

s a f e t y & s e c u r i t y



> safety and security

Firemen, miners, and construction workers are continuously exposed to natural elements, as well as extremely high temperatures and falling debris. For safety helmets, metals can provide some of the properties required, but their relatively heavy weight can quickly fatigue helmet wearers. Worse, helmets made of conductive metals can actually pose a safety risk to wearers if they come into contact with electrical equipment or lines.

These concerns have made thermoset composite materials a popular metals replacement material in safety and security applications. Thermoset bulk molding compound (BMC) and sheet molding compound (SMC) feature cross-linked molecules that provide excellent impact resistance at both high and low temperatures, giving thermosets a crucial edge over many thermoplastic materials. In addition to meeting demanding impact requirements, BMC and SMC also hold up well in harsh outdoor environments. They also feature good heat and flame resistance and low smoke and toxicity emissions when exposed to fire.

When used in a number of other safety and security applications, thermoset BMC and SMC provide important properties that are often difficult to obtain with metals or thermoplastics. These applications include:

Lighting and communications equipment: Mounted on the helmets of firemen and miners, this equipment can often mean the difference between life and death for helmet wearers and those in need of rescue. Thermosets offer good structural rigidity at extreme temperatures. They also allow manufacturers to mold in the design details of different types of mounting equipment.

Safety and security instrument housings: These housings must comply with OSHA color codes, survive years of harsh weather exposure, and protect internal equipment from radio broadcast interference. BMC and SMC can help manufacturers meet all these requirements, making these materials a popular choice for a range of instrument housings. Thermosets offer molded-in color, corrosion and UV resistance, and built-in RFI/EMI/ESD protection or radio-transmission transparency.

e n g i n e e r e d f o r p e r f o r m a n c e

Property	Unit	Test Method	X-210	M-209	46-16	48-50
Physical and Mechanical Properties						
Impact Strength	FT-LBS/IN	ASTM D 256	40-60	23	14	4-5
Flexural Strength	PSI	ASTM D 790	40-60,000	38,000	18,000	14-16,000
Flexural Modulus	10 ⁶ PSI	ASTM D 790	2.0	2.0	--	2.0
Tensile Strength	PSI	ASTM D 638	25-35,000	19,000	8,000	6,000
Compressive Strength	PSI	ASTM D 695	--	36,000	26,000	24,000
Water Absorption	%	ASTM D 570	--	0.15	0.15	0.11
Specific Gravity	G/CM ³	ASTM D 792	1.75-2.00	1.62	1.80	1.93
Shrinkage	IN/IN	ASTM D 955	0.000-0.015	0.001	--	0.001-0.003
Hardness	Barcol	ASTM D 2583	40-70	45-55	45-55	40-50
Bulk Factor App.	--	ASTM D 1895	1	1	1	1
Electrical Properties						
Dielectric Strength	KV/IN	ASTM D 149	--	290	320	300
Arc Resistance	Seconds	ASTM D 495	--	187	190	--
Thermal and Flame Retardant Properties						
Heat Deflection Temperature	@264PSI °F	ASTM D 648	--	>500	>500	>500
Flame Resistance	@1/16"	UL 94	5-V0	--	94V-0	94-HB
	@1/8"	UL 94	5-V0	--	94V-0	94-HB
	@1/4"	UL 94	5-V0	--	94V-0	94V-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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