



Use less Honeywell blowing agent to achieve equivalent properties to foam made with HCFC-141b.

Cost-Effective Replacements for HCFC-141b

Spray Foam Insulation



Replace HCFC-141b in Your Spray Foam Formulation with Confidence

Honeywell, Blowing Agent Technology Leader for 70+ Years

Honeywell has been at the forefront of blowing agent technology for decades, first offering chlorofluorocarbons like CFC-11, followed by HCFC-141b.

Honeywell's Enovate® 245fa (HFC-245fa), part of the third-generation of hydrofluorocarbons (HFCs), has long been considered a standard in the spray foam insulation industry. For over 15 years, it has delivered proven performance globally in spray foam wall and roof applications. It has a global-warming-potential (GWP) of 858.

In 2014, Honeywell introduced Solstice® Liquid Blowing Agent (HFO-1233zd(E)), based on hydrofluoro-olefin (HFO) technology, which retained all the positive attributes of Enovate 245fa, but boasts a GWP of 1, which is 99.9 percent lower than HFCs and equal to carbon dioxide.

Cost-Effective Solutions, Available Today, Offer Equal or Better Performance

Honeywell tested spray foam formulations with various blowing agents as replacements for HCFC-141b. Both of the Honeywell blowing agent solutions, Enovate 245fa and Solstice LBA, provide the following benefits:

- Nonflammable - no flame limits
- Non-ozone-depleting
- Compatible with most materials of construction
- Thermally stable
- Better low temperature thermal performance
- Liquid at room temperature

Review the following blowing agent comparison information to help determine which solution is best for you.

Formulation Detail

Parts	HCFC-141b System	HFC-245fa System
Polyol A	33	40
Polyol B	14	18
Polyol C	—	15
Polyol D	18	—
Water	2	3
Flame Retardant	6.5	6.5
Catalyst A	0.5	0.5
Catalyst B	3.5	3.5
Catalyst C	0.14	0.14
Surfactant	1.5	1.5
Glycerine	4	4
HCFC-141b	18	—
HFC-245fa	—	12

Physical Property Data

	HCFC-141b System	HFC-245fa System
Core Density (kg/m ³)	32.5	32
Dimensional Stability, (% Volume Change at 28 Days)		
-20°C	2.0	1.8
70°C	1.9	2.0
Initial λ (mW/mK) @10°C	20.3	20.9

HFC-245fa vs HCFC-141b

Cost-effective in formulations:

- Near “drop-in” replacement
- Superior blowing efficiency—potential to use less blowing agent for comparable formulation cost
- Good miscibility in polyols
- Nonflammable polyol blends

Cost-effective in the field:

- Reduce blowing agent levels by 30% or more and achieve equivalent lambda
- Use existing equipment
- Wider application window

Use less Enovate 245fa to achieve equivalent properties to foam made with HCFC-141b.

Solstice LBA vs HFCs

Next-Generation Solstice Liquid Blowing Agent Available Today

In addition to Enovate 245fa as a replacement for HCFC-141b, Honeywell offers Solstice LBA, a proven, ultra-low GWP replacement for HFCs or HCFCs. Solstice LBA not only enables superior foam performance, it helps your formulation stay ahead of changing environmental regulations (see sidebar).

Cost-effective in formulations:

- Superior blowing efficiency—potential to use less blowing agent
- Lower molecular weight than HFC-245fa or HFC-365mfc means less blowing agent needed to do the job
- Lower vapor pressure in polyol blends—as much as 60% lower in formulations tested
- Higher miscibility in polyols—as much as 20% higher than HFC-245fa in polyols tested
- Nonflammable polyol blends

Cost-effective in the field:

- Improved lambda—4-6% better than foams made with HFCs
- Improved blowing efficiency—10-15% yield improvement reported in the field
- Use existing equipment
- Equivalent application window

Use equal or less Solstice LBA to achieve the same or better insulation performance than HFCs.

Global Environmental Treaty Mandates Product Phaseout

As defined by the Montreal Protocol, Article V countries are being required to phase out their use of HCFC blowing agents, such as HCFC-141b.

In October 2016, delegates to The Montreal Protocol agreed in Kigali, Rwanda to an historic amendment that adds high-GWP HFCs to the Protocol and establishes schedules for their phase down in developed and developing countries.

Honeywell Technical Services Helps You Develop Optimized Solutions

Our technical service experts, located around the world, provide consulting services that can help you optimize your formulation and recommend materials that can further improve your foam performance.

Worldwide Sales Offices

Latin America/Caribbean

Honeywell Advanced Materials
Av. Santa Fe 94 Torre A Piso 1
ZEDEC Santa Fe
Alvaro Obregón
Ciudad de México
C.P.: 01210
México
Phone: 52-55-5549-0313

Asia-Pacific

Honeywell (China) Co., Ltd.
No 430, Li Bing Road
Zhang Jiang Hi-Tech Park
Pudong New Area,
Shanghai 201203
China
Phone: 86-21-2894-2000
Fax: 86-21-5855-2719

Honeywell Chemicals, Korea
6F Janghakjaedan, B/D 44-1
Bangpo-Dong, Seocho-Ku
Seoul 137040, Korea
Phone: 8-22-595-0204
Fax: 8-22-595-4964

Asia-Pacific (continued)

Honeywell Specialty Chemicals
(Singapore) Pte. Ltd.
17 Changi Business Park Central 1
Honeywell Building
Singapore 486073
Phone: 65-6355-2828
Fax: 65-6783-2947

Southern Europe, Middle East and Africa

Honeywell Fluorine Products Italia Srl
V. Le Milanofiori El
20090 Assago - MI - Italia
Phone: 0039-02-89259601
Fax: 0039-02-57500815

Customer Service

Phone: 1-973-455-6300
Fax: 1-973-455-2763

Although Honeywell International Inc. believes that the information contained herein is accurate and reliable, it is presented without guarantee or responsibility of any kind and does not constitute any representation or warranty of Honeywell International Inc., either expressed or implied. A number of factors may affect the performance of any products used in conjunction with user's materials, such as other raw materials, application, formulation, environmental factors and manufacturing conditions among others, all of which must be taken into account by the user in producing or using the products. The user should not assume that all necessary data for the proper evaluation of these products are contained herein. Information provided herein does not relieve the user from the responsibility of carrying out its own tests and experiments, and the user assumes all risks and liabilities (including, but not limited to, risks relating to results, patent infringement, regulatory compliance and health, safety and environment) related to the use of the products and/or information contained herein.

Solstice and Enovate are registered trademarks of Honeywell International Inc.

Interested in learning more?

To discuss your formulation requirements or to start a trial with a Honeywell blend today, call 1.800.631.8138 or visit: www.honeywell-blowingagents.com



FP BA 1389 | 06/2017 | v9
© 2017 Honeywell International Inc.

Honeywell