



PHENOLIC MOLDING COMPOUND 40% E-GLASS FIBER REINFORCED

ESK-M3D151-A

1. SCOPE

The material defined by this specification is a high heat resistant composite sheet of 40% chopped strand E glass fibers homogeneously encapsulated in a fully curable Phenolic resin. This material is self-extinguishing without flame retardant additives (SE) with no dense smoke and will be used for the hand-lay process directed fiber perform process or modified wet-lay-up molding.

2. APPLICATION

This specification was released originally for material used for heat insulation shields.

Note: This material absorbs water and should not be used without protected surfaces.

3. REQUIREMENTS

3.0 STANDARD REQUIRMENTS FOR PRODUCTION MATERIALS

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

3.4 TEST SPECIMEN

3.4.1 Preparation of Test Specimens

All tests are to be performed on specimens die-cut from stainless molded flat test sheets manufactured from the same material composition and under equivalent process conditions as on production parts. The thickness of test specimen shall be 2.5 +/- 0.5 mm (acc. to the finished part). The dimensions of the test sheet for flammability test shall be 1.7 – 1.9 x 100 x 355 mm. Edges of specimens to be flat, clean and at right angles to the surface. Molded test sheets shall be annealed according to following cycles before preparing the individual test specimen.

30 min annealing at 50 - 55 °C
4 h annealing at 80 - 85 °C and min.
24 h conditioning at 23 +/- 2 °C

3.4.2 Ash Content 30 - 45%
(ISO 3451/1, Method A
except 2 h at 850 +/- 50 °C
test portion: ca 10 g)

Residue of Ash: Glass fibers and inorganic fillers

Date	Action	Revisions
2005 06 20	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.5, 3.6 & 4; Removed Inactive ESK-M3D151-B
1988 02 01		Revised sheet 1, 2, 3, B/031508 TP
1986 09 17	Released	SM/EQ5638 TP





3.4.3	Density (ISO R 1183, Method A) Hand-lay process Directed fiber perform process	1.15 - 1.35 g/cm ³ 1.10 - 1.30 g/cm ³
3.4.4	Flexural Strength (ISO 178, 80 x 10 x 2.5 +/- 0.5 mm specimen, support span 60 mm, sr-factor 0.01)	min. 75 MPa
3.4.5	Flexural Modulus (ISO 178, 80 x 10 x 2.5 +/- 0.5 mm specimen, support span 60 mm sr-factor 0.01)	min. 4,700 MPa
3.4.6	Impact Strength, Izod, unnotched (ISO 180, except 63.5 x 10 x 2.5 +/- 0.5 mm 10 specimens for each test)	
3.4.6.1	At 23 +/- 2 °C	min. 55 kJ/m ²
3.4.6.2	At -40 +/- 1 °C	min. 55 kJ/m ²

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.

3.4.7	Heat Deflection Temperature (ISO 75, 110 x 10 x 2.5 +/- 0.5 mm) At 1.82 MPa	tbe
3.4.8	Water Absorption (ISO 62, Method 2) after 96 h total immersion at 23 +/- 2 °C, except test results in percent	max. 12%
3.4.9	Heat Ageing (ISO 188, normal oven type at 190 +/- 2 °C)	
3.4.9.1	Impact strength, Izod, unnotched (Test Method according to para 3.4.6.1) 10 specimens for each test after 24 h heat ageing after 1000 h heat ageing	min 20 KJ/m ² min 20 KJ/m ²
3.4.9.2	Flexural Strength (Test Method according to para 3.4.4) 10 specimens for each test after 24 h heat ageing after 1000 h heat ageing	min 50 MPa min 10 MPa

