EAST FAR MATERIALS

CryoMLI®302 Technical Datasheet

Vacuum Multilayer Insulation — Double-sided Aluminized PET (Mylar) + Synthetic Fiber Mesh

Premium Open-Mesh MLI for Frontier Science & Spacecraft

Compliance: GB/T 31480-2015 · GB/T 31481-2015 (ISO 201010:2014) · NB/T 47059-2017 · GB/T 18443-2010 · ASME BPVC Section VIII

PRODUCT STRUCTURE

Structure: Double-sided Aluminized PET (Mylar) + Synthetic Fiber Net

Operating Temperature: 4K (−269°C) to 393K (120°C); Thermal shock up to 423K (150°C)

KEY PROPERTIES

- ✓ Better performance than CryoMLI®101 composite type
- ✓ Low thermal conductivity / thermal insulating
- ✓ Suitable for temperatures down to 4K (−269°C), thermal shock resistant up to 423K (150°C)
- ✓ Easy to wrap, shape or cut
- ✓ Excellent chemical stability
- ✓ Exceptionally resistant to thermal shock
- ✓ Special design for frontier science

TECHNICAL DATA

Parameter	Unit	Specification
Synthetic fiber net basis weight	g/m²	15 ±1
Synthetic fiber net thickness	mm	0.12 ±0.02
Synthetic fiber net moisture content	%	< 0.2
Synthetic fiber net thermal conductivity	W/(m·K)	< 0.336
Synthetic fiber net outgassing rate	Pa·m³/(s·g)	< 3.5×10⁻
Double-sided Aluminized PET (Mylar) basis weight	g/m²	17 ±1
Double-sided Aluminized PET (Mylar) thickness	mm	0.012
Double-sided Aluminized PET (Mylar) coating	Å	600Å + 600Å
Double-sided Aluminized PET (Mylar) emissivity	ε	0.014 (@87K, NASA GRC)
Thermal shrinkage rate (180°C, 30min)	%	≤ 3.0
Spacer Gas Permeability	—	High (open mesh structure, efficient vacuum pumping)
Comprehensive tensile strength	MPa	≥ 190
Apparent thermal conductivity	W/(m·K)	< 8.17×10⁻⁵
Outgassing rate	Pa·m³/(s·g)	< 2.8×10⁻⁷
Reference Heat Flux (40 layers, 78K–305K)	W/m²	0.38 (NASA A139); 0.26 (60 layers, NASA A138)
Operating Vacuum Requirement	—	< 1×10⁻⁴ Torr

CUSTOMIZATION & PROCESSING

Item	Details
Composite Layer Configurations	5/5, 10/10, 20/20 (mature); custom available
Recommended Layer Density	0.8 – 1.5 layers/mm
Roll Material — Max Layers	Up to 10/10
Processing Capabilities	Rewinding, sewing, cutting, lamination
Production Method	Fully automated mechanical production

Standard Widths: **90 / 100 / 200 / 300 / 910 / 1310 / 1800 / 2000 mm** Max Production Width: **2160 mm** Custom Width: **Available (MOQ applies)**

TARGET APPLICATIONS & MARKETS

Spacecraft | MRI | Cylinders | ISO containers | Dewar | Cryogenic transfer line | Cryogenic Valve Box / Cold Box | Superconducting cables | Nuclear fusion cryogenic modules

Technical Note: Emissivity varies with temperature per Lockheed/NASA correlation: $\varepsilon \approx 6.8\times10^{-4} \times T^{\cdot 67}$. (Source: NASA/JPL CEC 2015)

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Custom widths, shapes, dimensions, and layer counts available. Contact sales for details.