



heavy truck market

> IDI vs. the competition top performance in metals replacement

Meeting the demands of the Heavy Truck industry presents design engineers with new challenges every day. Higher performance requirements combined with dramatic increases in the cost of metals and tougher emissions standards from the EPA, make meeting these demands no easy task. However, many designers are switching from metal to thermoset composite materials as a solution to Heavy Truck performance requirements.

AV-206 Sheet Molding Compound (SMC) from IDI Composites® is an ideal replacement for metal in heavy truck parts. AV-206 endures the 200°C-plus temperatures and corrosive substances in under-the-hood applications, while still maintaining the required long-term mechanical strengths necessary for this harsh environment. After six weeks of oil-aging, AV-206 surpasses competitive materials in dimensional stability, with a tensile strength of 8,149 PSI at 150°C and a tensile modulus of 1.5 M PSI at 150°C. The material also has excellent NVH characteristics.

Common applications of AV-206 in the Heavy Truck industry include under-the-hood components, such as oil drain pans, heat and noise shields, and valve and timing chain covers; structural parts, including hoods, truck bonnets, cab steps, and spoilers; external assemblies, such as windshield wiper housings and bumper/grill assemblies; and system components, including fuel management systems and injection pumps.

Rising Cost of Metals

The cost of metals has risen dramatically during the past few years due to increasing world-wide demand, and there's no end in sight. In parallel, the demand for high-performance components for Heavy Truck applications continues unabated, leading many design engineers to turn to alternative materials, such as AV-206 from IDI Composites.



engineered for performance

Property	Leading Competitive Material	IDI	Test Method
Original Properties			
Flex Strength @ 23 °C	23,461 PSI	28,913 PSI	ISO 178
Flex Strength @ 150 °C	13,384 PSI	12,340 PSI	ISO 178
Flex Modulus @ 23 °C	1.7 10 ⁶ PSI	2.09 10 ⁶ PSI	ISO 178
Flex Modulus @ 150 °C	1.0 10 ⁶ PSI	0.91 10 ⁶ PSI	ISO 178
Flex Modulus Secant, 0.5 mm @ 23 °C	1.67 10 ⁶ PSI	2.04 10 ⁶ PSI	ISO 178
Flex Modulus Secant, 0.5 mm @ 150 °C	0.99 10 ⁶ PSI	0.9 10 ⁶ PSI	ISO 178
Tensile Strength, Ultimate @ 23 °C	17,429 PSI	13,384 PSI	ISO 527
Tensile Strength, Ultimate @ 150 °C	6,540 PSI	7,062 PSI	ISO 527
Tensile Modulus @ 23 °C (tangent)	2.84 10 ⁶ PSI	2.54 10 ⁶ PSI	ISO 527
Tensile Modulus @150 °C	1.22 10 ⁶ PSI	1.03 10 ⁶ PSI	ISO 527
Izod Impact, Unnotched	10.06 FT-LBS/IN	9.95 FT-LBS/IN	ASTM D 4812
Shrinkage	0.28 MILS/IN	0.58 MILS/IN	
DMA Tg	342 °F	333 °F	
AGED 1 WEEK IN VALVOLINE PREMIUM BLUE 15W40 @ 300 °F			
Flex Strength @ 23 °C	28,362 PSI	20,735 PSI	ISO 178
Flex Strength @ 150 °C	13,456 PSI	11,615 PSI	ISO 178
Flex Modulus @ 23 °C	1.81 10 ⁶ PSI	1.83 10 ⁶ PSI	ISO 178
Flex Modulus @ 150 °C	0.96 10 ⁶ PSI	0.91 10 ⁶ PSI	ISO 178
Flex Modulus Secant, 0.5 mm @ 23 °C	1.81 10 ⁶ PSI	1.81 10 ⁶ PSI	ISO 178
Flex Modulus Secant, 0.5 mm @ 150 °C	0.96 10 ⁶ PSI	0.90 10 ⁶ PSI	ISO 178
Tensile Strength, Ultimate @ 23 °C	14,703 PSI	12,688 PSI	ISO 527
Tensile Strength, Ultimate @ 150 °C	7,932 PSI	7,859 PSI	ISO 527
Tensile Modulus @ 23 °C (tangent)	1.83 10 ⁶ PSI	2.04 10 ⁶ PSI	ISO 527
Tensile Modulus @150 °C	1.38 10 ⁶ PSI	1.29 10 ⁶ PSI	ISO 527
Izod Impact, Unnotched	37.32 FT-LBS/IN	32.93 FT-LBS/IN	ASTM D 4812
DMA Tg	379 °F	367 °F	
AGED 3 WEEKS IN VALVOLINE PREMIUM BLUE 15W40 @ 300 °F			
Flex Strength @ 23 °C	29,667 10 ⁶ PSI	23,157 PSI	ISO 178
Flex Strength @ 150 °C	13,877 10 ⁶ PSI	13,543 PSI	ISO 178
Flex Modulus @ 23 °C	1.89 10 ⁶ PSI	1.99 10 ⁶ PSI	ISO 178
Flex Modulus @ 150 °C	0.98 10 ⁶ PSI	0.96 10 ⁶ PSI	ISO 178
Flex Modulus Secant, 0.5 mm @ 23 °C	1.89 10 ⁶ PSI	1.97 10 ⁶ PSI	ISO 178
Flex Modulus Secant, 0.5 mm @ 150 °C	0.98 10 ⁶ PSI	0.96 10 ⁶ PSI	ISO 178
Tensile Strength, Ultimate @ 23 °C	11,151 PSI	13,760 PSI	ISO 527
Tensile Strength, Ultimate @ 150 °C	6,612 PSI	8,628 PSI	ISO 527
Tensile Modulus @ 23 °C (tangent)	1.9 10 ⁶ PSI	2.18 10 ⁶ PSI	ISO 527
Tensile Modulus @150 °C	1.36 10 ⁶ PSI	1.46 10 ⁶ PSI	ISO 527
Izod Impact, Unnotched	18.18 FT-LBS/IN	20.23 FT-LBS/IN	ASTM D 4812
DMA Tg	376 °F	376 °F	
AGED 6 WEEKS IN VALVOLINE PREMIUM BLUE 15W40 @ 300 °F			
Flex Strength @ 23 °C	25,317 PSI	25,274 PSI	ISO 178
Flex Strength @ 150 °C	12,789 PSI	13,340 PSI	ISO 178
Flex Modulus @ 23 °C	1.73 10 ⁶ PSI	1.83 10 ⁶ PSI	ISO 178
Flex Modulus @ 150 °C	0.91 10 ⁶ PSI	0.96 10 ⁶ PSI	ISO 178
Flex Modulus Secant, 0.5 mm @ 23 °C	1.71 10 ⁶ PSI	1.84 10 ⁶ PSI	ISO 178
Flex Modulus Secant, 0.5 mm @ 150 °C	0.91 10 ⁶ PSI	0.94 10 ⁶ PSI	ISO 178
Tensile Strength, Ultimate @ 23 °C	11,557 PSI	11,673 PSI	ISO 527
Tensile Strength, Ultimate @ 150 °C	6,221 PSI	8,149 PSI	ISO 527
Tensile Modulus @ 23 °C (tangent)	1.92 10 ⁶ PSI	2.26 10 ⁶ PSI	ISO 527
Tensile Modulus @150 °C	1.38 10 ⁶ PSI	1.51 10 ⁶ PSI	ISO 527
Izod Impact, Unnotched	12.32 FT-LBS/IN	12.8 FT-LBS/IN	ASTM D 4812
DMA Tg	376 °F	374 °F	

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