

The Art And Science Of Thermoset Composites



Tailgate Inner Structural Panel



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Case Study



Tailgate Inner Structural Panel

inquiry

For its new SUV, PSA Groupe wanted to find innovative solutions to several areas that they identified as challenges. They approached IDI and their molders to help find a way to reduce weight and production costs. The decision was made to use cutting edge thermoset technologies able to compete with traditional steel solutions in terms of aspect, odor and VOC emissions.

idea

The challenge was to match the structural performance of steel with direct aspect for inner parts of thermoplastic. The new part also had to be compatible with automotive cycle times, as it is delivered via a "just in sequence" process.

innovation

IDI Composites International developed a sheet molding compound (SMC) with a short curing time, aesthetic features, UV resistance, low odor and low emission values. The material was developed in Europe, but thanks to IDI's global presence, it has been implemented worldwide.

The part is bonded on a polypropylene (PP) outer panel and provides stiffness and chemical resistance to the tailgate. The use of SMC also allowed the integration of the antenna and other features into the part.

The solution for the Peugeot 3008 has been so successful that it led PSA Groupe to select the same material for use on the Opel Grandland X as well.



Low Odor, Low VOC SMC Tailgate Inner Structural Panel Reduces Weight and Production Costs

IDI Odor Main Specifications

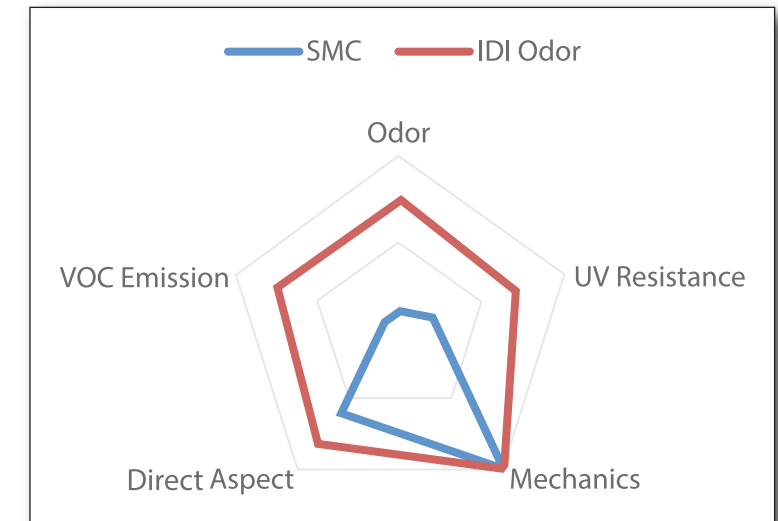
- Medium to high stiffness
- Low odor
- Low VOC emission
- Direct grained aspect
- UV and scratch resistance

Process

- Compression with automotive cycle time
- PU bonding compatible
- Material Card available

Status

- Coordinated development in Europe and China in collaboration with PSA Groupe and Flex N Gate
- Mass production began in September 2016



IDI's Low Odor, Low VOC Material - 15LP1393S (054-37)

The material is a composite based on thermosetting resin, mineral filler and reinforced with fibers.

Part marking - ISO 11469 : >UP-(GF+KD)66< | Main application: Various parts for cars, lorries, other vehicles

Total fiber content: 29% | Nature of fiber: Glass | Type of reinforcement: Chopped Strands | Color: Black

Material Properties	Value	Tolerance	Unit	Standard/Method/Comment
Physical Properties				
Density	1,72	± 0,06	kg/l	ISO 1183
Shrinkage	+0,03	± 0,06	%	ISO 2577
Mechanical Properties				
Flexural Strength	> 160		MPa	EN ISO 14125
Flexural Modulus	11000	± 2900	MPa	EN ISO 14125
Tensile Strength at Break	> 60		MPa	EN ISO 527-4
Modulus of Elasticity (Young's Modulus)	> 8100		MPa	EN ISO 527-4
Charpy Impact Resistance	100	± 30	kJ/m ²	EN ISO 179
Heat Distortion Temperature	> 200		°C	EN ISO 75-2
Fire Resistance				
Horizontal Combustibility - Speed of Combustion	< 100		mm/min.	FMVSS 302
Electrical Properties				
Surface Resistivity	> 1.10E14		Ohm/square	IEC 60093
Other Properties				
Water Absorption	< 0,5		%	ISO 62 method 1

Preservation and storage conditions before molding	Using conditions	Packaging
Shelf Life: From +4 to +14 days Storage: Between 0°C and +15°C Material Temperature: Between +15°C and +25°C	Molding Process: Compression Molding Pressure: 70 - 120 bar	This material can be supplied in rolls or folded. The weight/m ² is 4000 g/m ² according standard ISO 10352

The information on this sheet is a guide. The stated values reflect an average of several tests conducted on Composites International's (CI's) goods. These values were obtained under ideal conditions and may not be replicated in any particular test, part, or application. Because the values achieved in actual parts depend considerably on part design, molding conditions, and testing methods, no guarantee is made or implied regarding values to be obtained in any specific test, part, or application. CI makes no warranty or representation as to the suitability of any of its goods for use in any application. CI relies on customer to conduct its own tests and judge for itself the suitability of CI's goods.

3/2020



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