



Sustainable foaming solutions for the FOOTWEAR INDUSTRY



Alve-One® foaming agent solutions, bringing more value for your footwear foamed applications



Matching the technical performances of the market reference with a cost-competitive solution



Enhancing sustainability performance for footwear products with a compliant and safe foaming agent



Simplifying logistics through a safe- to-use foaming agent, delivering foams containing no odor

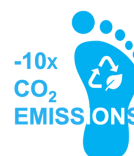


Improving competitiveness by optimizing formulations or manufacture processes (if desired)

Alve-One® characteristics

| | | | |
|-----------------------------|--|-------------------------------------|--|
| Chemical composition | Mineral based, endothermic decomposition | Granulometry range | Adapted to your process: From 5 µm to 50 µm |
| Physical form | Powder, Masterbatch * | Processing temperature range | Adapted to your process: From 140° to 210 °C |
| Resins | Elastomers, linear & crosslinked Polyolefins, rigid & flexible PVC, Rubber | Packaging | Supporting your needs |

*Available on demand depending on your region



Pedro Pinto

Business Development Manager

pedro.pinto@solvay.com

www.alve-one.com

Jorge Kabbabe

Technical Development Manager

jorge.kabbabe@solvay.com

www.alve-one.com

FOAMS FOR A SUSTAINABLE FUTURE

Alve-One® foaming agent solutions are based exclusively on [safe raw materials combinations](#), 100% compliant with REACH regulations, and deliver efficient foaming results without compromising the safety of the environment

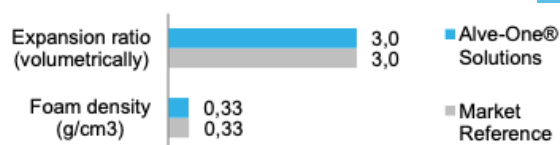


Fig 1. Characteristics comparison of two elastomeric foams produced with ADCA & Alve-One® solutions

✓ Under the same process conditions, Alve-One® solutions are at least as efficient as the market reference for density reduction & expansion ratio.

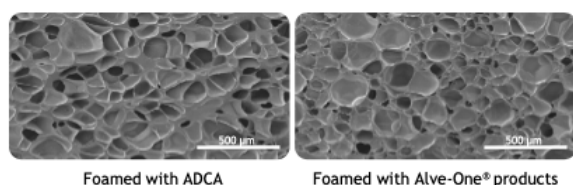


Fig 2. Cross-linked XLPO foam structures

✓ Under the same processing conditions range, the cellular structure of both foams is comparable with similar average cell size

*Images obtained with SEM (Scanning electron Microscopy)

ODOUR AND AMMONIA-FREE FOAM

When foamed with Alve-One® solutions, car parts [do not emit any strong gas smell \(ammonia\)](#) and contain [negligible quantities of VOC](#) (volatile organic compounds). These foamed products can thus be [used or sold right after their production](#), reducing storing times and total cost of operations.

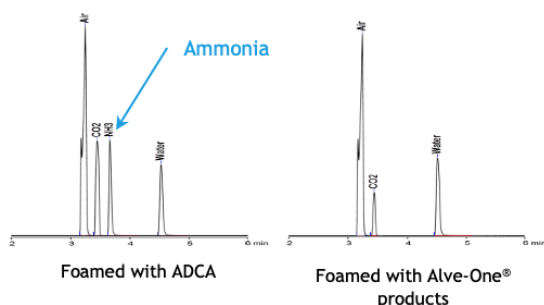


Fig 3. Gas emitted by crosslinked EVA foams when manufactured using Alve-One® products and ADCA

✓ Foams manufactured with Alve-One® blowing agent solutions do not emit ammonia.

*Chromatography obtained with a GC-MS



USING ALVE-ONE® SOLUTIONS TO FURTHER OPTIMIZE CUSTOMERS' FORMULATIONS AND PRODUCTION PROCESSES

While Alve-One® solutions can replace the foaming agent used in customers' formulation without adaptation, the **formulation** can also be **optimized** to achieve **additional benefits**.

| | Temp. (°C) | Time (min) | Foam density (g/cm ³) |
|------------------------------|------------|------------|-----------------------------------|
| NOT OPTIMIZED FORMULATION | 180* | 7* | 0.24 |
| OPTIMIZED FORMULATION | 175 | 5 | 0.21 |

*Reference process conditions for Azodicarbonamide

Fig 4. Comparison of crosslinked EVA foam formulations foamed with Alve-One® products in customer's mold

- ✓ Alve-One® products do not require kickers to be activated meaning less raw materials are needed while often also achieving improved density reduction & expansion ratio (Fig 5.).

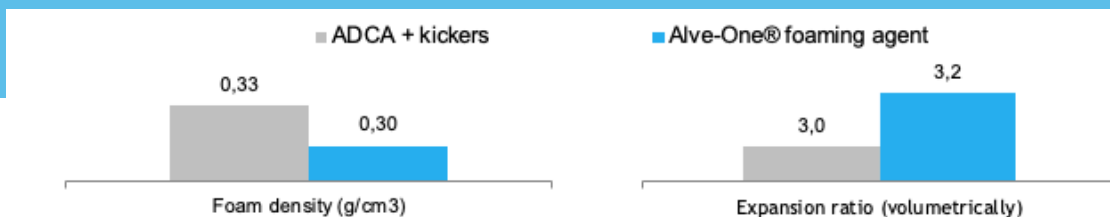


Fig 5. Crosslinked EVA formulation foamed using ADCA with kickers versus Alve-One® product without kickers.

- ✓ With a more efficient kinetic process than the market reference's, Alve- One® solutions can reduce cycle times, leading to potential savings and higher outputs.

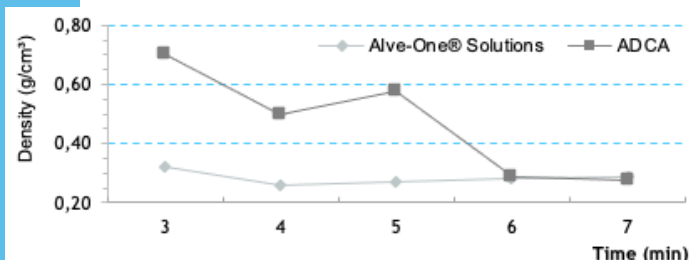


Fig 6. Evolution of crosslinked EVA foams' density during the manufacturing process when using ADCA and Alve-One® products.



Pedro Pinto

Business Development Manager
Alve-One® Solutions for Foamed Applications
T: +32 2 264 3405
pedro.pinto@solvay.com
www.alve-one.com

Jorge Kabbabe

Technical Development Manager
Alve-One® Solutions for Foamed Applications
T: +33 1 40 75 84 52
jorge.kabbabe@solvay.com
www.alve-one.com

www.solvay.com

www.alve-one.com



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