

Treading more lightly on the planet with Solstice[®] LBA

“With the phasing out of HFC-134a, we looked at a number of blowing agent options to deliver the quality of shoe soles our customers have come to expect from us and Solstice LBA offered clear benefits over water-blown systems.”

*Alexander Hill, Owner
Alexander Hill Sohlenfabrikation*

Case Study



Blowing agents are a critical component in the polyurethane foam used to manufacture shoe soles, but the ban of HFC-based blowing agents as of 2023 under the F-Gas Regulation along with an interim quota reduction scheme means companies are actively searching for alternatives in order to assure supply and avoid increasing costs.

These twin drivers prompted one such manufacturer, Alexander Hill Sohlenfabrikation, based in Pirmasens, Germany, to search for an alternative to HFC-134a which would be capable of delivering the required product quality while satisfying the eco-credentials of the business.

So in 2017, a research and test program was launched with the company's material supplier to identify a blowing agent that would enable Alexander Hill to plan for an HFC-free future.

The Needs

- Identify and test alternative blowing agents to HFC-134a, with a particular focus on quality, cost effectiveness and environmental impact
- Satisfy the expectation of the company's established customer base for high quality PU-soles, with good 'skin' and light weight
- Enhance the environmental credentials of the company by specifying a blowing agent with ultra-low global warming potential and is non-ozone depleting



The Solution

Blowing agents cause polyurethane foam to expand during the production process of shoe soles, but manufacturers need to take account of a number of factors including cost, compatibility with raw materials and processability, along with the effect on quality, notably the finish (skin), density, durability and cushioning properties.

Over a six month period Alexander Hill looked at various alternatives, including water-blown options, before selecting Solstice® LBA, Honeywell's fourth generation blowing agent, a hydrofluoroolefin (HFO).

The Benefits

Solstice LBA:

- Enabled AH Sohlen to transition smoothly without causing disruptions in production
- Allowed AH Sohlen to manufacture best-in-class products using water-blown PU systems, resulting in light and flexible rubber like soles with a density of between 0.5-0.6 g/cm³
- Increased the foam expansion rate, offering productivity gains over the predecessor technology
- Met the environmental goals by using a blowing agent with an ultra-low global warming potential (GWP) of 1
- Non-ozone depleting compared to a global warming potential (GWP) of 1430 for HFC-134a
- Is safe to store and use by virtue of its non-flammability
- Is F-Gas Regulation compliant and avoids the impact on raw material costs and availability due to the quota system applicable to HFC-134a



The Solstice LBA Advantage

Honeywell Solstice Liquid Blowing Agent is the latest advance in blowing agent technology. It is an ultra-low global warming potential (GWP), non-flammable, energy-efficient blowing agent ideally suited to PU foaming for insulation applications.

The energy efficiency benefits of Solstice LBA, combined with its low environmental impact and non-flammability, make it the ideal choice as a replacement for hydrocarbons, HFCs and HCFCs for use as a polyurethane foam blowing agent.

With a global warming potential (GWP) equal to 1, which is 99.9% lower than currently utilized HFCs, its widespread adoption could save about 60 million metric tons per year of CO₂ equivalent, comparable to eliminating carbon dioxide emissions from more than 11.8 million cars every year*.

* Source: GHG Equivalencies Calculator: <http://www.epa.gov/cleanenergy/energyresources/calculator.html>



Solstice Liquid Blowing Agent (LBA)

For more information

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FPF-021-2018-06-EN | 3001 BA EU A4 v2 June 2018

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