

EDITORIAL - EC's conclusion HFO-1234yf refrigerant is safe vindicates Honeywell and DuPont

17-Mar-2014 13:58 GMT

S&P Global

Supply Chain and Technology, Automotive

Demand ramps up and not just in regulated markets like Europe

The European Commission's (EC) Joint Research Centre (JRC) has concluded that HFO-1234yf refrigerant, jointly developed by Honeywell and DuPont, is safe for use in vehicles, according to press release by the European Union (EU). "...there is no evidence of a serious risk in the use of this refrigerant in MAC systems under normal and foreseeable conditions of use," EU said in a press statement. The review further reinforces the conclusions by the German regulator KBA, which had said that "there is no sufficient supporting evidence to a serious risk that would entail the intervention of the authorities".



The JRC made these assessments following a three-month evaluation during which it thoroughly reviewed the extensive testing done by several automakers, the Society of Automotive Engineers (SAE) and independent test agencies.

Honeywell and DuPont have welcomed JRC's conclusions. "The JRC's independent and unimpeachable report leaves no doubt that HFO-1234yf is safe for automotive applications," said Ken Gayer, vice president and general manager for Honeywell Fluorine Products. "DuPont is pleased with the final conclusions of the JRC, as they reinforce our high level of confidence that HFO-1234yf can be used safely in automotive air conditioning," said Thierry Vanlancker, president, DuPont Chemicals & Fluoroproducts.

Ramp-up for demand, not just in Europe

Honeywell expects strong growth in demand for new refrigerant driven by stringent emission regulations in key automotive markets. For example, in 2013 the European Union implemented a new Mobile Air Conditioning (MAC) directives requiring that refrigerants in all new vehicle types sold in Europe have GWPs below 150. All cars sold in the Europe after 2017 must meet the new GWP requirement of less than 150. HFO-1234yf, with a GWP of less than one, will help automakers to meet this directive. Automakers are expected to shift from HFC-134A to HFO-1234yf, which is currently the only refrigerant that meets the GWP requirement. However, some suppliers have announced plans develop low GWP refrigerants to meet MAC directives.

In the United States, automakers are switching to the new refrigerant even in the absence of any mandatory requirement. The US Environmental Protection Agency (EPA) is encouraging automakers to adopt the new refrigerant, since it results in lower greenhouse emissions compared with HFC134A. Automakers that use 1234yf are eligible for tradable credit from the EPA, which help them meet new fuel economy and emission standards in the country. Chrysler is using the new refrigerant in its Chrysler 300, Jeep Grand Cherokee, Dodge Charger, and Challenger. GM uses the new refrigerant in Cadillac XTS and Chevrolet Spark. In addition, JLR is using HFO-1234yf in Range Rover and Rang Rover Sport. The Honda Fit electric vehicle also uses the new refrigerant. In December 2013, Honeywell announced a USD300m investment to increase HFO-1234yf production capacity. The company will invest in a new production for the refrigerant at its Geismar plant in Louisiana (US). The new plant is expected to become operational in 2016.

David Smith-Tilley, Director, Component Forecasts & Analysis for IHS Automotive, comments that, "For other countries, no mandate to use an alternative is in place and we don't expect one in the near term. Thus the obligation to use an alternative only comes about for vehicles being exported to the EU. Having said that, recent G20 agreements involving the US and others plan to phase down the

production and consumption of HFCs and that will encourage adoption in the medium term.” The comments are part wide-ranging article on the subject of automotive refrigerant in this month’s issue of SupplierBusiness Analysis.

Controversy

HFO-1234yf has been mired in controversy ever since Daimler conducted field tests in 2012 and concluded that the refrigerant poses fire risks. Since then the refrigerant underwent comprehensive tests and validations by several agencies including SAE, which refuted the German automaker’s claim concluding that it is safe for use in vehicles.

Last year, KBA also conducted tests on HFO-1234yf and concluded that there was no sufficient supporting evidence of a serious risk in the use of the refrigerant that should entail intervention of the authorities. However, KBA assessment also concluded that the specific test on refrigerant release under more extreme conditions had indicated instances of flammability and hydrogen fluoride exposure that deserved further analysis. This led the EC to propose that the JRC would review the KBA testing procedure.

