

**PHENOLIC IMPREGNATED FELT MAT -
CROSS LAMINATED****ESP-M3D119-A****1. SCOPE**

The material defined by this specification is a felted mat, cross laminated and impregnated with a high temperature resistant phenolic resin.

2. APPLICATION

This specification was released originally for material used as a thrust washer in automatic transmissions, capable of withstanding operating temperatures of 177 to 204 °C.

3. REQUIREMENTS**3.0 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS**

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.1 TENSILE STRENGTH, min
(ASTM D 638)

With Grain	17,000 psi (117 MPa)
Across Grain	16,500 psi (114 MPa)

3.2 FLEXURAL STRENGTH, min
(ASTM D 790)

Flat with Grain	20,000 psi (138 MPa)
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3.3 COMPRESSIVE STRENGTH, min
(ASTM D 695)

40,000 psi (276 MPa)

3.4 IMPACT STRENGTH, Izod, min
(ASTM D 256, method "A", notched)

0.65 ft lb/in (34.7 J/m)

3.5 HARDNESS - ROCKWELL "M"
(ASTM D 785)

107 - 117

3.6 SPECIFIC GRAVITY
(ASTM D 792)

1.32 - 1.40

Date	Action	Revisions
2004 10 26	Revised	Inserted 3.0; Deleted 3.8, 3.10 & 4
1978 11 15		Metricated and Retyped PCR RD782440-P3
1972 03 08	Released	CP5-971749





3.7 OIL IMMERSION

Samples of production parts shall not check, warp, nor blister.

Test Method: Immerse sample parts in oil immersion baths of each approved automatic transmission fluid meeting either ESW-M2C33-F or ESP-M2C138-CJ, with baths at 93 ± 3 °C. Increase temperature of oil baths to 190 ± 3 °C within 1 h. Hold at 190 ± 3 °C for 1 h. Remove specimens and examine while hot and after cooling to room temperature.

3.9 PHYSICAL AND/OR PERFORMANCE OF FINISHED PRODUCT

When required, shall be as specified on the affected part or product engineering drawing, or in the affected part or product engineering performance specification.