

The Art And Science Of Thermoset Composites



Tailgate Inner Structural Panel

NODORINITE™

Low Odor / Low VOC Composites



**IDI Composites®
International**

Ideas For Meaningful Results.

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Case Study



Tailgate Inner Structural Panel

inquiry

For its new SUV, Stellantis 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 Stellantis to select the same material for use on the Opel Grandland X as well.



Nodorinite™ SMC Tailgate Inner Structural Panel Reduces Weight and Production Costs

Nodorinite™ Main Specifications

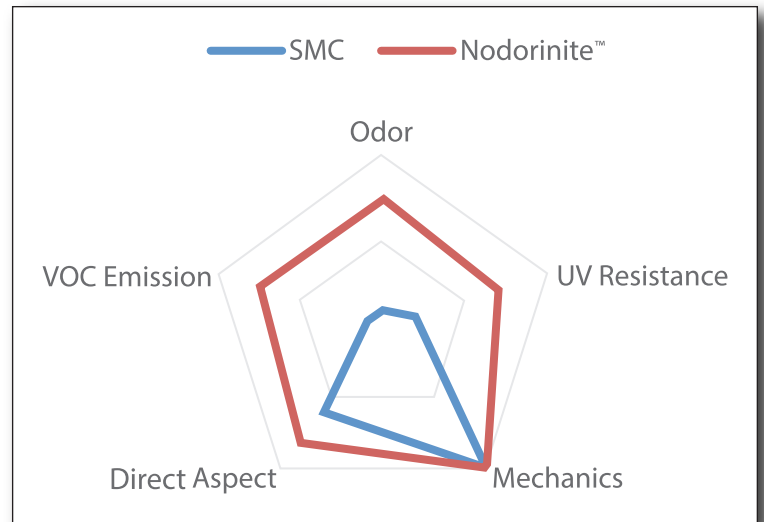
- Medium to high stiffness
- Low odor
- Low VOC emission
- Direct grained aspect
- UV and scratch resistance

Process

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

Status

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



Nodorinite™

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

Standard / Test Method	Unit	Nodorinite 054-37	Nodorinite 054-80	Nodorinite 053-00 (Gen 2)	Nodorinite 058-01 (Gen 2)	
Physical Properties						
Color	-	-	Direct Aspect - Black Mass Pigmented			Natural - To Be Painted
Density	ISO 1183	g/cm ³	1.75	1.77	1.84	1.93
Shrinkage	ISO 2577	%	0.04	0.06	0.05	-0.02
Mechanical Properties						
Flexural Strength	EN ISO 14125	MPa	200	255	220	250
Flexural Modulus	EN ISO 14125	MPa	9,900	12,500	12,000	14,600
Tensile Strength at Break	EN ISO 527-4	MPa	95	120	110	120
Modulus of Elasticity (Young's Modulus)	EN ISO 527-4	MPa	10,200	12,000	13,300	13,700
VOC / Odor Properties						
VOC Total	ISO 12-219-3 (μ Chamber)	μg/m ² h	15,005	2,615	2,465	3,244
Styrene	ISO 12-219-3 (μ Chamber)	μg/m ² h	9,936	984	694	880
Styrene	ISO 12219-4 (1 m3)	μg/m ³ /g	Ce 2.7	Ce 0.15	Ce 0.14	Ce 0.23
VOC Benzene	ISO 12219-4 (1 m3)	μg/m ³ /g	None Detected	--	None Detected	None Detected
VOC Formaldehyde	ISO 12219-4 (1 m3)	μg/m ³ /g	0.0253	0.0182	--	0.0394
VOC Formaldehyde μg/m ³ (PSA 10kg: 400ppm)	ISO 12219-4 (1 m3)	μg/m ³	155	136	--	301
Odor	D 10 5517 Labo Certech	-	3.9 ± 0.4	3.9 ± 0.4	3.3 ± 0.4	3.8 ± 0.4

In addition to these standard density SMC's, The 3i Technology Center in Europe is developing lower density Nodorinite products from 1.65 to 1.2 density with the same low levels of Odor & VOC.

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.

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GLOBAL LOCATIONS GLOBAL SOLUTIONS



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Oldbury, UK

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Shanghai, China

Caribbean
Aguirre, Puerto Rico

Mexico
Mexico City, Mexico