



DELTA[®]-4

MINERAL WOOL LAMELLA

Flexible - Versatile - Lightweight

DELTA[®] -4 LAMELLA is manufactured with perpendicular orientated mineral wool bonded together with a high temperature binder. The end grain fiber is adhered perpendicularly to a laminate {facing surface}. This construction provides high compressive strength and easy-to-wrap, flexible type insulation that require the finished characteristics of heavy density mineral wool boards. **DELTA[®] Mineral Wool LAMELLA** has a wide range of applications from -20°F.(-29°C) to 850°F.*(454°C*) including use on large pipes & cylindrical ducts, storage tanks, and equipment.

Physical Properties

All values in () are metric conversions.

Density: Nom. 4 lb./ft³ (Nom. 64 kg./m³)

Service Temperature: [ASTM C 411] -up to **850° F*(454°C*)**

Thermal Conductivity: °F.(°C) mean temp.= Btu in./h ft² °F (W/m K) [per ASTM C 177 with C 1045 calculations]

100°F. (38°C) = 0.29 (0.040)

200°F. (93°C) = 0.36 (0.052)

300°F. (149°C) = 0.44 (0.063)

400°F. (204°C) = 0.55 (0.078)

500°F. (260°C) = 0.65 (0.094)

600°F. (316°C) = 0.78 (0.113)

k = 0.27 @75°F. (24°C) mean temp or ~R = 3.7 per in. (25mm)

Compressive Strength: [ASTM C 165]- Not less than 125 lbs./ft² (5.8 kPa)

Corrosion [Steel, Aluminum, Copper, ASTM C 665] -None

Moisture Sorption [Vapor, ASTM C 1104]- Less than 1%

Water *wicking* resistant* and Non-hygroscopic.*

Permeance: [ASTM E 96] ASJ & FSK facing only = 0.02

Perms, max. (.014 g/24h m²/mm Hg., max.)

Does not promote growth of fungi or bacteria.

Incombustible: Mineral Wool per ASTM E 136

Test Method *Surface Burning Characteristics:* Tested as a composite/finished product with ASJ facings per ASTM E 84 Test Method

Flame Spread Index = 15

Smoke Developed Index = 20

Facings {Laminates}

Standard: A.S.J. {All Service Jacket} laminate constructed with 30 lb/ 3000 ft² (49g/m²) White Kraft, tri-direction fiber glass filament {Scrim}, 0.00035" (9 um) aluminum Foil, and fire retardant adhesive. *Special Order: F.S.K.* {Foil-Scrim-Kraft} laminate constructed with 0.0007"(18um) aluminum Foil, Tri-directional fiber glass filament {Scrim}, 30 lb/ 3000 ft² (49g/m²) natural Kraft, and fire retardant adhesive. 0.033"(0.9 mm) thick fiber **Glass Mat**.

Roll Forms Available

Thickness: 1" (25mm) thru 6" (152mm) in ½" (13mm) increments

Width: 36 in. (91cm)

Roll Length: Varies with thickness

Custom lengths {special stretch-outs} available at extra costs.

Packaged: ~ = 27"(69cm) diameter roll in perforated polyethylene or corrugated carton, 27½"(70cm) square by 37"(94cm) high.

Specifications

{Board Blank tested flat}ASTM C 612-93

{ASJ Facing Only}U.S. Federal Specification HH-B-100B

U.S. Federal Specification HH-I-558B and C

Stainless Steel Stress Corrosion Specification:

Special provisions apply concerning lot testing, contact manufacture...

ASTM C 795, per test methods, C 871 & C 692

Nuclear Regulatory Commission, Reg. Guide #1.36

Suggested Thickness: ≤ 140°F. Outer Temp.

3EPLUS[®] v2.12 computer model calculating for insulation thickness at various Process Temperatures on a vertical flat surface. Input data: ambient air= 75° F, no wind, for outer surface...Emittance {A.S.J. Facing} = 0.9 or

Emittance {Oxidized Aluminum Jacketing} = 0.1

Temp.	Thickness	Temp.	Thickness
250°F≤	0.5" ---- 1.0"	650°F.+	2.5" ----- 5.5"
350°F≤	1.0" ---- 2.0"	750°F.+	3.5" ----- XX
450°F≤	1.5" ---- 3.0"	850°F.+	4.5" ----- XX
550°F≤	2.0" ---- 4.0"	XX	Not Recommend

Caution: Various operational conditions such as insufficient thickness, higher ambient temperatures, solar load, and aluminum jacketing can cause the outer temperature to exceed the maximum temperature {150°F.(66°C)} limit of the insulation facing. Double layering is not recommended for process temperatures above 550°F.(288°C) at 80°F.(27°C) ambient air. Maximum recommended installed thickness is six (6) inches. Properly installed protective vapor retarders must be used for below ambient applications to prevent movement of water vapor through or around the insulation towards the colder surface. During initial heat-up to operating temperatures above 380°F.(193°C), an acrid odor and smoke will be given off as a portion of the bonding material used in the insulation begins to undergo a controlled decomposition.