

DuPont™ FE

CLEAN AGENT FIRE EXTINGUISHANTS WHITE PAPER

Safe, environmentally sustainable fire suppression solutions

There are a number of misconceptions surrounding the environmental impact of hydrofluorocarbons (HFCs) in clean agent fire suppression materials. As this paper will outline, none of the current key global regulatory initiatives place restrictions on the use of HFCs in fire protection due to the low emission levels of these applications.

In fact, the leading HFC clean agent fire suppression materials found in DuPont™ FE clean agent fire extinguishants, provide an environmentally sustainable fire protection solution that is fast, effective and non-ozone depleting. In addition, the use of DuPont Fire Extinguishants clean agent fire suppression products can contribute to LEED® (Leadership in Energy and Environmental Design) credits needed to obtain green building certification, and provide a more cost-effective alternative for new and existing fire suppression applications.

Low emissions of HFCs in fire protection applications

Key regulatory initiatives that shape the discussion of hydrofluorocarbons (HFCs) in clean agent fire suppression materials are the Montreal Protocol, the Kyoto Protocol, the European Union (EU) F-Gas regulation (the common name for the EU “Regulation of the European Parliament and of the Council on Certain Fluorinated Greenhouse Gases”—part of a group of regulations aimed at meeting the EU commitment under the Kyoto Protocol)—and recent actions by the California Air Resources Board (CARB).

Although the U.S. has not ratified the Kyoto Protocol, California is moving forward with climate change legislation. There have been recommendations regarding currently proposed early action measures which included action item 2-10 and the use of HFCs in fire suppression.

The Recommendation Committee agrees with the California Air Resource Board (CARB) that this is not an early action measure. As a result of voluntary initiatives within the fire protection industry, the total amount of HFC emissions attributed to the fire protection sector is below 2.5% of total HFC emissions. This represents less than 2% of global greenhouse gas (GHG) emissions, according to industry estimates.

These emissions are currently at such low levels that fire suppression is treated the same as non-emissive sources—and accordingly, none of the current global regulatory initiatives place restrictions on the use of HFCs in fire protection.

DuPont Fire Extinguishants



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In fact, the British Fire Protection Systems Association (BFPSA), in a summary of the F-Gas regulation for the fire protection industry, stated, "Adherence to the terms of the proposed regulations will ensure that HFCs continue to be recognized as viable, environmentally acceptable agents for use in fixed fire protection systems."¹

Advantages over fluoroketones and inert gases

Alternative clean agents with zero ozone-depleting potential and lower global warming potential have been marketed for total flooding applications. Fluoroketone products along with inert gases are positioned as having a lower environmental impact than HFC-based clean agents.

However, fluoroketone and inert gas products demonstrate several significant disadvantages compared to HFC-based products. First, fluoroketone and inert gas fire suppression systems require 1.5 times more agent, at a cost that is 1.3 times greater than HFCs. Additionally, fluoroketone and inert gas fire suppression systems require higher design pressures in order to force the fluoroketone liquid into a vapor, or because of inherently high inert gas cylinder pressures. Often, these products cannot be used to replace Halon 1301 in existing systems.

By contrast, HFC-based clean agents, such as the technologies used by DuPont Fire Extinguishants, are a popular choice for new installations and provide an easy, cost-efficient method for removing Halon 1301 while potentially maintaining the piping network of an existing system and utilizing the same system pressure. DuPont™ FE clean agent fire extinguishants are also safe for use in normally occupied spaces for Class-A fires (which represent greater than 90% of all commercially protected scenarios), Class-B fires (which occur only in limited access areas) and Class-C electrically energized fires.

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Overall, DuPont™ FE clean agent fire extinguishants offer the most cost-effective fire suppression—with no ozone-depletion and relatively low potential greenhouse gas emissions.

Contributions to LEED® green building credits

The U.S. Green Building Council (USGBC), a nonprofit coalition of building industry leaders, developed the LEED® system to establish a common standard of measurement for environmentally sustainable building practices. DuPont Fire Extinguishants helps contribute to LEED® credits in the Energy & Atmosphere category. The Ozone Protection section requires that projects "do not operate fire suppression systems that contain chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) or halons" in order to merit certification. Specifying DuPont™ FE clean agent fire extinguishants, which have zero ozone depletion potential and are preferred alternatives to halon, fulfills this requirement.

Conclusion

HFCs are well-established as reliable and highly effective clean agent fire extinguishants. They have zero ozone-depleting potential, and voluntary codes of practice within the industry have significantly reduced emissions levels by clearly stating responsible methods of installing, retrofitting, maintaining and servicing fire suppression systems.

Due to the low emissions levels across the industry, none of the key environmental regulatory initiatives restrict the use of HFCs in fire suppression applications. In fact, specifying DuPont™ FE products in new and existing buildings can contribute to LEED® credits for sustainable building design, and are a more versatile and cost-effective solution than fluoroketone-based products and inert gas systems.

1. From Section 11, Closing Comments of the BFPSA review of the F-Gas regulations, titled "Guidance Note – EC Regulation No. 842/2006 on Certain Fluorinated Greenhouse Gases – BFPSA Guidance for the Fire Protection Industry."