

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:Variable Density MLI — Custom Composite

Operating Temperature: Below 4K (custom configurations)

KEY PROPERTIES

- ✓ Variable density layer configuration for optimized thermal performance
- ✓ Lower density on cold side, higher density on hot side
- ✓ Custom layer density based on application requirements
- ✓ Custom shapes via vibration knife cutting machine
- ✓ Tailored dimensions, shapes, and layer counts
- ✓ Suitable for ultra-low temperature scenarios below 4K
- ✓ Compatible with all CryoMLI® base materials

TECHNICAL DATA

Parameter	Unit	Specification
Product Type	—	Variable Density MLI (Custom Composite)
Base Materials	—	CryoMLI® 101 / 102 / 201 / 202 / 212 / 302
Layer Density — Cold Side	—	Custom (lower density, conduction reduction)
Layer Density — Hot Side	—	Custom (higher density, radiation shielding)
Material Differentiation	—	Different reflector/spacer combinations per side
Operating Vacuum Requirement	—	< 1×10 ⁻⁴ Torr
Standards Compliance	—	GB/T 31480-2015 · GB/T 31481-2015 (ISO 201010:2014) · NB/T 47059-2017 · GB/T 18443-2010 · ASME BPVC Section VIII
Production Lead Time	—	Subject to customization scope

CUSTOMIZATION & PROCESSING

Item	Details
Composite Layer Configurations	5/5, 10/10, 20/20 (mature); custom available
Recommended Layer Density	Variable (optimized per application)
Roll Material — Max Layers	Up to 10/10
Custom Shape Cutting	Vibration knife cutting machine
Custom Dimensions / Layer Count	Per customer specification
Processing Capabilities	Rewinding, sewing, cutting, lamination
Production Method	Fully automated mechanical production

Standard Widths: 90 / 100 / 200 / 300 / 910 / 1310 / 1800 / 2000 mmMax Production Width: 2160 mmCustom Width: Available (MOQ applies)

TARGET APPLICATIONS & MARKETS

- Liquid Hydrogen (LH₂) applications
- Liquid Helium (LHe) applications
- Ultra-low temperature research
- Spacecraft and launch vehicles
- Superconducting cable systems
- Nuclear fusion cryogenic modules
- Custom cryogenic vessels
- Specialized industrial cryogenic systems

Technical Note: Spacer Material Comparison (NASA tested): Silk Netting — lowest conductivity; Polyester/Dacron Net — low conductivity, high gas permeability, contemporary spacecraft standard; Fiberglass Paper — moderate conductivity, moderate permeability, industrial benchmark; Non-woven Polyester — moderate conductivity, moderate-high permeability. (Source: NASA TFAWS)

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