Ford Engineering Material Specification

Material Name

ADHESION REQUIREMENTS, POLYURETHANE FOAM TO POLYPROPYLENE - PRESSURE SENSITIVE FILM

Specification Number

ESA-M11P19-A

1. SCOPE

This specification defines the bond requirements for polyurethane foam gaskets with a polyester film backing to a polypropylene substrate.

2. APPLICATION

This specification was released originally for material used for assemblies requiring a gasket with a pressure sensitive adhesive on one side. The pressure sensitive adhesive is intended as an assembly aid. It should be used only where the seal is mechanically retained in final assembly.

3. REQUIREMENTS

3.1 PEEL STRENGTH, PLASTIC MEMBRANE TO PANEL, min (ASTM D 903)

Standard test panel to be injection molded smooth surfaced polypropylene ESB-M4D63-A. Adhere 6 in (152 mm) of the 0.50 in (12.7 mm) thick specimen to the test panel using a rubber covered steel roller. The steel roller must be 3.25 ± 0.1 in (82.6 ± 2.5 mm) in diameter and 1.75 ± 0.05 in (44.5 ± 1.3 mm) in width, covered with rubber approximately 1/4 in (6 mm) in thickness, having a durometer hardness of 80 ± 5. The weight of the roller which applies pressure to the specimen shall be 4.5 ± 0.1 lb (2.04 ± 0.05 kg). The roller should be constructed so that the weight of the handle is not added to the weight of the roller during use. Pass the roller, without application of additional pressure, over the gasket lengthwise once in each direction at the rate of approximately 2 in (50 mm)/s. Allow 20 ± 5 min before resuming test. Apply masking tape to the surface of the foam to reduce the friction between the foam surfaces when the specimens are bent 180° with respect to themselves.

3.1.1 As Received — 40 oz/in (0.44 N/mm) width

3.1.2 Heat Aged — 40 oz/in (0.44 N/mm) width

Test Method: Condition the test panel with the specimen adhered for 7 days in a mechanical convection oven at 88 ± 1°C. Allow a 4 h recovery at 23 ± 1°C and 50 ± 5% R.H. before determining peel strength.

3.1.3 Humidity Aged — 40 oz/in (0.44 N/mm) width

Test Method: Condition the test panel with the specimen adhered for 7 days at 95-100% R.H. and 37 ± 1°C. Allow a 4 h recovery at 23 ± 2°C and 50 ± 5% R.H. before determining peel strength.

Date	Para. No.	Revisions	Approval
979 01 10		Metricated, Renumbered & Retyped CAH2 823385	
1972 07 03		Released CDB8-545842-H	E.P. Frame 11-30-76

1978 11 30

Eng Res June 77 3948-a

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3.2 PEEL STRENGTH, FOAM TO PLASTIC MEMBRANE
(Bond must be made of a permanent type adhesive)

3.2.1 As Received — No delamination

Test Method: Same as para 3.1, except double back each specimen on itself, slit through the membrane without cutting the foam, and peel back approximately 1 in (25 mm). Activate the machine at a jaw separation rate of 2 in (50 mm)/min.

3.3 BOND SEPARATION — None

Test Method: Using an actual production part which has the gasket adhered, (1 in (25 mm) width), cut the gasket and fasten a 200 g weight to one end by doubling the gasket back approximately 1 in (25 mm). Hang 3 assemblies in a similar manner with the weights vertically suspended by the gaskets for 1 h with no separation of bond.

3.4 QUALITY

The release film shall readily be removed from the pressure sensitive adhesive so as not to interfere with normal production processing.

3.5 POLYURETHANE FOAM — As specified on engineering drawing

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