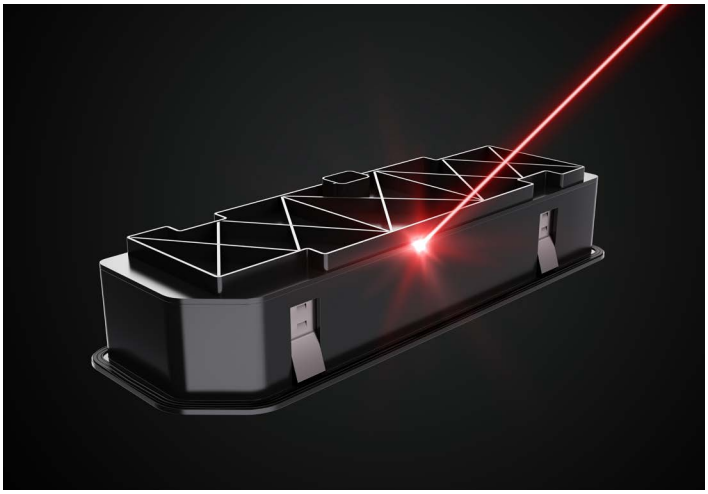
Product Sheet

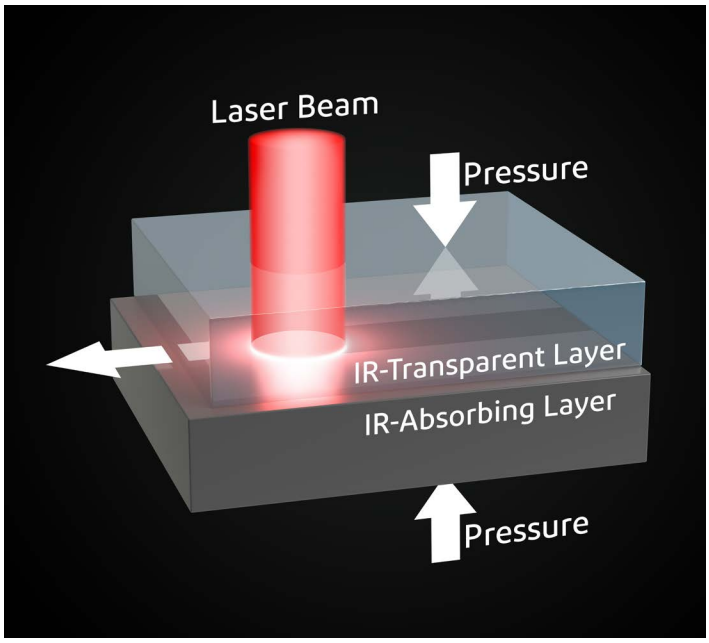
Robust DuPont™ Crastin® Laser Transparent Portfolio Maximizes Design Flexibility in EV Sensors and ADAS

The rapid growth in electric vehicles and advanced driver assistance systems (ADAS) relies on an ever-increasing number of sensors. More sophisticated sensor designs and the miniaturization of sensors call for versatile bonding solutions that keep vehicles operating efficiently and help prevent accidents. Laser welding, using advanced engineering thermoplastics like DuPont™ Crastin® PBT, offers maximum design flexibility and high performance.



Manufacturers of automotive electronics choose laser transmission welding for bonding thermoplastics because it:

- Prevents damage to internal precision components since no heat, vibration or ultrasonic waves are applied to the product directly
- Enables excellent design and surface appearance
- Maintains stable dimensions in the welding process
- Provides a clean joint shape in the bonding session
- Reduces cycle time with the fast welding speed



Material Innovations That Meet Manufacturer Needs

Manufacturers of automotive sensors seek cost-effective laser welding solutions with low warpage and hydrolysis resistance, as well as superior laser transparency. Crastin® offers a robust portfolio of laser transparent materials that are ideal for sensors in EV batteries, e-motors, and ADAS, as well as electronic components like switches, connectors, and ECUs (electronic control units).

The advantages of the Crastin® laser transparent portfolio include:

- Hydrolysis resistance
- Superior performance in low warpage
- A variety of black colors with high transparency (despite the fact that pigments are typically laser absorbers)
- Dimensional stability with strong bond adhesion
- Wider processing windows with high speed and efficiency
- Smooth surface with good appearance

Product Selector: Choose the Crastin® Solution That's Best for Your Application

	Crastin® Laser Transparency Portfolio			Benchmark
	SK9230 BK237LT (PBT/PET-GF30)	SLW9230 BK218LT (PBT/PET-GF30)	HR5430 HFS BK218LT (PBT-I-GF30)	SK605 NC010 (PBT-GF30)
• High laser transparency • Wider process window (high speed) • Flexible design in wall thickness	★★★★	★★★	★★	★
• Dimensional stability • Smooth surface	★★★	★★★★	★★	★
• Hydrolysis resistance • Chemical resistance	★	★★	★★★★	★
• Electrical Performance Comparative Tracking Index (CTI)	275	375	550	400

