

hvac market



> hvac

Applications in the heating, ventilation, and air conditioning (HVAC) market are benefiting from the development of new composite materials. With products expected to last ten years or greater, materials in this market must be able to withstand heat, corrosives, and condensation while maintaining strength, shape, and overall aesthetics. Traditionally, metals have filled this role; however, rising metals costs coupled with increased product performance requirements have design engineers and manufacturers transitioning from metals to thermoset composite bulk molding compound (BMC) and sheet molding compound (SMC) for new product designs.

Thermoset composites are corrosion and flame resistant, and maintain their structural integrity when exposed to elevated temperatures. The material also possesses an excellent strength-to-weight ratio, a key benefit to HVAC manufacturers, as many HVAC applications — including air conditioner housings and cooling coil drip pans — must be strong enough to withstand continual loads without being prohibitively weighty.

Thermoset composites have proven to be an ideal replacement for traditional galvanized metal parts that tend to rust or corrode well before the end of the product life cycle. Thermosets can also be formulated with antimicrobial additives to help prevent the possible growth of mold or fungus in an HVAC system. Thermosets, because of their rigidity, have superior sound dampening properties as well; traditional sheet metal assemblies often create unwanted ambient noises, such as creaking.

From a manufacturing standpoint, thermosets have proven to be a cost-effective replacement for most metal HVAC components. Molding from thermoset composites virtually eliminates secondary operations associated with metal, including welding, stamping, and drilling. Converting to thermosets is also safer for assembly operators and installers who are no longer exposed to sharp metal edges common in sheet metal HVAC product designs.

engineered for performance

Property	Unit	Test Method	46-12	46-16	E-204	E5V-204
Physical and Mechanical Properties						
Impact Strength	FT-LBS/IN	ASTM D 256	8-10	14	12	12
Flexural Strength	PSI	ASTM D 790	19-22,000	18,000	23,000	23,000
Flexural Modulus	10 ⁶ PSI	ASTM D 790	--	--	1.6	1.6
Tensile Strength	PSI	ASTM D 638	7-9,000	8,000	11,000	11,000
Compressive Strength	PSI	ASTM D 695	23,000	26,000	27,000	27,000
Water Absorption	%	ASTM D 570	0.15	0.15	0.10	0.10
Specific Gravity	G/CM ³	ASTM D 792	1.78	1.80	1.78	1.78
Shrinkage	IN/IN	ASTM D 955	0.001-0.003	--	0.001	0.001
Hardness	Barcol	ASTM D 2583	30-50	45-55	30-35	--
Bulk Factor App.	--	ASTM D 1895	1	1	1	1
Electrical Properties						
Dielectric Strength	KV/IN	ASTM D 149	290	290	380	380
Arc Resistance	Seconds	ASTM D 495	180+	187	180+	180
Thermal and Flame Retardant Properties						
Heat Deflection Temperature @264PSI	°F	ASTM D 648	>500	>500	>500	>500
Flame Resistance	--	UL 94	--	--	--	@2.0mm: V-0, 5VA
	@ 1/16"	--	V-0	--	V-0	--
	@ 1/8"	--	V-0	--	V-0	--
	@ 1/4"	--	V-0	--	V-0	--

IDI Composites International is the premier global formulator and manufacturer of thermoset molding compounds for custom molders and OEMs. The company provides customized polyester/vinylester-based bulk molding compounds (BMC) and sheet molding compounds (SMC) for the world's most demanding markets, including automotive/truck, electrical, food service, alternate energy, and appliance.

Headquartered in a 200,000 square foot facility in Noblesville, IN (USA), IDI has a strong presence in the international thermoset composites market. To support a growing customer base world-wide, the company operates multiple wholly-owned manufacturing facilities in Europe, Asia, and The Americas.

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