



ENGINEERING MATERIAL SPECIFICATION

ABS, 10% GLASS FIBER REINFORCED MOLDING COMPOUND
ABS, 20% GLASS FIBER REINFORCED MOLDING COMPOUND
ABS, 30% GLASS FIBER REINFORCED MOLDING COMPOUND

ESB-M4D297-A1
ESB-M4D297-A2
ESB-M4D297-A3

1. SCOPE

The material defined by these specifications is an acrylonitrile butadiene styrene (ABS) molding compound, reinforced with various percentage levels of glass fibers.

2. APPLICATION

These specifications were released originally for materials used for instrument panel upper supports, or other applications which require a high strength material.

ESB-M4D297-A1 replaces and is same as ESB-M4D297-A, Type I
ESB-M4D297-A2 replaces and is same as ESB-M4D297-A, Type II
ESB-M4D297-A3 replaces and is same as ESB-M4D297-A, Type III

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).

3.2 MOLDED TEST SPECIMENS, Injection Molded

		A1	A2	A3
3.2.2	Color	Natural	Natural	Natural
3.2.3	Glass Fiber Content, by weight 2.0% (1 h at 649 °C)	10	20	30
3.2.4	Specific Gravity, min (ASTM D 792)	1.08	1.18	1.24
3.2.5	Tensile Strength, psi (MPa), min (ASTM D 638, 0.2 in (5 mm)/min	8,000 (55)	11,500 (79)	12,000 (83)
3.2.6	Flexural Strength, psi (MPa), min (ASTM D 790, 0.2 in (5 mm)/min, 1/4 x 1/2 x 5 in (6.4 x 13 x 127 mm) specimen)	11,500 (79)	14,000 (97)	17,000 (117)

Date	Action	Revisions
2005 01 25	Revised	Inserted 3.0; Deleted 3.1, 3.2.1, 3.3.3, 3.4 & 4
1982 02 12	Released	AM1-6000-78



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3.2.7	Flexural Modulus, psi (GPa), min (ASTM D 790, 0.2 in (5 mm)/min, 1/4 x 1/2 x 5 in (6.4 x 13 x 127 mm) specimen)	375,000 (2.6)	500,000 (3.4)	850,000 (5.9)
3.2.8	Impact Strength, Izod, ft.lb/in (J/m), min (ASTM D 256, 1/4 in (6.4 mm) specimen width)			
	Notched	1.25 (67)	1.00 (53)	0.75 (40)
	Unnotched	5.50 (294)	5.50 (294)	4.00 (214)
3.2.9	Deflection Temperature, °C min (ASTM D 648, 1/4 in (6.4 mm) specimen width)			
	At 66 psi (455 kPa)	93	96	99
	At 264 psi (1820 kPa)	85	91	91
3.2.10	Hardness, Rockwell "M", min (ASTM D 785)	30	45	50

3.3 MOLDED PART

3.3.1	Color	Natural or as specified on engineering drawing.		
3.3.2	Appearance	Shall be uniform in density, texture and finish, free of visible porosity, warpage, heat scorch, checks, cracks and chipped edges. They shall also be free of other contamination.		
3.3.4	Flammability, max (FLTM BN 024-02, without the lot sampling plan)	4 in (101 mm)/min		