

# News Release

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## Create Complex Shapes & Contours

# Ticona R&D Leads to Development of New Fortron<sup>®</sup> PPS for Use in 3D Robotic Manipulated Blow Molding Process

**Florence, Ky., Sulzbach, Germany, Shanghai, PR China, June 5, 2012** – [Ticona](#)

Engineering Polymers today introduced a newly developed grade of [Fortron<sup>®</sup>](#) that is the first polyphenylene sulfide (PPS) designed for use with 3D robotic manipulated blow molding for tubular components with extreme complex geometries.

“Ticona polymer scientists used patent pending technology to develop a new formulation of Fortron PPS. The advanced properties profile of this grade delivers a solution that allows original equipment manufacturers (OEMs) and general industry customers to produce high temperature air management and exhaust gas recirculation (EGR) systems that include components with complex shapes and contours,” said Peter Radden, Ticona automotive application development engineer.

“The value to our customers is a material with high temperature resistance for harsh environments that can be shaped by one blow molding process into a duct with multiple 90 degree bends and intricate contours.”

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With the introduction of this developmental Fortron PPS grade, customers can now use all available blow molding technologies — standard, 3D-suction, robot manipulation and injection — to create air inlet systems and EGR pipes with multiple bends while reducing the number of manufacturing steps and shortening cycle times.

“The internal combustion engine remains an important part of the powertrain, even as the push for lighter and more efficient traditional, hybrid and pure electric vehicles continues,” Radden said. “While OEMs downsize their engines, they are pushing to increase the horsepower. This leads to higher operating temperatures and a more challenging environment with compact, more powerful engines in tighter engine compartments.”

The new Fortron PPS grade, which passed all high temperature tests in a production scale trial, offers a set of material properties beyond those of standard blow moldable Fortron PPS grades:

- Higher melt strength
- Improved impact resistance
- Higher blow up ratio
- Longer handling time
- No restriction regarding vibration

Ticona is working with [Röchling Automotive](#) on a new air duct geometry that requires Fortron PPS, which was used in the first PPS automotive blow molded commercial application. In 2009 this blow-molded charge air pipe was awarded 1st place in the “Powertrain” category and a “Grand Award” in the collective “Parts & Components” category at the 12th Automotive Division Award of the Society of Plastics Engineers (SPE) Central Europe.

Fortron PPS provides cost savings via a combination of factors: lower reject rates, reduction in number of fabrication steps, shorter cycle times and higher process reliability. In addition, blow molded pipes can weigh up to 30 percent less than aluminum components.

“Our new higher performance turbo charging systems required a redesign of the air ducts including extreme complex part geometry which can only be shaped through the 3D

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robotic manipulated blow molding process,” said Paolo Curci, Röchling Automotive advanced projects developer. “The Ticona engineers worked with us to tailor the material properties to our design and process. The ability to fine tune the material composition reduced the need to run extensive production scale trials.”

While initially used in an automotive application, Fortron PPS can be used in other industries that use extrusion, thermal forming and blow molding technologies.

### **About Fortron PPS**

Fortron PPS delivers performance in some of the most extreme and challenging environments. Fortron can replace aluminum, steel and die-cast metals and other materials in throttle body valves, crankshaft flanges, water pump housings and impellers, thermostat housings, air management systems and can be used in alternative and biofuel applications and hybrid powertrain components. It offers a property profile that provides:

- Continuous service temperature up to 240 degrees Celsius (464 degrees Fahrenheit)
- Very good dimensional stability
- Inherent flame resistance
- Excellent resistance to automotive/aircraft fuels and fluids, strong acids and bases (pH 2 to 12)
- High hardness and stiffness
- Extremely low creep behavior
- Low coefficient of linear thermal expansion (CLTE), comparable to aluminum
- Very low water absorption
- Ease of processing

### **About Ticona and Celanese**

*Ticona, the engineering polymers business of Celanese Corporation, produces and markets a broad range of high performance products, and posted net sales of \$1,298 million in fiscal 2011. Ticona employs more than 1,500 individuals at production, compounding and research facilities in the USA, Germany, Brazil and China. For more information, please visit [www.ticona.com](http://www.ticona.com) or [www.ticona.cn](http://www.ticona.cn) (Chinese language).*

*Celanese Corporation is a global technology leader in the production of specialty materials and chemical products that are used in most major industries and consumer applications. Our products, essential to everyday living, are manufactured in North America, Europe and Asia. Known for operational excellence, sustainability and premier*

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*safety performance, Celanese delivers value to customers around the globe with best-in-class technologies. Based in Dallas, Texas, the company employs approximately 7,600 employees worldwide and had 2011 net sales of \$6.8 billion, with approximately 73% generated outside of North America. For more information about Celanese Corporation and its global product offerings, visit [www.celanese.com](http://www.celanese.com) or the company's blog at [www.celaneseblog.com](http://www.celaneseblog.com).*

### **About Röchling Automotive**

*Röchling Automotive aims to provide vehicle manufacturers and their customers with future-oriented technology in the fields of air flow management and acoustics, lightweight construction, and thermal management. Over 3,500 employees working at development centers and production sites in every world market help reduce CO2 emissions and noise pollution, lower air resistance and friction, and keep the total costs of producing a vehicle as low as possible. For more information, please visit [www.roechling.com](http://www.roechling.com).*

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Fortron® is a registered trademark of Fortron Industries LLC.



**Complex Blow Molded Pipes** — A new Fortron® polyphenylene sulfide (PPS) grade allows production of components with complex shapes and contours for high temperature air management and exhaust gas recirculation (EGR) systems.