

Colombes, 10 October 2014

Arkema's Forane® solutions to comply with the latest European regulatory changes presented at the Chillventa trade show

Chillventa, the leading trade fair in the refrigeration, air-conditioning, ventilation and heat pump markets in Europe, is being held in Nuremberg from 14 to 16 October 2014. Arkema will be showcasing its refrigerant substitutes designed to address the definitive ban on recycled R-22 and other HCFCs (2nd generation refrigerant gases) at the end of 2014. Arkema will also be presenting its refrigerant solutions to help users adapt to the latest F-Gas¹ regulation.

Arkema's stand will be located in Hall 1 (Stand 214).



As 2014 comes to an end, the refrigerant sector is undergoing major regulatory changes in Europe. Firstly, the use of recycled or reclaimed R-22 for the maintenance of existing equipment will be definitely banned in Europe at the end of the year. A large number of installations running on R-22 are still in very good operating order, but after 2014 could no longer be loaded with recycled or reclaimed R-22 fluid in cases of leakage. So what solutions are available today? Changing the equipment entails high capital investments, as well as rather long idle periods between dismantling of old equipment and installation of a new one, which may impose to stop or shut down an industrial or commercial activity relying on refrigeration for several weeks.

Forane® 427A, the solution for an easy retrofit of existing R-22 installations

In order to continue operating R-22 installations in a simple, quick and cost-efficient manner, Arkema has developed **Forane® 427A**. This 3rd generation refrigerant fluid (HFC) makes for a straightforward substitution of R-22 in existing refrigeration and air-conditioning installations (retrofit). Forane® 427A offers the closest match to R-22 in terms of performances (COP, cooling power) as well as mass flow rates and operating pressures in both air-conditioning and low and medium temperature refrigeration. As its thermodynamic properties are close to those of R-22, Forane® 427A is the only retrofit fluid that can be used in most equipment designed for R-22 without requiring any major changes to the installations (no need to change liquid lines, expansion valves, condensing units or any other costly parts of the system). Forane® 427A, a nil ODP² refrigerant fluid with one of the lowest GWP³ (2130) among existing substitutes, is the easiest and most cost-effective retrofit solution with regard to the total ban on R-22. This fluid has been marketed for many years in Europe, and its use both in air-conditioning and in refrigeration has shown that it is effective and easy to put into operation.

One last major point to bear in mind when choosing a retrofit fluid as a replacement for R-22 is its GWP³. Indeed the new F-Gas¹ regulation (Regulation (EU) No 517/2014) will ban in Europe the use of fluids with a GWP³ in excess of 2500 for the maintenance and servicing of existing installations in operation in Europe from 1st January 2020. With its GWP³ of 2130, Forane® 427A will still be permitted for the topping up of installations in cases of leakage after this date without any restriction.

¹ Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006.

² ODP: Ozone Depletion Potential.

³ GWP: Global Warming Potential, an index characterizing gases in terms of greenhouse effect.

Forane® 407A, the answer to the latest F-Gas¹ regulation aiming to reduce CO₂ equivalent emissions from installations

In this context of the new F-Gas¹ regulation coming into effect in Europe banning the use of R-404A and R-507 from 2020 both in new equipment and for the maintenance of existing equipment, Arkema offers a replacement solution that can be used not just as a retrofit fluid but also in new equipment: **Forane® 407A** (R-407A). This lower GWP³ (2107) refrigerant can replace R-404A and R-507 in medium and low temperature refrigeration applications. This fluid has in particular been used for many years in the United States and in the United Kingdom by several major supermarket chains. Forane® 407A has a GWP³ almost 50% lower than that of R-404A and R-507, a similar cooling capacity, and an improved energy efficiency especially in the most critical temperature conditions.

In addition to Forane® 407A, Arkema is preparing for the future by developing other substitutes to R-404A and R-507 with a much lower GWP³, or even a very low GWP (<150). These various solutions will be presented at a **conference entitled "What's coming next after R-404A" on 14 October at 1.40 pm (Hall 4A, Forum 4).**

For more information on our of Forane® range of refrigerant fluids, please visit our website: www.forane.com

For commercial or technical enquiries (and for information on product availability in your country), please contact us at the following address: info.forane@arkema.com

Arkema's Fluorochemicals business unit produces and markets a range of fluorinated gases under the Forane® brand in the following markets worldwide:

- Refrigerant fluids for refrigeration and air-conditioning, including commercial and industrial refrigeration, construction, automotive and other applications;
- Blowing agents for polymer foams, specifically polyurethane and polystyrene;
- Feedstock for the production of fluoropolymers;
- Degreasing, cleaning and drying solvents;
- Aerosol sprays (mainly for pharmaceutical applications).

Arkema's Fluorochemicals business unit operates four production facilities worldwide, two of them in Europe which produce the most common refrigerants, namely 134a and various blends – R404A, R507A, R407A, R407C, R410A and R427A (retrofit refrigerant for R-22 installations). Through its three R&D centers in Europe, the US and China, Arkema's Fluorochemicals business unit plays an active role in the development of next-generation low-GWP refrigerants.

*A global chemical company and France's leading chemicals producer, **Arkema** is building the future of the chemical industry every day. Deploying a responsible, innovation-based approach, we produce state-of-the-art specialty chemicals that provide customers with practical solutions to such challenges as climate change, access to drinking water, the future of energy, fossil fuel preservation and the need for lighter materials. With operations in more than 40 countries, some 14,000 employees and 10 research centers, Arkema generates annual revenue of €6.1 billion, and holds leadership positions in all its markets with a portfolio of internationally recognized brands.*

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