

Solvay Hall B4 Booth #4213 | FAKUMA 2018

Solvay's Ryton® PPS used for flexible, lightweight coolant lines, brackets and connectors advances complex automotive thermal management assembly systems

Bollate, ITALY, Oct. 16, 2018 --- Solvay, a leading global supplier of specialty polymers, launches its first batch of Ryton® polyphenylene sulphide (PPS) extrusion grades that complement proven Ryton® PPS injection molding materials for use together in demanding automotive cooling line assembly applications.

The new Ryton® PPS extrusion series is globally available in three grades: Ryton® XE3500BL, Ryton® XE4500BL and Ryton® XE5500BL. The stiffness of these grades varies between 1500 MPa (218 ksi) and 2500 MPa (363 ksi) to fulfil requirements of flexible tubes with different wall thicknesses and diameters or for post-extrusion thermoforming. Flexible coolant lines made using Solvay's new extrusion polymer technology exhibit high melt strength, chemical resistance and thermal stability with enhanced tensile elongation and impact strength.

Solvay's injection molding grades include Ryton® XE5430BL (30 percent glass filled) and Ryton® R-4-270BL (40 percent glass filled). These materials have exhibited a proven fit in many existing connector and bracketry fittings to enable automotive OEMs to design fully harmonized and integrated coolant line assemblies for engines and transmissions.

"Under-the-hood temperatures are pushing existing cooling line design and material solutions to their limits, narrowing the safety margin," says Andreas Lutz, European Area Development Manager for Solvay's Specialty Polymers global business unit. *"Engine downsizing along with the generalization of high-temperature components such as turbochargers, superchargers, automatic transmissions, air conditioning and exhaust gas recirculation systems all crowded into a shrinking engine bay are leading to a 'space crunch' with hot spots that can exceed the thermal performance of conventional metal/rubber and polyamide designs."*

Since coolant lines are among the last components to be designed to fit the engine bay, materials must not only offer the design freedom to enable more complex routing, but also provide enhanced thermal and chemical resistance to ensure operational safety without adding weight, such as the need for additional heat shields.

Solvay's Ryton® PPS extrusion technology can help OEMs replace cumbersome and expensive powertrain fluid handling lines with sleek, light, integrated solutions that include connectors, over-molded brackets, and welded brackets made from Ryton® PPS injection molding grades.

While some major European automotive OEMs have already integrated lightweight Ryton® PPS solutions, others are investigating their use across a variety of coolants as well as engine and powertrain oil handling systems, seeking to replace incumbent mixed material (metal/rubber) and polyamide (PA) designs. *"The more complex a fluid handling line is, the more instrumental Ryton® PPS can be in reducing weight as well as simplifying manufacturing and assembly costs,"* adds Lutz.

In addition to expertise in polymers, Solvay provides a comprehensive innovation and technical support service at the company's recently expanded Application Development Center in Bollate, Italy to help automotive OEMs and Tier 1 suppliers leverage the potential and maximize the benefits of Ryton® PPS.

® Ryton is a registered trademark of Solvay.

Solvay is an advanced materials and specialty chemicals company, committed to developing chemistry that addresses key societal challenges. Solvay innovates and partners with customers worldwide in many diverse end markets. Its products are used in planes, cars, batteries, smart and medical devices, as well as in mineral and oil and gas extraction, enhancing efficiency and sustainability. Its lightweighting materials promote cleaner mobility, its formulations optimize the use of resources and its performance chemicals improve air and water quality. Solvay is headquartered in Brussels with around 26,800 employees in 61 countries. Net sales were €10.1 billion in 2017, with 90% from activities where Solvay ranks among the world's top 3 leaders, resulting in an EBITDA margin of 22%. Solvay SA ([SOLB.BE](#)) is listed on Euronext Brussels and Paris (Bloomberg: [SOLB.BB](#) – Reuters: [SOLB.BR](#)) and in the United States its shares (SOLVY) are traded through a level-1 ADR program. *Financial figures take into account the announced divestment of Polyamides.*

Solvay Specialty Polymers manufactures over 1500 products across 35 brands of high-performance polymers – fluoropolymers, fluoroelastomers, fluorinated fluids, semi-aromatic polyamides, sulfone polymers, ultra-high performance aromatic polymers, and high-barrier polymers – for use in Aerospace, Alternative Energy, Automotive, Healthcare, Membranes, Oil and Gas, Packaging, Plumbing, Semiconductors, Wire & Cable, and other industries. Learn more at www.solvayspecialtypolymers.com.

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Photography and graphic courtesy of Solvay.

Typical properties of Ryton® PPS extrusion grades

| Property | Unit | Ryton® XE5500BL | Ryton® XE4500BL | Ryton® XE3500BL | Test Method |
|---|--------------------|--------------------|--------------------|--------------------|-------------|
| Tensile strength | MPa psi | 55 7,800 | 45 6,500 | 40 5,800 | ISO 527 |
| Tensile elongation at break | % | 15 | 20 | 80 | ISO 527 |
| Flexural strength | MPa psi | 100 14,500 | 80 11,600 | 60 8,700 | ISO 178 |
| Flexural modulus | MPa psi | 2,500 363,000 | 1,800 261,000 | 1,500 218,000 | ISO 178 |
| Izod impact, notched | kJ/m² ft-lb/in² | 30 14 | 30 14 | 50 24 | ISO 180/1A |
| Viscosity at 400 sec ⁻¹ , 316 °C | Pa·s | 500 | 700 | 750 | |
| Density | g/cm³ | 1.30 | 1.25 | 1.20 | ISO 1188 |

Continuous use temperature of Ryton® PPS extrusion grades are 170°C in air with short term performance to 190°C.