

appliance market



> appliance

Appliance components must meet the most stringent durability requirements. The life span of these components may be 10 years or more, during which time they can be exposed to the adverse effects of heat, loads, impacts, electrical currents, and corrosive substances. Besides retaining physical properties during long exposure to harsh environments, components must maintain an attractive appearance. For instance, a bright white kitchen appliance must retain its color and gloss, even when exposed to high temperatures and staining substances such as food, grease, condiments, and cleaning chemicals.

A growing number of appliance designers and manufacturers are converting from pricey conventional materials to thermoset composites. Consisting of fiber reinforcement in a polymer resin, thermoset materials such as bulk molding compound (BMC) and sheet molding compound (SMC) can cost significantly less than common metal and thermoplastic alternatives.

Despite their relatively low cost, thermoset materials offer top-notch performance in appliance applications. Besides excellent structural and electrical properties, thermosets are among the few uncoated plastics that provide dimensional stability along with stain and corrosion resistance. Thermosets can also maintain their color at temperatures up to 500°F.

Some key applications benefiting from a conversion to thermoset BMC and SMC:

- **Kitchen appliances:** thermoset composites are chemically “clean” enough for use in food-contact environments and are specified for components from lids to range and refrigerator handles.
- **Refrigeration and HVAC systems:** BMC/SMC compounds are used to mold components such as housings and cooling coil drip pans in air conditioning systems.
- **BBQ grills:** due to its superior thermal and flame resistant properties, manufacturers have converted outdoor grill side shelves and handles to thermoset BMC.
- **Non-visual:** so-called “working” areas of appliances that have converted to thermoset composites include brush holders, armature sleeves, and motor housings.

engineered for performance

Property	Unit	Test Method	44-10	44-10MW	E5V-204
Physical and Mechanical Properties					
Impact Strength	FT-LBS/IN	ASTM D 256	4-5	3-4	12
Flexural Strength	PSI	ASTM D 790	15-17,000	13-15,000	23,000
Flexural Modulus	10 ⁶ PSI	ASTM D 790	--	--	1.6
Tensile Strength	PSI	ASTM D 638	6,000	5-6,000	11,000
Compressive Strength	PSI	ASTM D 695	21,000	18-20,000	27,000
Water Absorption	%	ASTM D 570	0.15	0.07	0.10
Specific Gravity	G/CM ³	ASTM D 792	1.96	1.90	1.78
Shrinkage	IN/IN	ASTM D 955	0.001-0.003	0.0005-0.0015	0.001
Hardness	Barcol	ASTM D 2583	40-50	25-35	--
Bulk Factor App.	--	ASTM D 1895	1	1	1
Electrical Properties					
Dielectric Strength	KV/IN	ASTM D 149	--	--	380
Arc Resistance	Seconds	ASTM D 495	180+	--	180
Thermal and Flame Retardant Properties					
Heat Deflection Temperature @264PSI	°F	ASTM D 648	>500	>500	>500
Flame Resistance	--	UL 94	--	--	@2.0mm: V-0, 5VA
	@ 1/16"	--	94-HB	HB	--
	@ 1/8"	--	94-5V	HB	--
	@ 1/4"	--	94-5V	HB	--

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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