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**AUTOMOTIVE APPLICATION PROFILES**

# Charge Air Cooler (CAC)

We understand that in the automotive industry, you need reliable materials that perform to a higher standard. Ascend offers a comprehensive portfolio of engineered plastics for challenging automotive applications. We work with our customers to achieve the very best from our products. That's why we offer a worldwide support network of application specialists and technical experts. Our material knowledge and expertise in automotive systems can help you improve part performance and reduce material usage and cycle times.

## Products Used:

**Vydyne® R535H, R550H**—For extended exposure to temperatures at or below 170 C

**Vydyne R535HT, R550HT**—For extended exposure to temperatures of 170–190 C

**Vydyne R535XHT, R550XHT**—For extended exposure to temperatures of 190–210 C

**Vydyne R735XHT, R750XHT**—For extended exposure to temperatures of 210–230 C

## Application Description

Increasing use of turbochargers in new engine designs is focused on optimizing power, efficiency and compliance. Thermal management in these systems is critical, and charge air coolers and intercoolers must reduce the temperature of hot air while standing up to extreme conditions, internal pressures and harsh chemicals. The end caps in these designs cannot lose sealing pressure or crack—they must maintain their integrity over the life of the vehicle.

## The Vydyne Difference

As CAC placement in the system and long-term requirements differ by engine design, Ascend has created a full family of materials to meet performance needs. With special attention to long-term durability, Vydyne grades cover temperature exposure levels between 140 C and 230 C for 3,000 hours while maintaining properties. Our newest materials, based a patented development optimizing both resin and heat stabilization technologies, allow products to deliver exceptional property maintenance even when exposed to temperatures up to 230 C.



## Product Properties

<b>R535H, R535HT, R535XHT, R735XHT</b>						
Property*	Test Method	Units	R535H	R535HT	R535XHT	R735XHT
Density	ISO 1183	g/cm <sup>3</sup>	1.41	1.41	1.44	1.42
Tensile Strength	ISO 527-2	MPa	210	200	199	192
Flexural Modulus	ISO 178	MPa	10,500	10,200	11,000	10,200
Notched Izod	ISO 180	kJ/m <sup>2</sup>	12	14	13	13
DTUL @ 1.8 MPa	ISO 75-2/A	°C	250	240	232	230

\*Dry as molded (DAM)

## Application Development and Support

Our automotive applications team relies on years of industry experience and CAE support for tooling to help you optimize your system design. For more information, contact our expert applications specialists or visit [ascendmaterials.com](http://ascendmaterials.com).



Ascend Performance Materials is the world's largest fully integrated producer of nylon 6,6 resin. We manufacture and reliably supply world-class plastics, fibers and chemicals that are used in thousands of everyday applications such as car parts, electronics and cable ties.

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