

## Brilliant Polymer Screens

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PLEXIGLAS® by Evonik significantly reduces the weight of car screens. After testing new material concepts in racing cars, the successful technical concept is now on the way to be transferred to serial production.

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Every pound counts—not just at summery beaches, but also in cars at the race track. “A weight reduction by 40 to 50 percent in a single component makes the heart of every race car engineer beat faster,” says Martin Roos, owner of RED Motor Sports from the North-Rhine Westphalia town of Mettmann, about the significance of light-weight design in cars. The Lotus Exige race car, which is upgraded and weight-reduced with parts of Evonik Industries, one of the world’s largest specialty chemicals manufacturers, is no exception. The automotive specialists of the Group have made light-weight design one of their priorities. Thus, the front and side windows of the British race car are made of polymethyl methacrylate (PMMA), which Evonik sells under the brand name PLEXIGLAS®.

As a special feature, the side windows have a composite design made of PLEXIGLAS® with a soft inside layer. As a result, the composite windows weigh only half as much as conventional glass windows. Even though weight is of central importance in car racing, PMMA-based PLEXIGLAS® has “many additional impressive advantages,” notes Klaus Hedrich, the head of the Evonik Automotive Industry Team (AIT). The composite design is primarily characterized by high rigidity and transparency, excellent acoustics, and outstanding UV- and weather-resistance. Furthermore, “the material is highly resistant to ageing.” And the material is much more resistant to stone chipping than glass.

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The multi layer polymer screens are lightweight and highly efficient. They have already passed the mandatory ball drop test and showed no splintering. Says Hedrich: “It goes without saying that the engineers at Evonik are working hard and at top speed to make such composite solutions available for all vehicle screens.” This also opens up an opportunity to integrate additional functions into the window panes.

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To Evonik, motor racing is a testing stage for day-to-day applications — an endurance testing phase before serial production. Those products that do well at the race track stand the chance of being suitable for serially produced vehicles. These deliberations prompted Evonik to take the next step. Together with the Lotus Engineering team in the British town of Hethel, the company developed a special, road-approved Lotus Exige that contains all lightweight design solutions of Evonik and a few additional features. “The car was based on our racing car with RED Motor Sports,” explains AIT Head Klaus Hedrich. “That vehicle earned us many racing victories in the past at the Dutch Super Car Challenge.” The design secret of the road racer is this: Low weight is effective, and always plays an important part in essential car properties, such as fuel consumption, acceleration, braking action, and cornering performance. The purpose of the road-approved racing car is to show how race-proven lightweight solutions can find their way into serial applications, and of course, to underscore how attractive the results of losing weight can be. The Evonik Light Weight Design (LWD) Lotus is the result of these efforts and weighs a full 75 kilograms less than the ultra-light serial car, Exige S.

#### **About Evonik**

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