

Solstice[®] yf – Information for regulators and authorities

EU Regulation – background and enforcement

The [EU directive 2006/40/EC](#) ("MAC Directive") stipulates that vehicle types, whose authorization was applied for after 2011, must be equipped with a refrigerant with a global warming potential (GWP) of less than 150.

Due to a temporary supply bottleneck after the earthquake in Fukushima, Japan, the date of enforcement of the directive was postponed to January 1, 2013.

From 1 January 2017, the requirements of the directive apply to all new passenger cars.

In 2014, the European Commission [launched infringement procedures against Germany](#), determining that the Member State was not properly enforcing the MAC Directive. According to the Commission, the German Federal Motor Transport Authority (Kraftfahrt-Bundesamt, KBA) had expanded the scope of existing type approvals for some manufacturers, making it possible for them to continue using HFC-134a and therewith circumventing the application of the MAC Directive.

Environment

In response to the MAC Directive, Honeywell developed the refrigerant Solstice[®] yf with a GWP of less than 1 (GWP confirmed by the [Intergovernmental Panel on Climate Change](#), a scientific intergovernmental body under the auspices of the United Nations).

Thereby it significantly undercuts the GWP of currently used HFC-134a by more than 99.9 % and remains more than 99.3 % below the threshold prescribed by the MAC Directive.

Safety

Solstice[®] yf has repeatedly been proven safe for use in automobiles.

Between 2007 and 2009, the Society of Automotive Engineers (SAE) established a Cooperative Research Program ([CRP1234](#)) showing that the risks associated with the use of HFO-1234yf in automotive vehicles is well below those commonly considered acceptable by the general public and regulatory agencies.

When in fall 2012, Daimler raised safety concerns after internal tests, the SAE conducted a subsequent risk assessment of the refrigerant ([CRP1234-4](#)), based on extensive data provided by OEMs, including Daimler. This report described Daimler's internal safety testing as "unrealistic", since the tests would create "extreme conditions that favored ignition while ignoring many mitigating factors that would be present in an actual real-world collision".

The German Federal Motor Transport Authority has reached the same conclusion: Their tests and risk assessment did "not provide sufficient supporting evidence of a serious risk within the meaning of the Product Safety Act (ProdSG)" ([KBA Press release No. 25/2013](#)).

Finally, the Joint Research Centre (JRC) of the European Commission conducted a comprehensive evaluation of the numerous tests already carried out on HFO-1234yf, preceded by a careful three-month review of all available data by all parties, including three meetings in which these data were discussed. The [final JRC report](#) is summarized in the Commission's statement that "there is no evidence of a serious risk in the use of this refrigerant in MAC systems under normal and foreseeable conditions of use" ([European Commission Memo 14/168](#)). The Joint Research Centre concludes that HFO-1234yf is a safe refrigerant which enables car manufacturers to meet the requirements of the EU MAC Directive.

Having taken all studies into account, the final JRC report thus conclusively confirms HFO-1234yf's safety.