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## AUTOMOTIVE APPLICATION PROFILE

# Cooling Valve and Connector

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: R530H BK0201, R530HR BK652**

### Application Description

Cooling systems in hybrid and electric vehicles are becoming increasingly complex due to multiple lines, the length of those lines and more components requiring thermal management. Unlike conventional internal combustion vehicles, the cooling circuits of hybrid and electric vehicles may be in use while the vehicle is at rest, for thermal management during charging or prior to starting. Duty cycles are, therefore, extended by thousands of hours over the life of the vehicle. The connectors and valves for these cooling lines are required to perform over a wide range of temperatures (-30°C to above 100°C). Strength and stiffness at elevated temperatures and dimensional stability are critical to avoid fluid leakage. The connectors and valves will be in contact with hot water or glycol mixtures, making hydrolysis resistance and the maintaining of mechanical properties over time an important consideration. They also require resistance to a variety of automotive chemicals from other systems in the vehicle.

### The Vydyne Difference

Ascend's Vydyne® R530H and R530HR glass-filled products are ideal for cooling-line connectors and valves. They possess a combination of high strength, stiffness and HDT to support the connection, even after prolonged exposure to elevated temperatures. All Vydyne PA66 grades are designed with processability in mind, with R530H BK0201 and R530HR BK 652 exhibiting high flow that helps reduce warpage during molding and frequently provides faster cycle times versus the competition. Outstanding PA66 chemical and hydrolysis resistance is also a characteristic of both grades.



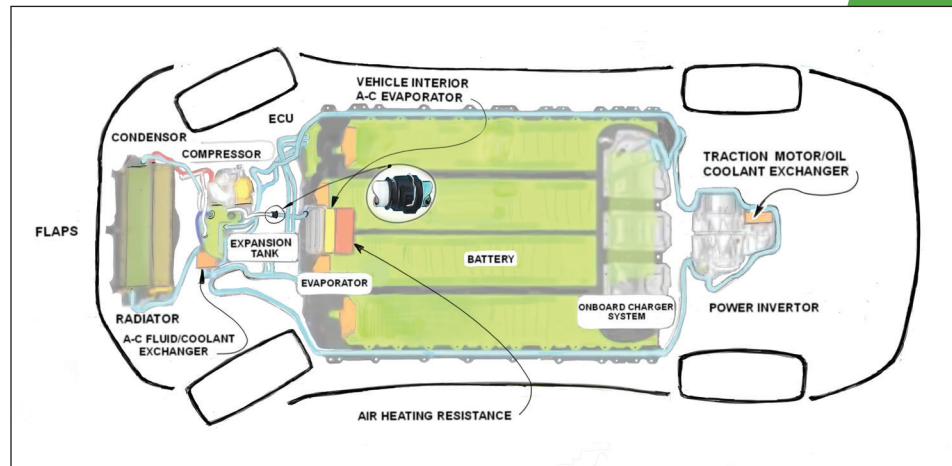
## Product Properties

R530H, R530H BK0201, R530HR BK652				
Property*	Test Method	Units	R530H BK0201	R530HR BK652
Density	ISO 1183	g/cm <sup>3</sup>	1.37	1.37
Tensile Strength	ISO 527-2	MPa	195	185
Tensile Modulus	ISO 178	MPa	10,000	9,650
Notched Charpy Impact at 23°C	ISO 179	kJ/m <sup>2</sup>	11	11
DTUL @ 1.8 MPa	ISO 75-2/A	°C	250	247
Dielectric Strength	IEC 60112	kV/mm	20	20
Volume Resistivity	IEC 60093	ohms-cm	1.0 E+13	1.0 E+13

\*Dry as molded (DAM)

## Benefits

- Superior stiffness
- Strength
- Temperature resistance
- Hydrolysis resistance
- Chemical resistance



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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