



# Opteon™ 1150

## Foam Blowing Agent

## Product Information

### Introduction

In response to growing needs for high performance products with reduced environmental impact, Chemours is commercializing a new blowing agent, Opteon™ 1150, based on hydrofluoroolefin chemistry. Opteon™ 1150 provides an excellent match of physical properties and performance characteristics when compared with HFC-245fa (**Table 1**). Opteon™ 1150 offers a sustainable solution to meet changing regulatory requirements with enhanced performance to replace hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs), and hydrocarbons (HCs).

**Table 1.** Opteon™ 1150 Properties

Ozone Depletion Potential (ODP)	0
Global Warming Potential (GWP) 100 yr ITH	7.0 (AR5)
Atmospheric Lifetime (NOAA)	67 days
Nonflammable (ASTM E681 at 25 °C [77 °F] and 60 °C [140 °F])	Yes
Boiling Point (°C [°F])	7.5 (45.5)
Vapor Thermal Conductivity (mW/mK at 25 °C [77 °F])	11.5
Maximum Incremental Reactivity (g O <sub>3</sub> /g)	0.01

### Versatile Application

Opteon™ 1150 properties and advantages make it well suited for a variety of polyurethane foam applications including:

- Spray
- Adhesives
- Pour in Place
- Appliance
- Reefers
- Integral Skin

### An Effective and Safe Alternative

Opteon™ 1150 foam blowing agent features physical properties that make it an extremely effective

replacement for low boiling HCFCs, HFCs, and HCs in urethane-based foam applications. These properties include a unique boiling point, low vapor thermal conductivity, and low permeation rate. Opteon™ 1150 offers the added benefits of being nonflammable and having a favorable toxicity profile. This provides increased safety in use for both workers and consumers.

### Superior Chemical Stability and Shelf Life

Opteon™ 1150 foam blowing agent chemical stability has been evaluated by Chemours in both B-side formulations and foams aged at elevated temperatures for up to 6 months. These tests have demonstrated the excellent chemical stability of Opteon™ 1150 in polyurethane systems and foams. The high chemical stability of Opteon™ 1150 results in longer B-side formulation shelf lives compared to those employing other HFO and HCFO blowing agents. Opteon™ 1150 is also compatible with a wide range of amine catalysts, therefore, allowing for a high degree of flexibility in formulation reactivity and application customization.

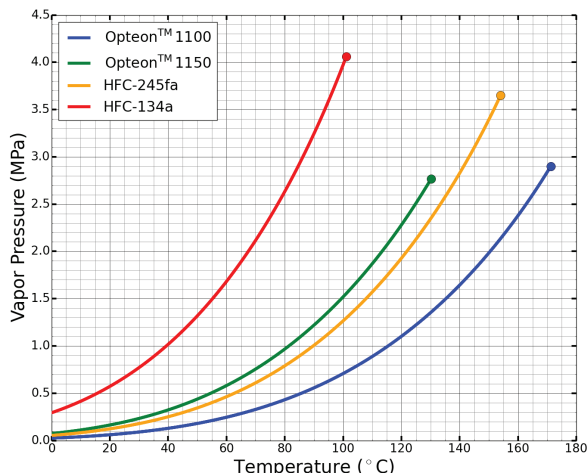
### Opteon™ 1150 Materials Compatibility

Materials compatibility testing for up to 14 days has shown that Opteon™ 1150 foam blowing agent is compatible with the metals, elastomers, and plastics typically used in the storage, handling, and manufacture of foams. No equipment or material of construction changes should be required.

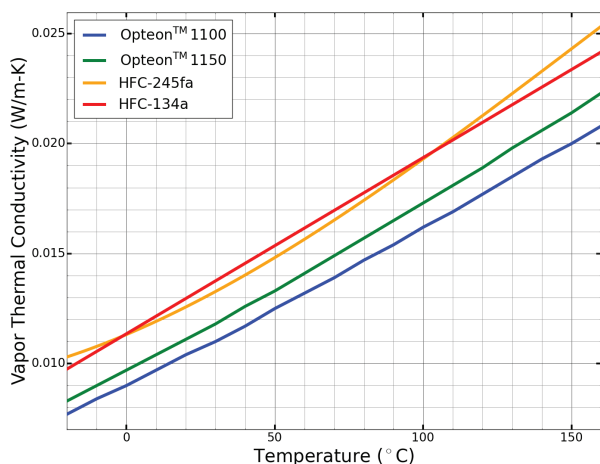
### Physical Properties

The physical properties of Opteon™ 1150 foam blowing agent compare closely to those of HFC-245fa, a major foam blowing agent of choice for polyurethane foams that is currently being phased out globally due to high GWP properties. Two key Opteon™ 1150 properties, vapor pressure and vapor thermal conductivity, are shown in **Figures 1** and **2**. Opteon™ 1150 is also nonflammable as determined by ASTM E681.

**Figure 1.** Vapor Pressure for Opteon™ 1150 Compared to HFC-245fa and Other Foam Blowing Agents



**Figure 2.** Vapor Thermal Conductivity for Opteon™ 1150 Compared to HFC-245fa and Other Foam Blowing Agents



### Opteon™ 1150 Polyol Compatibility

As seen in **Table 2**, Opteon™ 1150 exhibits low to medium solubility in a broad range of polyols. Opteon™ 1150 solubility is generally highest in aliphatic polyether polyols. However, the solubility of Opteon™ 1150 can be enhanced with the use of additives, as seen in **Table 3**

**Table 2.** Opteon™ 1150 Polyol Solubility

Polyol Type	OH Number (mg KOH/g)	Opteon™ 1150 Solubility Limit (Weight %) 21 °C (70 °F)
Polyethers		
Amine	391	<5
Glycerin P0	100-250	5-15
Sucrose/Glycerin	280-520	3-10
Mannich-Base	300-390	2-5
Polyesters	240-307	2-10

**Table 3.** Opteon™ 1150 Polyol Solubility as a Function of Additive Concentration

Trial	Opteon™ 1150 Solubility (%)
Control (No Additive)	3
1% Additive	4
2% Additive	9
3% Additive	13

### Opteon™ 1150: An Excellent Choice for Polyurethane Foams

As a nonflammable blowing agent, Opteon™ 1150 provides a safer, easy to handle foam blowing agent for polyurethane applications. The low vapor thermal conductivity and low permeation of Opteon™ 1150 results in the production of polyurethane foams with improved initial and aged k-factors compared to foams prepared with incumbent HFC, HC, or hydrochlorofluoroolefin blowing agents. Customer field trials with Opteon™ 1150 have demonstrated superior application behavior coupled with improved, long lasting k-factors. Furthermore, when co-blown with a liquid blowing agent, like Opteon™ 1100, Opteon™ 1150 has been shown to provide much better k-factor values at low temperatures without sacrificing k-factor value at higher temperatures.

### Opteon™ 1150 Advantages

- High foaming efficiency, including equal weight substitution in some cases
- Improved energy efficiency versus current commercial products in numerous applications
- Further performance and cost optimization opportunities by blending Opteon™ 1150 with other blowing agents

**For more information on Opteon™ foam blowing agents, visit [opteon.com](http://opteon.com) or call (800) 235-7882.**

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