

# automotive market



## automotive

In the automotive and heavy truck market, designers struggle to meet many different and sometimes conflicting requirements. Parts must have the physical properties to handle the loads and environments of demanding vehicle applications. At the same time, they must be relatively light, cost effective, and manufacturable in the time allowed by tight production schedules. In some cases, they must also have a pleasing appearance that will help attract buyers and differentiate a vehicle from its competitors.

A large and growing number of automotive and heavy truck designers are discovering the advantages of converting to thermoset composite materials. Consisting of fiber reinforcement in a polymer resin, thermoset materials such as bulk molding compound (BMC) and sheet molding compound (SMC) are used for a wide range of automotive and truck parts, including exterior body panels, headlamp and tail light housings, interior structural and cosmetic components, and under-the-hood electrical and heat-shielding components.

Why are thermoset compounds gaining popularity in the automotive industry?

- **Light weight:** thermoset components are up to 35 percent lighter than steel parts of equal strength.
- **High thermal stability:** thermoset parts maintain dimensional stability when exposed to engine heat and summer temperatures.
- **Excellent impact resistance:** while metal panels permanently deform on impact, thermoset panels spring back to their original shape.
- **Top-notch surfaces:** capable of providing a surface appearance rivaling that of steel, thermosets also cost up to 70 percent less than thermoplastics that are used to produce Class A surfaces.
- **Shorter cycle times:** by slashing the number of parts in finished assemblies, tooling major thermoset automotive body panels takes 12 months or less, compared to as long as 24 months for major steel body panels.

# engineered for performance

Property	Unit	Test Method	A102-8	A103	AV-206
<b>Physical and Mechanical Properties</b>					
Impact Strength	FT-LBS/IN	ASTM D 256	4-5	3.3	--
Flexural Strength	PSI	ASTM D 790	13-15,000	14,700	26,192-27,734*
Flexural Modulus	10 <sup>6</sup> PSI	ASTM D 790	--	--	1,646-2,149*
Tensile Strength	PSI	ASTM D 638	5-6,000	6,700	12,331-15,226*
Compressive Strength	PSI	ASTM D 695	18,000	17,000	--
Water Absorption	%	ASTM D 570	--	--	--
Specific Gravity	G/CM <sup>3</sup>	ASTM D 792	1.96-2.05	1.85	1.75-1.94
Shrinkage	IN/IN	ASTM D 955	-0.04-0.10	-0.44	0.00095-0.00106
Glass Fiber Content	WT%	--	13-16	14	33
Shrinkage/Expansion	%	ASTM D 955	-0.04-0.10	-0.44	0.00095-0.00106

\*Specifications were tested with ISO test methods 178, 527.

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.

[www.idicomposites.com](http://www.idicomposites.com)

**The Americas**

IDI Composites International  
407 S. 7th Street  
Noblesville, IN 46060 U.S.A.  
317-773-1766  
Fax: 317-773-3877  
info@idicomposites.com

IDI Composites International  
P.O. Box 400  
Road #3, KM 151.8  
Aguirre, Puerto Rico 00704  
787-853-2186  
Fax: 787-853-2187  
lcruz@idicomposites.com

**Asia/Pacific**

IDI Composites International  
No. 8, Lane 275, QianPu Road  
New Eastern Section of  
Sonjiang Industrial Park  
Shanghai, 201611 China  
86-21-51096910  
Fax: 86-21-67601689  
rrodriguez@idicomposites.com

IDI Composites International  
Shenzhen Company, LTD.  
P.O. Box 107  
Fucheng Industrial Park  
Hongtian, Xinqiao, Sajing Town  
Bao An, Shenzhen, 518125 China  
86-755-27229550  
Fax: 86-755-27229554  
rrodriguez@idicomposites.com

**Europe**

IDI Composites International  
Unit One, Oldbury Park  
Popes Lane  
Oldbury, West Midlands  
B69 4RG U.K.  
44-121-552-0038  
Fax: 44-121-543-5377  
pgarland@idicomposites.co.uk