EAST FAR MATERIALS

CryoMLI®102 Technical Datasheet

Vacuum Multilayer Insulation — Double-sided Aluminized PET (Mylar) + Fiberglass Paper

Ultra-Low Emissivity MLI for Broad Cryogenic Applications

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) + Fiberglass Paper

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

KEY PROPERTIES

- ✓ 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
- ✓ Ultra-low emissivity radiation shield

TECHNICAL DATA

Parameter	Unit	Specification
Fiberglass paper basis weight	g/m²	13 ±0.5
Fiberglass paper thickness	mm	0.06 ±0.01
Fiberglass paper moisture content	%	< 0.2
Fiberglass paper loss on ignition	%	< 0.2
Fiberglass paper thermal conductivity	W/(m·K)	< 0.029
Fiberglass paper outgassing rate	Pa·m³/(s·g)	$< 1.0\times10^{8}$
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	—	Moderate (paper barrier, slower pump-down)
Comprehensive tensile strength	MPa	≥ 190
Apparent thermal conductivity	W/(m·K)	$< 8.0\times10^{-5}$
Reference Heat Flux (40 layers, 78K–294K)	W/m²	0.66 (ref: NASA A126, DAM + paper)
Operating Vacuum Requirement	—	$< 1\times10^{-4}$ Torr

CUSTOMIZATION & PROCESSING

Item	Details
Composite Layer Configurations	5/5, 10/10, 20/20 (mature); custom available
Recommended Layer Density	1.5 – 2.5 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 mm** Max Production Width: **1800 mm** Custom Width: **Available (MOQ applies)**

TARGET APPLICATIONS & MARKETS

Spacecraft · MRI · Cylinders · ISO containers · Microbulk · Dewar · Semitrailer / Rail tanks · Storage tanks · Cryogenic transfer line · Superconducting cables · Nuclear fusion cryogenic modules

Technical Note: Emissivity varies with temperature per Lockheed/NASA correlation: $\varepsilon \approx 6.8\times10^{-4} \times T^{0.67}$. Reference: 300K→0.031, 200K→0.023, 100K→0.014, 77K→0.012, 40K→0.0075, 20K→0.005. (Source: NASA/JPL CEC 2015)

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