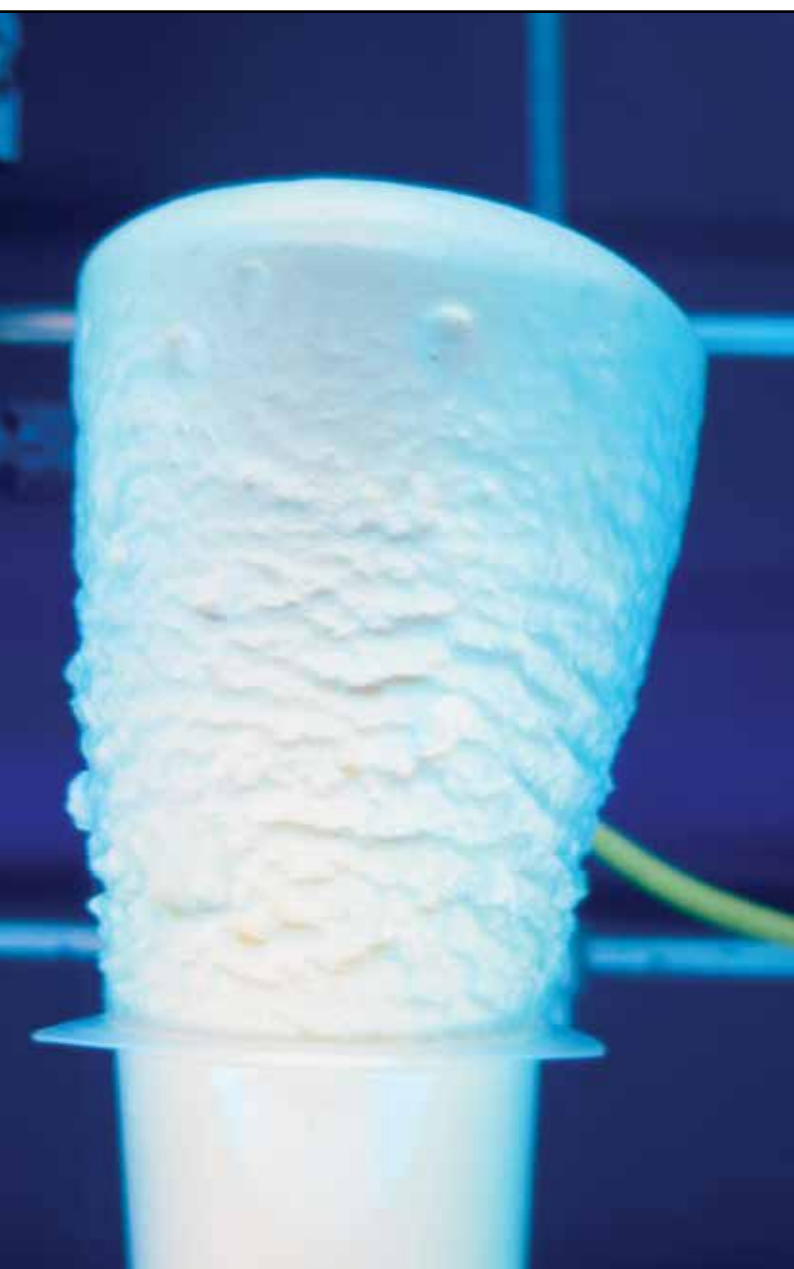


Benefits that cover your needs...

Forane[®] FBA 1233zd Blowing Agent

- **Energy Efficiency**
- **Low Environmental Impact**
- **Safety**
- **Ease of Use**



A COMPREHENSIVE APPROACH TO SAFELY MEET STRICTER GLOBAL ENERGY STANDARDS WITH LOW ENVIRONMENTAL IMPACT.

