



PRESS RELEASE

BREMBO'S LATEST INCREASINGLY LIGHTWEIGHT, ADVANCED AND HIGH-PERFORMANCE BRAKING SYSTEMS FOR THE 24 HOURS OF LE MANS

Thanks to innovative friction material, Brembo brake pads will go the distance at Le Mans

Stezzano, Italy, June 2016 – Sixty race-cars, divided into four different categories, will take the green flag in the 84° edition of the classic 24 Hours of Le Mans, the world's greatest endurance race. Of the 60, 52 will be equipped with Brembo supplied components.

At Le Mans, Brembo technicians are focused on the lightness of braking systems. The high stiffness and reliability of Brembo brake pads, when used correctly in race conditions, will last for the entire 24 hours, without need of replacement.

The famous 24 Hours of Le Mans has run since 1923 on the semi-permanent Circuit de la Sarthe, characterized by heavy braking. This is especially true close to the two chicanes dividing the long Mulsanne straight where braking systems have the possibility to cool. It's essential for the teams to be able to ensure that the brake system remains within the correct range of operating temperatures.

LMP1 and LMP2 race-cars are equipped with carbon friction material. Discs have front diameter ranging from 320mm to 370mm, rear diameter from 320mm to 350mm, with 30 or 32mm thickness. The number of ventilation holes ranges from a minimum of 36 to a maximum of 430, with an operating range from 350 to 800 degree, per team's request. The most significant difference between the two categories as regards to the braking system is the material of six-piston calipers where, due to regulatory reasons to promote cost reduction, in LMP2 it's limited the use of aluminium-lithium alloy, used in LMP1, recurring to the use of standard aluminium.

Furthermore, Brembo develops the bells, element that connects the hub to the disc, using two different materials and technologies based on the categories it is being used: in LMP1 the bells are in titanium, with spline fixing, similar to the one applied to F1 cars; while in LMP2 it is using aluminium, with a T-bobbin type fixing, the same used on the traditional competition cars.

In GTE categories, race-cars use cast iron slotted discs, with 380 or 390 mm at the front and 322-355mm for the rear, in both cases used with ceramic-based pads

For the carbon discs the main unknown factor lies in the operating temperature that must never drop below 350°C; a possibility that is far from remote, especially on the long straight stretches in adverse weather conditions. In this case, the problems connected with the excessive cooling and "glazing" of the friction material not only can compromise braking efficiency, but even cause excessive and premature brake disc wear.

In order to handle these potential issues, Brembo provides the teams with a friction material characterized by extremely low wear that allows for more efficient thermal conductivity. This material guarantees optimum warm-up (they quickly reach the most efficient operating temperature) offering a wide range of use in terms of both pressure and temperature, together with a very linear friction response. These are all characteristics that provide the driver with perfect modulation of the braking system. The incredibly low wear also allows performance to stay unchanged and repeatable from the start of the race to the finish.



The cast iron brake discs, on the other hand, don't require minimum operating temperatures and are therefore immediately effective even at low temperatures. Nevertheless, cast iron is a particularly sensitive material to thermal stress, so for the cast iron discs the greatest danger is the formation of cracks due to the rapid alternation of low and high temperatures of discs in the straight stretches and the hard braking sections.

Of the 32 race-cars entered in LMP category that will compete for the overall victory, 28 are equipped with Brembo products, supplied also to 24 of the 27 race-cars of GTE category, for a total of 52.

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