

Resonator Made of DuPont™ Zytel® PLUS Helps Revolutionary Hybrid Sports Car Sound Good

The stunning BMW i8 plug-in hybrid sports car features a resonator made of glass-fibre reinforced DuPont™ Zytel® PLUS 95G35 which is tuned to reduce the typical high-frequency air intake sound to a lower level.

Geneva ([PRWEB](#)) March 17, 2016 -- The stunning BMW i8 plug-in hybrid sports car features a resonator made of glass-fibre reinforced DuPont™ Zytel® PLUS 95G35 which is tuned to reduce the typical high-frequency air intake sound to a lower level, so improving driving experience. [Zytel® PLUS](#) is a high-performance polyamide, produced with DuPont's proprietary SHIELD technology which provides superior long-term resistance to high temperatures and aggressive fluids typical of under-the-hood applications. Due to its function, the resonator has a relatively large volume, but – thanks to an optimised design in terms of wall thicknesses and the use of this high stiffness and high strength grade of Zytel® PLUS – it weighs just 1.5 kg. Installed between the air filter and turbo charger in the rear of the i8, it is part of the [air management system](#) of the sports car's compact 1.5 litre 3-cylinder petrol engine.

The resonator was developed by close collaboration between BMW Group, DuPont Performance Materials and MANN+HUMMEL. This Tier-1 supplier makes use of its experience in hot-gas welding to assemble two injection moulded parts – the perforated interior tube as well as an outer tube measuring about 40 cm in length with integrated fittings for fuel tank ventilation and blow-by inlet – to create the broad-band resonator. An additional air duct including an elastic bellows segment, made of an unreinforced soft nylon grade, is then mounted to connect the resonator to the air intake filter, whilst the system's opposite end fits to the intake side of the turbo charger.

Thanks to the choice of Zytel® PLUS, the resonator has long-term resistance to temperatures from -40°C to 190°C as well as hot engine gases and fluids. As Florian Janiak, Polymer Specialist / Global Production Strategy, MANN+HUMMEL, comments: “In the light of the high temperature environment due to close proximity to the exhaust gas system and direct contact with chemicals such as road salt, we quickly ruled out standard polyamide materials for this demanding application due to their insufficient long-term heat and chemical resistance. Zytel® PLUS 95G35 performs well in such a hot and confined operating environment and what's more, it retains most of its weld strength even after extended exposure to very high temperatures, where traditional materials would drop significantly. We also found it very easy to mould and weld in our hot gas process.”

“Our collaboration with BMW Group and MANN+HUMMEL is another illustration of DuPont's materials and developmental capabilities in partnership with automotive OEMs and Tier-1 suppliers — demonstrating, as the resonator for the futuristic BMW i8 hybrid shows, leadership in advanced polymers such as Zytel® PLUS for demanding under-the-hood applications,” says Thomas Werner, Global Key Account Manager, DuPont Performance Polymers.

[DuPont's proprietary SHIELD technology](#) combines several innovations including a new polymer backbone, polymer modifications and a special set of additives which can double or triple the service life of standard nylon on exposure to hot environments and aggressive chemicals such as hot oil, automotive coolants and road salt. DuPont™ Zytel® PLUS 95G35, the core product of the Zytel® PLUS family, shows no significant drop in its ability to withstand load – even over 4,000 hours of testing at 180 °C – whereas a traditional PA 66 GF35's

ability to withstand load is cut to less than half. This resilience makes it attractive for use in cylinder head covers, resonators, exhaust mufflers and oil pans.

The MANN+HUMMEL Group is a leading global expert for filtration solutions and development partner and original equipment supplier to the international automotive and mechanical engineering industries. Employing 16,000 people at more than 60 locations worldwide, the company achieved a turnover of about 2.8 billion euros in 2014. The group's product portfolio includes air filter systems, intake manifold systems, liquid filter systems, cabin filters and technical plastic parts, as well as filter elements for vehicle servicing and repair. For general engineering, process engineering and industrial manufacturing sectors the company's product range includes industrial filters, a series of products to reduce carbon emission levels in diesel engines, membrane filters for water filtration and filter systems.

DuPont Performance Materials (DPM) is a leading innovator of thermoplastics, elastomers, renewably-sourced polymers, high-performance parts and shapes, as well as resins that act as adhesives, sealants, and modifiers. DPM supports a globally linked network of regional application development experts who work with customers throughout the value chain to develop innovative solutions in automotive, packaging, construction, consumer goods, electrical/electronics and other industries. For additional information about DuPont Performance Materials, visit <http://plastics.dupont.com>.

DuPont (NYSE: DD) has been bringing world-class science and engineering to the global marketplace in the form of innovative products, materials, and services since 1802. The company believes that by collaborating with customers, governments, NGOs, and thought leaders we can help find solutions to such global challenges as providing enough healthy food for people everywhere, decreasing dependence on fossil fuels, and protecting life and the environment. For additional information about DuPont and its commitment to inclusive innovation, please visit <http://www.dupont.com>.

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