Ford Motor Company

FORD LABORATORY TEST METHOD AQ 105-01

DETERMINATION OF CHROMIUM OXIDE COATING WEIGHTS

Application

This procedure is used to determine the coating weight of chromium oxide conversion coatings on aluminum parts by testing the coating on aluminum test panels which have been put through the complete cycle of the coating system under test.

Materials and Apparatus Required

Aluminum Panels

Made from alloys with the same composition as the aluminum parts which have been put through the coating system.

Dimensions: 100 x 300 mm (max 5 mm thick).

Laboratory Convection Oven

Capable of maintaining a temperature of 100 +/- 2 °C.

Analytical Balance

With an accuracy of 0.1 mg.

Desiccator

With a suitable desiccant.

Ethanol

Acetone

Tetrachloroethylene

Stripper Solution A *

Date	Action	Revisions	
2001 01 31	Revised	Editorial – no technical change	A. Cockman
2000 04 20		Editorial – no technical change	A. Cockman
1990 04 10			

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Stripper Solution B *

Consisting of 1.2 g chromic acid (C.P.); 480 g Aluminum Nitrate; 300 mL water.

Note: Stripper Solution A is to be used for unbaked test panels under 24 hours old. Stripper Solution B is to be used for unbaked test panels over 24 hours old. (Stripper Solution B may not be used for SAE AA2024, Din 1725 AlCuMg2, BS 1470 H15, and SAE AA7075, DIN 1725 AlZnMgCu 1.5 alloys). These alloys must be tested before they are 24 hours old.

* Stripping solution must be renewed after twelve test panels have been run.

Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Procedure

1. Process two panels through a complete cycle of the coating system under test which includes cleaning, coating, acid rinse (if required) and drying.

2. Cut four test panels (100 x 100 mm sections, or other suitable size) from the larger panels.

3. Remove all grease or foreign matter from the 100 mm x 100 mm test panels by washing with tetrachloroethylene, acetone and ethanol. A mixture of these three solvents poured over the test panels should remove any soil.

4. Blot the test panels with a soft cloth and dry in the oven at 100 +/- 2 °C for five minutes.

5. Cool in the desiccator and weigh the test panels to the nearest 0.1 mm.

6. Fully immerse each test panel in the appropriate stripping bath.

   Note: Stripper A - Immerse test panels at 23 +/- 2 °C for 2 – 5 minutes.
   Stripper B - Immerse test panels at boil for 2.5 – 5 minutes.

7. Rinse test panel in cold running water (under 27 °C, preferably under 16 °C). Blot and dry in oven at 100 °C.

8. Cool in desiccator and reweigh. Repeat Steps 5, 6 and 7 until a constant weight is obtained.

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