



Engineering Material Specification

Material Name

Specification Number

GLASS FIBER SOUND ABSORPTION
BATT - LOW BINDER CONTENT

ESB-M12G45-A1, A2, A3, A4, A5
VESB-M12G45-B1, B2, B3, B4, B5

1. SCOPE

The materials defined by this specification are fine fibered, flexible, resilient blankets of fibrous glass, bonded with a thermosetting resin.

2. APPLICATION

This specification was released originally for materials used as thermal insulators and sound absorbers.

3. REQUIREMENTS

3.1 CONDITIONING

All test values indicated herein are based on materials conditioned in a controlled atmosphere of $23 \pm 2^{\circ}\text{C}$ and $50 \pm 5\%$ relative humidity for 24 hours prior to testing, and tested under the same controlled conditions.

3.2 COLOR

Black or Neutral

3.3 THICKNESS (FLTM BN 23-2)

As specified on engineering drawings with the following tolerances:

- Under 1.0 in (2.54 cm): $+1/8$ in (3.2 mm) $-1/16$ in (1.6 mm)
- 1.0 in (2.54 cm) and over: $+1/4$ in (6.35 mm) $-1/8$ in (3.2 mm)

3.4 CONSTRUCTION

3.4.1 Fiber Diameter 0.00013 - 0.00031 in (3.3 - 7.9 μm)

Test Method: Measure the diameter of 10 fibers using a calibrated microscope or other suitable means and report the average value.

3.4.2 Binder Content 4 - 12% Phenol Formaldehyde
or equivalent by weight

Test Method:

1. Cut up a 12 x 12 in (300 x 300 mm) sample into a nichrome or stainless steel wire basket (50 mesh).

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2. Condition in a mechanical convection oven at $102 \pm 3^{\circ}\text{C}$ to a constant weight and record.
3. Heat in a muffle furnace at $538 \pm 10^{\circ}\text{C}$ until binder is burned off.
4. Cool, weigh and calculate % binder on basis of conditioned weight (step 2).

3.5 PHYSICAL PROPERTIES

ESB-M12G45-	Density (+20% - 10%)		Specific Strength (minimum)				Compression (% max)	Recovery - (% min)	Firm- ness (min)
	lb/ft ³	kg/m ³	WMD	AMD	psi	kPa			
					psi	kPa			
A1/∇B1	1.0	16.0	2	14	1	7	90	60	10
A2/∇B2	1.5	24.0	5	34	4	28	87	65	20
A3/∇B3	2.0	32.0	6	41	5	34	85	70	25
A4/∇B4	2.5	40.0	9	62	7	48	80	75	40
A5/∇B5	3.0	48.0	12	83	10	69	75	85	55

Requirements based on 1 in (25 mm) thick sample

Test Methods:

Density - ASTM C 167 using the thickness test specified below

Thickness - FLTM BN 23-2

Specific Strength - ASTM D461

Dry Compression and Recovery - FLTM BN 15-2

Firmness - FLTM BN 23-1

3.6 SOUND ABSORPTION
(ASTM C384)

(Initial Approval Only)

ESB- M12G45-	Thickness	Min. Sound Absorption % Frequency in Hz			
		250	500	1000	2000
A1/∇B1	1" (25 mm)	5	10	22	45
	1/2" (13 mm)	4	7	17	30
A2/∇B2	1" (25 mm)	6	12	26	55
	1/2" (13 mm)	4	7	17	35
A3/∇B3	1" (25 mm)	6	12	30	60
	1/2" (13 mm)	4	8	18	35
A4/∇B4	1" (25 mm)	6	13	35	70
	1/2" (13 mm)	4	8	19	37
A5/∇B5	1" (25 mm)	6	14	35	70
	1/2" (13 mm)	4	8	20	40

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