Momentive Performance Materials Announces Introduction of Fully Fluorinated Silicone Liquid Elastomers (FFSLs)

WILTON, Conn. November 1, 2007 — Momentive Performance Materials announced today that, at K2007 Tradefair for plastics and rubber, 24 –31 October in Dusseldorf, Germany, it has introduced fully fluorinated silicone liquid elastomers (FFSLs), a new line of game-changing products in their elastomers portfolio. The new, patented FFSLs combine fluorosilicones' physical and chemical properties (including low and high temperature resistance and constant behavior over a broad temperature range) with the unique processing and productivity advantages of an addition-cured, platinum-catalyzed liquid silicone rubber (LSR). This combination allows these exciting new FFSLs to offer extremely fast cure speed, flashless, trim-free, fully automated injection molding as well as broad range temperature resistance and temperature stability.

Fluorosilicones are widely used in automotive applications where excellent low temperature flexibility is required, along with the ability to withstand exposure to harsh environments created by fuel, oil, blow-by-gas, hot air, etc. The previous generation of fluorinated LSR, known as FSLs, withstood exposure to diesel/RME and hot oils, and Momentive's new FFSLs offer the same capabilities. However, the new Momentive FFSLs also bring a full set of chemical resistance properties comparable to those offered by commercial peroxide curable fluorosilicone heat cured rubber (FVMQ).

The new FFSLs range in hardness from 40 to 70 Shore A. "We were seeking an improved solution to the automotive mass production applications that come in contact with fuels, oils or blow-by-gas," said Oliver Franssen, industry manager, Momentive. "Therefore, we needed a family of products, such as 40 Shore A oil bleeding FFSL for connectors, a 70 Shore A FFSL for O-Rings and 50 to 60 Shore FFSLs for membranes, seals and gaskets. Within those potential application areas, the FFSLs may demonstrate cost efficiency through productivity gain and increase engineers' design freedom for multi-component parts. We feel that this is one of the biggest innovations in the high-performance elastomer arena in the last few decades."

At the 172nd Technical Meeting of the American Chemical Society's Rubber Division, Momentive presented a technical paper describing the new FFSLs and comparing them to fluorosilicone heat-cured elastomers (HCEs). "Over the last several years, the industry trend has been away from HCEs, in favor of the increased use of liquid silicone rubber (LSR) for molded rubber parts, due to easier processability, design versatility, quality and productivity gains offered by LSR," said ACS presenter Gail Riley, regional marketing manager, Momentive. "However, as greater quantities of fluorine are added to liquid silicone rubber, processability of the LSR becomes a challenge. Our new generation of FFSLs represents a significant breakthrough, combining these properties to offer a family of products with excellent chemical resistance and easy processing for the most demanding applications."

A global team of fourteen Momentive experts spent the last two years developing the FFSLs. "While we discussed the possibility of such a fully fluorinated LSR material over the last ten years, it was the combination of new ideas that brought us together in this team," said Dr. Stephan Bosshammer, technology leader for LSRs, Momentive. "This development began with a piece of paper, because the huge fluoro side of the polymer chain posed great complexity in the design of a low viscosity material. Our cumulative historical technology focus, which has helped us to collaborate with our customers to achieve innovation in LSRs, was applied to this problem. Our biggest and most critical

achievement with the new FFSLs is a viscosity comparable to our standard grade LSR, combined with the availability of high hardness up to 70 Shore A."

To demonstrate the usefulness of these innovative products, Momentive developed the first oil-bleeding fluorosilicone within the new FFSL family. Focusing on wire harnesses and electrical connectors that typically receive use in the harshest automotive environment, this special new FFSL oil bleeds out of the molded parts, reducing the force required for assembly and disassembly of cables and metal clamps. It also helps to protect the seals from potential damage.

To eliminate the risk of poor processing, Momentive teamed up during this development with validation customers, who gave input on physical properties and other associated expectations and helped out in the processing validation. "It is especially important in the automotive segment to work hand in hand with OEMs and tier one companies to identify new product needs and to include our direct customers in highly confidential product developments," said Franssen. "Production trials have been carried out on different machines, with different mass-production molds and cold runners with up to 64 cavities, in a fully automated process. The new material has already proven virtually flawless in processing, comparable to standard LSR grades. In parallel, we spent months conducting laboratory testing to prove the chemical resistance capabilities of FFSL in relation to existing commercial fluorosilicones."

The new Momentive FFSLs will be available in November 2007. Momentive will offer support through a focused automotive development and marketing organization, which also will handle the relevant industry network of equipment suppliers, to mold manufacturers and the automotive system suppliers and OEMs. Joint validation trials can be carried out in the local Momentive ADCs (Application Development Centers).

To find out more about Momentive's fully fluorinated silicone liquid elastomers, please call 1-800-295-2392 in North America, call +31.164.293.276 in Europe or visit www.momentive.com.

About Momentive Performance Materials
Momentive Performance Materials is a premier specialty materials company, providing high-technology materials solutions to the silicones, quartz and ceramics markets. The company is a global leader with worldwide operations, a robust product portfolio, industry-leading research and development capabilities, and a long tradition of service excellence.

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