ENGINEERING MATERIAL SPECIFICATION

Material Name

BONDING FRICTION MATERIAL TO METAL

Specification Number

SQ-M11P9000-AA

1. SCOPE

This specification covers the requirements and processes for bonding friction material to metal for operating in oil.

2. APPLICATION

Friction material so bonded must resist all action of oils in operations such as automatic transmissions.

3. REQUIREMENTS

3.1 Inspection with a 0.13 mm feeler of the bonding line between the metal and the friction material shall show no voids.

3.2 Three sections from one assembly shall be bent individually 3.14 rad around a 11 mm mandrel with lining on the outside.

The appearance of the broken bond surface shall be 65 % broken in the friction material itself. The fragments of friction material shall adhere to the cement and the cement shall be adhered to the metal.

For parts not having this break pattern, the bending test has to be repeated three (3) more times on the same band assembly.

Out of these six (6) bending trials one maximum defective area of 300 mm2 is permitted, but the total non-bonded portion of all six (6) trials must not exceed 35 % of the bent area. In case this requirement is not met, all parts of the same lot shall be rejected if more than 10 % of the lot will exceed the 300 mm2 limit (for up to 10 % of production a non-bonded area of maximum 900 mm2 is permissible). Friction material having a grooved pattern before bonding will reproduce this pattern on the broken bond surface. If this pattern causes less than 50 % adhesion, the part shall be rejected

3.3 When the assemblies are placed in operation, in an automatic transmission, they shall perform, in all respects, in a similar manner to that of the original approved samples tested by Product Engineering.

Date	Release No.	Released
1994 12 19		Revised and Retyped was: 8 pages
1981 08 11	B/453224 TP	Changed sheet 4
1971 07 30	MD/ET0172 QP	Released, BL.5

WP 3948-a

9009160 0037373 762

Copyright by the Ford Motor Company

Sat Aug 27 21:35:53 2016

Documents
Document Sharing Hub

Full document details: FORD SQ-M11P9000-AA 1994

3.4 PROCESSING

3.4.1 Cleaning

The metal surface must be cleaned prior to bonding by one of the following methods:

A) Sand Blasting
B) Grit Blasting
C) Grinding or
D) Zinc Phosphate Coating to Spec. S-M3P1-B

Rusted metal must be processed by A), B), or C). The cleaning operation must be performed within two hours prior to operation 3.4.5. If necessary, clean the friction linings on the bond side, by blowing the grinding dust off with compressed air, which has been filtered to remove oil and water. If necessary, clean dirt, oil, or other undesirable matter off by grinding, wire brushing or rubbing with steel wool.

3.4.2 Apply Bonding Cement

Apply a suitable bonding cement to either the bond side of the specified friction material or directly to the cleaned metal by extruding, brushing or spraying to 0.08 - 0.32 mm dry film thickness. This corresponds to about 0.12 to 0.48 mm of wet spray film thickness. Good results are obtained by spraying two 0.23 mm coats, with solvent evaporation time between them.

3.4.3 Drying

Position the coated friction material or the coated metal to minimize puddling of the cement during drying.

In batch process, the coat should be dried in two steps:

1) Air dry for a minimum of 30 minutes, then

2) oven dry in a 60 +/- 5 C mechanical convection oven for 6 +/- 0.5 hours.

If a continuous process of drying is used, the coat should be gradually raised from room temperature to 88 C in eight minutes, and held at 88 +/- 3 C for a minimum of 15 minutes and a maximum of 30 minutes.

3.4.4 Shape

While warm, pass friction material between rollers to make it conform to curvature of mating metal part. This is only necessary, if specified.

9009160 0037374 6T9

Copyright by the Ford Motor Company

Sat Aug 27 21:35:53 2016

Documents
Document Sharing Hub

Full document details: FORD SQ-M11P9000-AA 1994