

Press Release

FIA 8860-2004 Advanced Helmets in WRC

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FIA WORLD RALLY CHAMPIONSHIP

From 1 January 2010, the latest FIA 8860-2004 helmet became mandatory for all Priority 1 and 2 drivers competing in World Rally Championship events. The helmet, which took eight years to develop by the FIA and FIA Institute, provides drivers with increased protection in all key areas of safety.

The helmet absorbs 50 per cent more impact energy and has improved load spreading during side impact accidents. It also resists 30 per cent more penetration energy and provides up to 30 per cent more protection against injury caused by excessive rotational accelerations.

An 8860-2004 helmet withstands an impact of 9.5m/s with deceleration of less than 300g. During fire tests, the helmet was subjected to 800°C for 30 seconds, with temperatures inside the helmet not exceeding 70°C. In addition, the visors can withstand projectiles being fired at them at high speeds.

The basic design consists of an exceptionally stiff and strong outer shell and an energy-absorbing inner liner. The outer shell protects the head from external penetration and has been developed to work in combination with the inner liner to provide the increased energy absorption. When the helmet hits something (or something hits the helmet) the head will continue moving inside the helmet until all the energy has been absorbed.

The liner's job is to bring the head to a stop as gently as possible. This is achieved by using combinations of different density-lining materials. The outer shell of the FIA 8860-2004 helmet is designed not to deform, thus allowing maximum energy absorption of the inner liner and minimum G-forces inside the helmet.

To achieve this, the helmet designers use layers of different composite materials, carefully chosen for their different properties. The outer shell of the helmet is, typically, made up of layers of T1000 aerospace-grade carbon-fibre material, created by weaving together thousands of kilometres of micro-threads. The strength of the material is not simply about the strength of the micro-threads, but also how tightly they are woven together.

The use of lightweight materials means that the finished helmets can weigh as little as 1200 grams (unpainted) but can withstand astonishing forces.

The FIA and the helmet manufacturers go to great lengths to ensure that these helmets are as efficient as possible such that they provide maximum protection.

Click [here](#) to download an image of the open-face helmet.

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