



Novec™

Brand

Sustainable HFC alternatives sought as F-Gas Regulation impacts multiple industries across West Europe.

The HFC phase-down: what it means for industry.

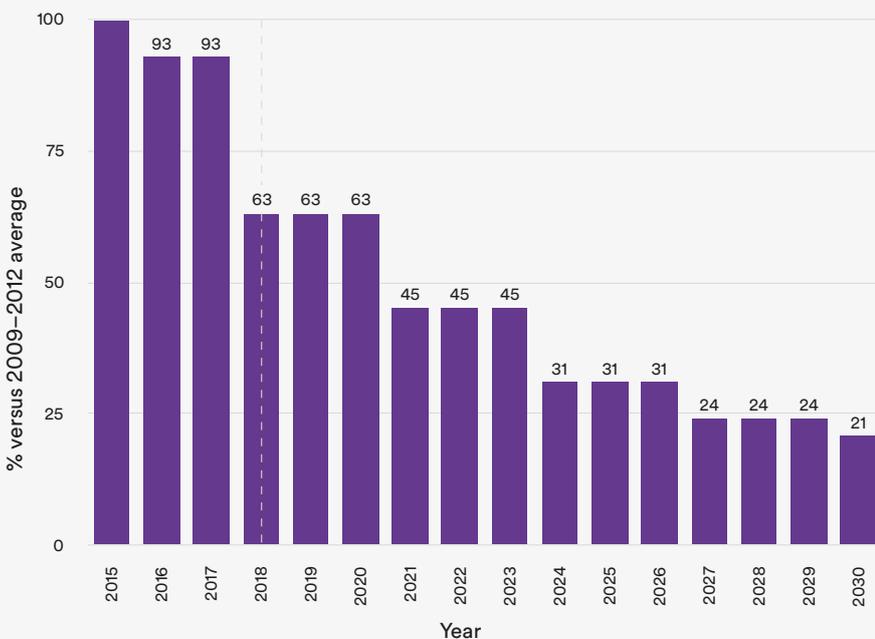
The HFC (Hydrofluorocarbon) phase-down in Europe under the F-Gas Regulation is well underway and is driving users to consider more sustainable alternatives. HFCs are potent greenhouse gases used across multiple industries including air conditioning, refrigeration, and fire protection, in addition to use as dilution, cleaning or deposition solvents.

Developed in the 1990s to replace halons and other ozone-depleting substances, HFCs are not themselves ozone-depleting, but have high global warming potentials (GWPs), which would make their continued growth a contributor to climate change. By 2030 only 21% of the HFC volume placed on the market between 2009 and 2012 will remain; users needing to switch to sustainable alternatives in advance of this date.

HFC alternatives for different applications.

This phase-down is resulting in both a reduction in supply and a subsequent price increase of HFCs. Fortunately, there are alternative solutions emerging in many of the industries affected. For the refrigeration sector, replacement solutions include HFOs (Hydrofluoroolefins), CO₂ (carbon dioxide) and NH₃ (ammonia). Due to the availability of cost effective substitutes, the fire extinguishing industry, previously an ardent user of HFCs, has already largely switched to clean agents like 3M™ Novec™ 1230 Fire Protection Fluid, which has zero ozone depletion potential and low GWP, plus inert gases and aqueous based solutions.

Maximum quantity of HFC to be placed on the market EU Regulation 517/2014, Annex V.



2018 marks a significant step-down for HFC usage in the European Union.

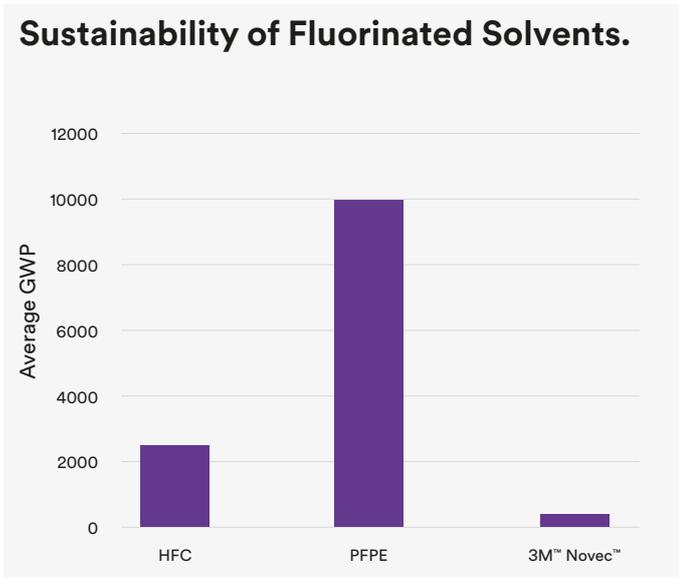
Use of HFCs as specialty solvents for formulated products (e.g. coatings, greases, lubricants, compounds) is another affected application. Here, HFOs are a technical alternative but the price point can be prohibitive. PFPEs (Perfluoropolyethers) are cheaper, but have a high GWP rating (between 5000–10000, depending on molecular weight), and less desirable solvency for many applications.

Looking for HFC alternatives, many customers are landing on HFEs (Hydrofluoroethers) as a credible solution across multiple applications. One proven option are 3M™ Novec™ Engineered Fluids, which combine performance, safety and sustainability. A family of HFEs from 3M, they have zero ODP, low GWP and are not targeted for regulatory phase-down.

‘The F-Gas Regulation is now having a considerable impact on many industries. When considering HFC replacements, customers are having to balance multiple parameters including performance, safety and cost. 3M™ Novec™ Engineered Fluids can often meet that challenge and help customers optimise their own products. In addition to being used as solvents by themselves, they can also enhance the performance of alternative solvents.

For example, users of HFCs as propellants in aerosols have in some cases switched to HFOs, but some HFOs have flammability risks in certain usage conditions. Adding 3M™ Novec™ 7100 Engineered Fluid may solve this and help the propellants pass flammability tests.’

Julie Llado
3M Market Development Manager for Fluids



PFPEs are not currently targeted by the F-Gas Regulation but, considering their greenhouse gas impact, may well be impacted in the future.

Whether used as a stand-alone solvent solution or in combination with other solvents, 3M is happy to provide technical support to customers who are seeking sustainable HFC alternatives across multiple applications.

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