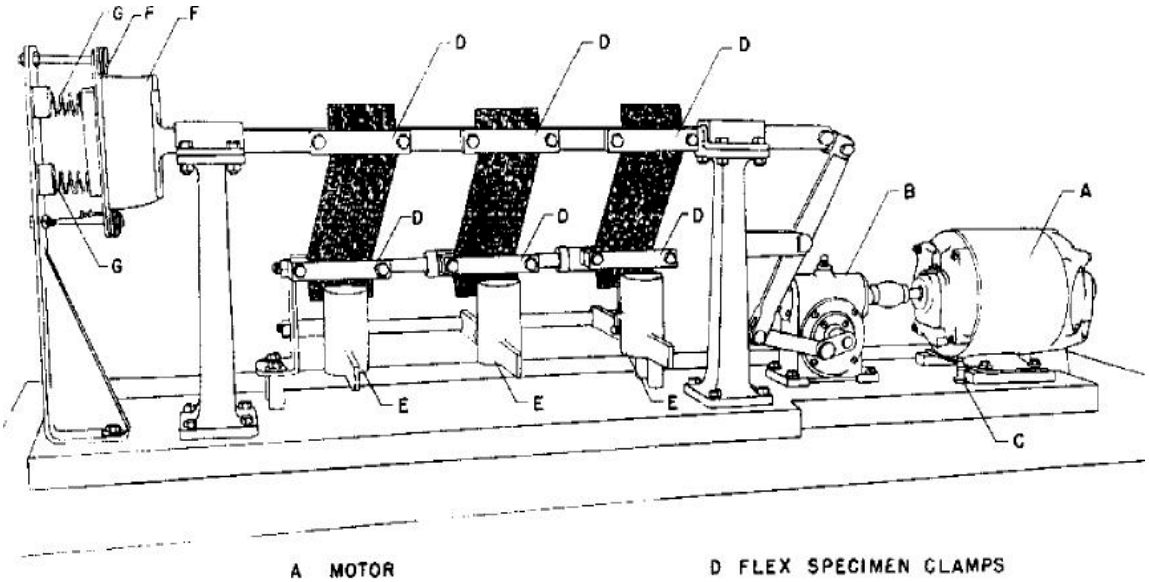
Report visual appearance following the rating scale below:

1 – slightly noticeable
2 – noticeable
3 - very noticeable

13.3 Test Reports

Report the visual appearance as indicated in the evaluation criteria above. Report if the specimen crazed, cracked, whitened or separated.

ANNEX A
(Informative)
Flex and Fold tester



A MOTOR
B REDUCTION GEAR
C STARTING SWITCH
D FLEX SPECIMEN CLAMPS
E FLEX SPECIMEN TENSION WEIGHTS
F FOLD SPECIMEN PRESSURE PLATES
G FOLD SPECIMEN TENSION SPRING

Figure A-1 - Flex and Fold Tester

End of Annex A