Source: DuPont

★★★★ Best ★★★ Superior ★★ Good ★ Standard

Black Crastin® Doubles Laser Transmission Compared to Market Benchmark

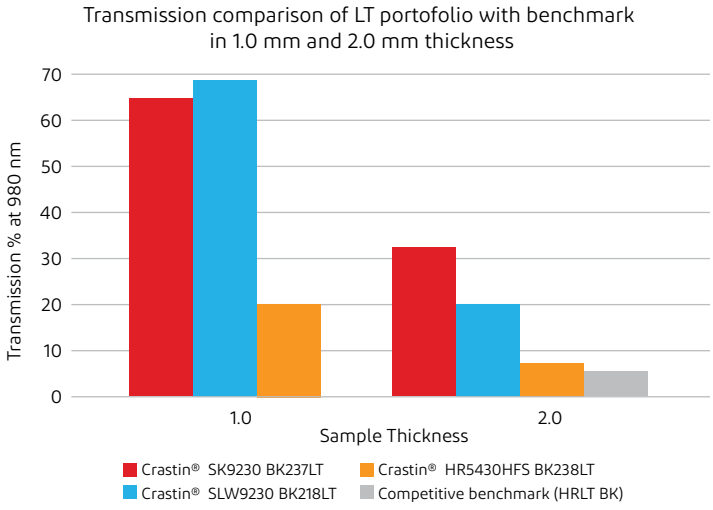
Black Crastin® laser transparent products offer best-in-class transmission and enable flexible design in wall thickness while improving processability. Crastin® SK9230 BK237LT demonstrated superior transparency in laser weld testing — achieving over 200% improvement in laser transmission when compared to the market general benchmark.

Crastin® SLW9230 BK218LT provides excellent balance between hydrolysis resistance (HR) and laser transparency. It offers solid HR performance while improving laser transmission by 100%.

As a result of this superior laser transparency, both Crastin® SK9230 BK237LT and SLW9230 BK218LT enable strong adhesion at 2.0 mm wall thickness.

Laser Transmission Rate

Crastin® laser transparent solutions compared to benchmark at 1.0 mm and 2.0 mm wall thickness.

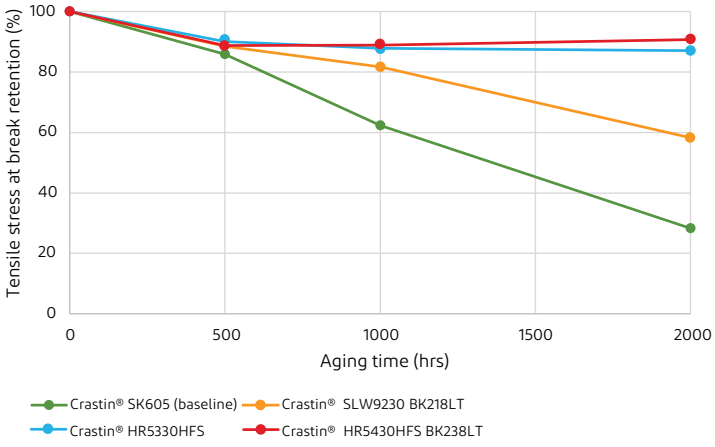


Source: DuPont

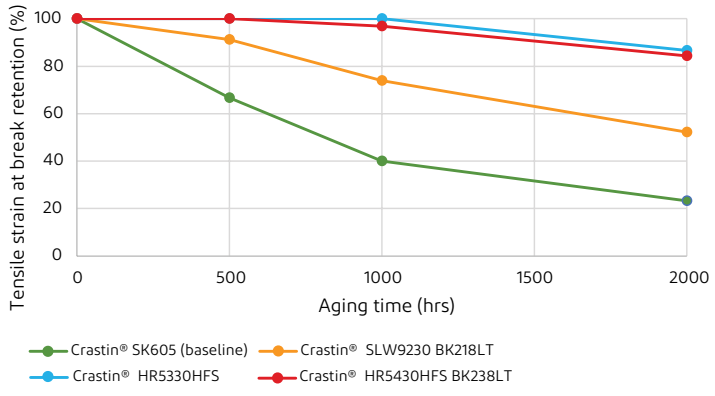
Two-in-One Crastin® PBT Solutions

Conventional solutions for hydrolysis resistance negatively impact the laser transparency of PBT. Two Crastin® laser transparent grades overcome this barrier: Crastin® SLW9230 BK218LT and Crastin® HR5430HFS BK238LT. Crastin® HR5430HFSLT demonstrates best-in-class hydrolysis resistance while maintaining good laser transmission for weldability.

Hydrolysis Resistance



Source: DuPont



Source: DuPont

Superior Low Warpage

Crastin® SLW9230 BK218 LT demonstrates best-in-class performance in disk warpage when tested at 1.5 mm. This makes it a good solution for sensors and electronic housing/cases which require high levels of dimensional stability. Plus, Crastin® SLW9230 BK218 LT provides a smooth surface and dimensional stability for miniature designs with laser welding.

Excellent compatibility allows one-stop solution for both back and front parts

	Absorbent	Transmission
Example 1	HR5330HFS BK591	HR5430HFS BK238LT
Example 2	SK605 BK591	SK9230 BK237LT

Key Characteristics of Crastin® PBT Laser Transparency Portfolio

Grade	Product	HR	*LPKF TMG-3 980nm – 2mm	Tensile Modulus (MPa)	Tensile Strain	HDT @ 1.8 MPa	N-Charpy	Shrinkage, parallel	Shrinkage, normal
SLW9230 BK218LT	PBT/PET-GF30	•	21	10700	160%	186°C	10 kJ/m²	0.2%	0.4%
SK9230 BK237LT	PBT/PET-GF30		31	10200	154%	191°C	10.7 kJ/m²	0.3%	0.6%
HR5430HFS BK238LT	PBT-I-GF30	•	7	9000	125%	190°C	10 kJ/m²	0.2%	0.8%
HR5430HFS NC010LT	PBT-I-GF30	•	7	9000	125%	190°C	10 kJ/m²	0.2%	0.8%
Benchmark (SK605 NC010)	PBT-GF30		N.A.	10000	140%	205°C	10 kJ/m²	0.3%	1.1%

Source: DuPont

For more information about Crastin® laser transparent grades, contact your DuPont representative.

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