



LAMINATE, UNSATURATED POLYESTER (UP) 50% FIBER MAT REINFORCED

WSK-M97D1-A

1. SCOPE

The material defined by this specification is a 50% man made fiber mat (5% 'C' glass +45% PET and PAN fibers) reinforced unsaturated polyester laminate. The length of the fiber glass in the mat shall be 15 mm minimum.

2. APPLICATION

This specification was released originally for material used for splash shield in the engine compartment.

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).

3.4 MOLDED TEST SPECIMEN

3.4.1 Preparation of Test Specimens

All test specimens shall be prepared from cross-ply molded plaques or equivalent. The plaques are to be manufactured from the same material and under equivalent conditions as production parts. The plaques shall have the following dimensions:

300 x 300 mm, min x 2.5 +/- 0.2 mm

Prepared specimens must show no evidence of fiber tear or loose fiber strands protruding from the specimens. No additional annealing of specimens is allowed. Specimens must be cut transverse to fiber's long direction.

3.4.2	Density (ISO 1183, Method A/ASTM D 792, Method A1)	1.12 - 1.40 g/cm ³
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3.4.3 Filler Content

3.4.3.1	Ash Content (ISO 3451/1, Method A, 1 h at 650 °C)	10 - 20%
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3.4.3.2	'C' Glass Fiber Content, By Weight	3 - 8%
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Date	Action	Revisions
2006 09 20	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.6, 3.7 & 4
1992 02 03	Released	EP00E10176261000



Documents

P. Kuntze
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Test Method: ISO 3451/1, Method B, 1 h at 650 +/- 25 °C, except use 5% by volume hydrochloric acid solution for 15 min. Rinse the glass fibers several times with distilled water before drying in an oven for 2 h at 120 +/- 2 °C. After cooling, weigh the crucibles and calculate the percent glass fibers.

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| 3.4.4 | Tensile Strength at Break, min
(ISO R 527/ASTM D 638, 150 min x
10 x 2.5 +/- 0.2 mm specimen, 5 mm/min
test speed) | 30 MPa |
| 3.4.5 | Flexural Modulus, min
(ISO 178/ASTM D 790, Method I,
Procedure A, 1.25 mm/min test
speed, 60 x 10 x 2.5 +/- 0.2 mm
specimen, 40 mm support span) | 3.5 GPa |
| 3.4.6 | Flexural Strength, min
(ISO 179/ASTM D 790, Method I,
Procedure A, 60 x 10 x 2.5 +/- 0.2 mm
specimen, 40 mm support span) | 75 MPa |
| 3.4.7 | Impact Strength, Unnotched, min
(ISO 180/ASTM D 256, no notch on either
side, 63.5 x 12.7 x 2.5 +/- 0.2 mm
specimen, 10 specimens minimum) | |
| 3.4.7.1 | At 23 +/- 2 °C | 44 kJ/m ² |
| 3.4.7.2 | At -40 +/- 2 °C | 40 kJ/m ² |
| <p>The test specimens must be conditioned for minimum of 6 h at the above specified temperature prior to impact test. Low temperature testing shall be done within the cold box, if not possible, test can be conducted outside, but within 5 s.</p> | | |
| 3.4.8 | Heat Deflection Temperature, min
(ISO 75, Method A/ASTM D 648, 120 x
10 x 2.5 +/- 0.2 mm specimen at
standard deflection of 0.32 +/-
0.01 mm. At 1.80 MPa) | 90 °C |
| 3.4.9 | Heat Aging Performance
(ISO 188/ASTM D 573, 150 +/- 50 air
changes/h, 1000 h at 150 +/- 2 °C.
Unaged property values shall be
determined at the time of the aged
properties determination) | |
| 3.4.9.1 | Tensile Strength Change
(Test Method per para 3.4.3) | +/- -- % |
| 3.4.9.2 | Impact Strength Change
(Test Method per para 3.4.7.1) | +/- -- % |

