

# FM-200™

## Fire Suppressant

### Montreal Protocol Kigali HFC Amendment... What Does It Mean for Fire Protection?

## Regulations Overview

### Brief Summary

- The 2016 Montreal Protocol amendment agreed upon in Kigali, Rwanda, does not call for a complete phaseout of hydrofluorocarbons (HFCs), but a reduction of 15 to 20% of the baseline from 2036 to 2047, depending on the group. This remaining production extends out indefinitely, a recognition of the importance of HFC use in many critical and/or non-emissive applications, such as fire protection.
- FM-200™ has the largest installed base of any clean agent fire extinguishant, including halon, and the added benefit of a very large reservoir of material available to the fire industry's recyclers. The use and application of this recycled material is not incorporated in the Protocol's global warming potential (GWP)-weighted allocations.
- Chemours anticipates having sufficient GWP allocation throughout the course of the phase down to support the requirements of key applications, including fire protection. This confirms the viability and availability of FM-200™ to protect the world's infrastructures and crucial facilities for decades to come.

### Background

On October 15 2016, in Kigali, 197 parties agreed to amend the Montreal Protocol phasing down the consumption of high GWP HFCs. The Montreal Protocol was originally created to reduce and eliminate the consumption of ozone-depleting substances, including halons, and has been hailed as the most successful international treaty for global environmental action. HFCs were developed largely to replace the ozone-depleting products regulated under the Montreal Protocol. While HFCs do not deplete the ozone,

they contribute to global warming, along with carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, and several other compounds released from human activities.

The amendment creates four different groups of countries, each with different baseline volumes and reduction schedules. Unlike the original Montreal Protocol, the amendment does not call for a complete phaseout of HFCs, but a reduction of 15 to 20% of the baseline from 2036 to 2047, depending on the group. There will be a technical review every four to five years to ensure that this is the appropriate level and timing for the final phase down step-down. This remaining production extends out indefinitely, a recognition of the importance of HFC use in many critical and/or non-emissive applications, such as fire protection.

Like the original Montreal Protocol, this amendment will provide countries an annual combined weighted target volume to meet. For HFCs, however, it will be GWP-weighted and not ozone depletion potential (ODP)-weighted. The amendment does not regulate any specific products, molecules, or applications, such as fire protection, but simply aggregates all HFCs into a total GWP-weighted target volume. The combined GWP-weighted target volume levels for each country will be measured as:

$$\text{Production} + \text{Imports} - \text{Exports} = \text{Consumption}$$

Each country will enact its own regulations in order to meet the target levels assigned by the Protocol. Due to its success with chlorofluorocarbons (CFCs), we anticipate national regulatory structures similar to those used with the original Protocol. In the United States, we expect the U.S. Environmental Protection Agency (EPA) to operate

under the Clean Air Act to allocate GWP volumes to commercial enterprises, consistent with their historical requirements. Those firms will then each manage their mix of products within the GWP allocation to meet specific market demands. With the significant transitions already underway in the air conditioning, refrigeration, and foam expansion market segments, we would anticipate having sufficient GWP allocation throughout the course of the phase down to support the requirements of key applications, such as fire protection, pharmaceutical metered dose inhalers, and aerosol propellants, as well as some of the more challenging refrigeration applications and service requirements.

Unlike most products included in the Montreal Protocol, fire protection products are largely non-emissive. This means most of the extinguishing agent produced to date remains contained within those systems and portable extinguishers installed across the globe to protect critical facilities. The fire protection industry, as a result of the halon phaseout, has excellent experience with using recycled extinguishing material to support ongoing demand. Halon consumption (as defined by the Protocol above: production + imports - exports) ended in the 1990s; yet, the use of halon in fire

protection continues on, more than twenty years after the Montreal Protocol phaseout. Today's ongoing halon requirements are entirely met through the use of recycled material repositioned to support critical applications in commercial aviation and military systems, as well as service and recharge of installed systems. With the largest installed base of any clean agent fire extinguishant, including halon, FM-200™ has the added benefit of a very large reservoir of material available to the fire industry's recyclers. The use and application of this recycled material is not incorporated in the Montreal Protocol GWP-weighted allocations.

While specific regulatory details still need to be established for many of the 197 countries supporting this Montreal Protocol amendment, there are still many factors confirming the viability and availability of FM-200™. These include the active transition programs in air conditioning, refrigeration, and foam blowing agents; the 15-20% ongoing allocation tail; and the large installed bank of potential material for recycle.

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**For more information on FM-200™, please visit [cleanagents.chemours.com](http://cleanagents.chemours.com) or call (800) 473-7790**

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