With effect from 1 January 2013, the EU implemented new Mobile Air-Conditioning (MAC) directives which require new vehicles in the region to use refrigerant which has global warming potential (GWP) less than 150. HFO-1234yf claims to have GWP of one and is the only refrigerant which currently meets new MAC directive. In contrast, HFC-134a, the refrigerant which is used widely, has GWP of 1,430. Most automakers, except Daimler, are shifting from HFC-134a to HFO-1234yf. However, Daimler continues to maintain its stand which has fuelled a face-off between the EU and Germany. While the latest JRC report upholds the stand taken by Honeywell and DuPont, it will be interesting to see how Daimler responds to these findings. The German automaker is believed to be developing its own refrigerant to meet EU’s MAC directives.

CONTACTS

The Americas

+1 877 863 1306

Europe, Middle East & Africa

+44 20 7176 1234

Asia-Pacific

+852 2533 3565

www.spglobal.com/mobility

Copyright © 2025 S&P Global Inc. All rights reserved.

These materials, including any software, data, processing technology, index data, ratings, credit-related analysis, research, model, software or other application or output described herein, or any part thereof (collectively the “Property”) constitute the proprietary and confidential information of S&P Global Inc its affiliates (each and together “S&P Global”) and/or its third party provider licensors. S&P Global on behalf of itself and its third-party licensors reserves all rights in and to the Property. These materials have been prepared solely for information purposes based upon information generally available to the public and from sources believed to be reliable.

Any copying, reproduction, reverse-engineering, modification, distribution, transmission or disclosure of the Property, in any form or by any means, is strictly prohibited without the prior written consent of S&P Global. The Property shall not be used for any unauthorized or unlawful purposes. S&P Global’s opinions, statements, estimates, projections, quotes and credit-related and other analyses are statements of opinion as of the date they are expressed and not statements of fact or recommendations to purchase, hold, or sell any securities or to make any investment decisions, and do not address the suitability of any security, and there is no obligation on S&P Global to update the foregoing or any other element of the Property. S&P Global may provide index data. Direct investment in an index is not possible. Exposure to an asset class represented by an index is available through investable instruments based on that index. The Property and its composition and content are subject to change without notice.

THE PROPERTY IS PROVIDED ON AN “AS IS” BASIS. NEITHER S&P GLOBAL NOR ANY THIRD PARTY PROVIDERS (TOGETHER, “S&P GLOBAL PARTIES”) MAKE ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE PROPERTY’S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE PROPERTY WILL OPERATE IN ANY SOFTWARE OR HARDWARE CONFIGURATION, NOR ANY WARRANTIES, EXPRESS OR IMPLIED, AS TO ITS ACCURACY, AVAILABILITY, COMPLETENESS OR TIMELINESS, OR TO THE RESULTS TO BE OBTAINED FROM THE USE OF THE PROPERTY. S&P GLOBAL PARTIES SHALL NOT IN ANY WAY BE LIABLE TO ANY RECIPIENT FOR ANY INACCURACIES, ERRORS OR OMISSIONS REGARDLESS OF THE CAUSE. Without limiting the foregoing, S&P Global Parties shall have no liability whatsoever to any recipient, whether in contract, in tort (including negligence), under warranty, under statute or otherwise, in respect of any loss or damage suffered by any recipient as a result of or in connection with the Property, or any course of action determined, by it or any third party, whether or not based on or relating to the Property. In no event shall S&P Global be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees or losses (including without limitation lost income or lost profits and opportunity costs or losses caused by negligence) in connection with any use of the Property even if advised of the possibility of such damages. The Property should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions.

The S&P Global logo is a registered trademark of S&P Global, and the trademarks of S&P Global used within this document or materials are protected by international laws. Any other names may be trademarks of their respective owners.

The inclusion of a link to an external website by S&P Global should not be understood to be an endorsement of that website or the website’s owners (or their products/services). S&P Global is not responsible for either the content or output of external websites. S&P Global keeps certain activities of its divisions separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain divisions of S&P Global may have information that is not available to other S&P Global divisions. S&P Global has established policies and procedures to maintain the confidentiality of certain nonpublic information received in connection with each analytical process. S&P Global may receive compensation for its ratings and certain analyses, normally from issuers or underwriters of securities or from obligors. S&P Global reserves the right to disseminate its opinions and analyses. S&P Global Ratings’ public ratings and analyses are made available on its sites, www.spglobal.com/ratings (free of charge) and www.capitaliq.com (subscription), and may be distributed through other means, including via S&P Global publications and third party redistributors.