MATERIAL DATA SHEET (MDS)

Gelcopper® - GelBlack-GelWhite® Pre-Insulated Line Sets & Single Rolls

Seamless UL Classified – UL Verified Pre-Insulated Copper HVACR Soft Coils per ASTM B280 / ASTM B1003

This technical data sheet summarizes the definitive material, insulation, chemical compliance, and thermodynamic performance requirements for Gelcopper® - GelBlack-GelWhite® Pre-Insulated Copper Coils, strictly governed by ASTM B280 and ASTM B1003 engineering standards.

1. Material Description & Copper Specifications

- **Product Brand Name:** Gelcopper® - GelBlack-GelWhite®
- **Copper Tube Standard:** Manufactured strictly according to ASTM B280 and ASTM B1003.
- **Alloy Grade Designation:** UNS C12200 Deoxidized High Phosphorus (DHP).
- **Material Purity Profile:** 99.9% pure copper minimum content.
- **Pressure Threshold:** Rated for high-pressure systems up to 700 PSI.
- **Refrigerant Compatibility:** Approved for use with standard R410A systems and next-generation A2L mildly flammable gases.

2. Technical Insulation Parameters

- **Material Type:** Closed-cell expanded polyethylene foam finished with an integrated low-density polyethylene outer barrier film.
- **Chemical Family Group:** Polyolefin Thermoplastics.
- **Manufacturing Standard:** Compliant with ASTM C 1427-21 (Type I, Grade I) for commercial, non-cross-linked applications.
- **Working Temperature Boundaries:** Continuous capability extending from -94°F up to +250°F (-70°C to +121°C).
- **Water Vapor Permeability:** According to ASTM E96-00, $\rho = 4 \times 10^{-5}$ [mg/(h·m·Pa)].
- **Thermal Conductivity:** According to ASTM C 335-95, 'k' at 75°F mean temperature = 0.252369 (Btu in.)/(sq.ft. °F h) for ½" insulation.

3. Fire, Smoke, & Environmental Weathering Ratings

- **Surface Burning Characteristics:** UL723 CLASSIFIED R39562 (ASTM E84 25/50). Flame Spread Index < 25, Smoke Development Index < 50.
- **Vertical Flammability Classification:** UL 94-5VA (Top Rated).
- **UV Resistance:** UL PERFORMANCE VERIFIED A693219 - 71% retention of strength properties after 2000 hours of UV conditioning in Accelerated Weathering Test Machine (comparable to direct sun exposure for 5.66 years at a subtropical latitude).
- **Industrial Codes Compliance:** ASME B35 and ANSI B9.1 Compliant.

4. Insulation Thickness & R-Value Reference Matrix

OD	Nominal Insulation Thickness	Insulation Thickness (OD)	ID	k	R value
1/4	3/8	0.420	0.300	0.263	3
3/8	3/8	0.402	0.400	0.263	3
1/2	3/8	0.439	0.503	0.263	3
5/8	3/8	0.445	0.650	0.263	3
3/4	3/8	0.465	0.770	0.263	3
7/8	3/8	0.473	0.900	0.263	3
1/4	1/2	0.509	0.300	0.263	4
3/8	1/2	0.520	0.400	0.263	4
1/2	1/2	0.547	0.503	0.263	4
5/8	1/2	0.577	0.650	0.263	4
3/4	1/2	0.665	0.770	0.263	4
7/8	1/2	0.680	0.900	0.263	4
1/4	3/4	0.693	0.300	0.263	6
3/8	3/4	0.832	0.400	0.263	6
1/2	3/4	0.837	0.503	0.263	6
5/8	3/4	0.853	0.650	0.263	6
3/4	3/4	0.818	0.770	0.263	5
7/8	3/4	0.771	0.900	0.263	5
1/4	1	1.000	0.300	0.27	9
3/8	1	1.000	0.400	0.27	8
1/2	1	1.024	0.503	0.27	8
5/8	1	1.125	0.650	0.27	8
3/4	1	1.115	0.770	0.27	8
7/8	1	1.150	0.900	0.27	8

5. Safety, Sustainability, & Environmental Declarations

- **Declaration of NO RED List Items:** PDM US LLC declares the polyethylene foam used in all its products to be cleared of all RED LIST ITEMS, specifically: Asbestos, Cadmium, Chlorinated Polyethylene, Chlorosulfonated Polyethylene, CFCs, Chloroprene, Added Formaldehyde, Halogenated Flame Retardants, HCFCs, Added Lead, Mercury, Petrochemical Fertilizers/Pesticides, Phthalates, PVC, and wood treatments containing Creosote, Arsenic, or Pentachlorophenol.
- **California Proposition 65 Declaration:** All PDM US LLC commercial formulations completely exclude substances regulated under California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). No warning labels are required.
- **Recyclability:** In alignment with circular economy practices, all physical components and metals are 100% recyclable.
- **Build America Buy America Act (BABA):** PDM products are manufactured in full structural compliance with federal domestic sourcing requirements under the Build America Buy America Act, supporting domestic infrastructure and procurement tracks.