Thermal Performance

- Improved energy efficiency in household refrigerators and freezers
- High R value per inch for critical cold chain and spray PU foam applications

Low Environmental Impact

- Low Global Warming Potential (GWP of 1*), a 99.9% reduction vs. currently-used HFC's
- Non-ozone depleting
- EPA SNAP approved for most polyurethane foam application
- VOC exempt. 1233zd is not a volatile organic compound

Safety Performance

- Non-Flammable
- Low Vapor Pressure

Ease of Use

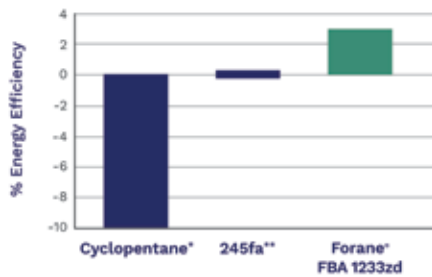
- Use with existing equipment and raw materials
- Easy to use liquid form

*IPCC 5th Assessment Report Published 2014

Benefits That Cover Your Needs... Forane® FBA1233zd Blowing Agent

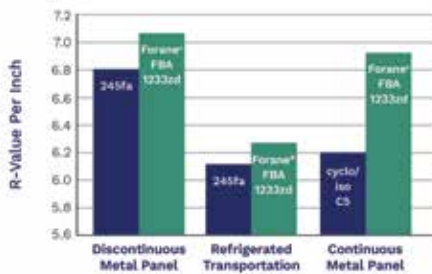
Arkema has granted patents on 1233zd use in Foam and Heat Transfer applications throughout the world.

% Energy Efficiency Improvement in Household Refrigerators



*Cyclopentane vs 245fa from AHAM trials
**Commercial trials, unoptimized foam system with Forane® FBA 1233zd vs. HFC 245fa

R-Value/Inch Cold Chain Applications* Forane® FBA 1233zd blowing agent provided excellent insulation values at low temperatures critical to all cold chain applications.



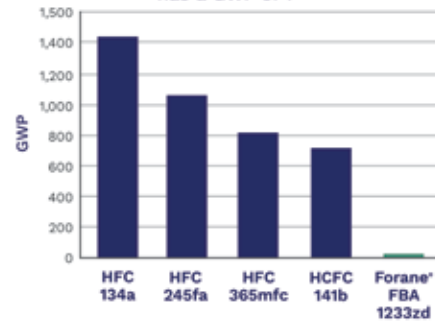
*Tested @ 75°F Mean Test Temperature

R-Value/Inch Spray PUR Foam*



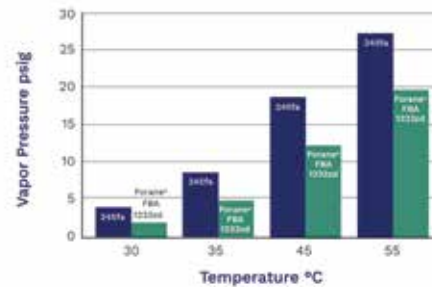
*Tested @ 75°F Mean Test Temperature

Low Environmental Impact Forane® FBA 1233zd blowing agent has a GWP of 1*



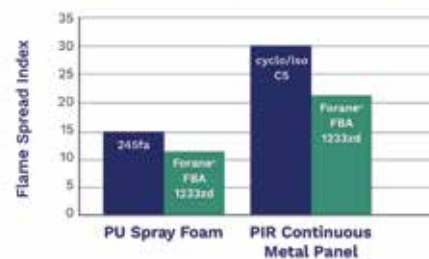
*IPCC 5th Assessment Report WG1, Jan. 2014

Vapor Pressure of Fully Blended B-Side



Fire Performance*

Forane® FBA 1233zd may allow for lower levels of flame retardants.



*Spray Foam tested under ASTM E84 guidelines, Continuous Metal Panel burn tested under controlled lab conditions. These tests should not be used to predict burn behavior under actual fire conditions.

CAS No. 102687-65-0

Customer Service: (800) 245-5858
forane.arkema.com

Forane® is a registered trademark of Arkema.

Headquarters: Arkema France
420, rue d'Estienne d'Orves
92705 Colombes Cedex – France
T +33 (0) 1 49 00 80 80
F +33 (0) 1 49 00 83 96
arkema.com

Arkema Inc.
900 First Avenue
King of Prussia, PA 19406
T +1 610 205 7000
F +1 610 205 7497
arkema.com

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