



SOLVAY

asking more from chemistry®



Sustainable Foaming Solutions for the
FOOTWEAR INDUSTRY

ALVE-ONE® SOLUTIONS CHARACTERISTICS

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

LIGHTWEIGHT WITHOUT COMPROMISING ON SUSTAINABILITY

Alve-One® foaming agent solutions are based exclusively on **safe raw materials combinations**, 100% compliant with REACH regulations, and deliver efficient foaming results:

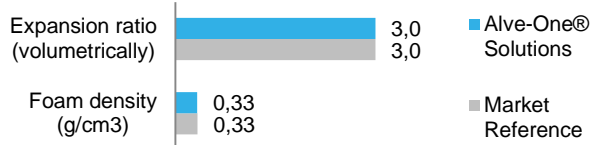
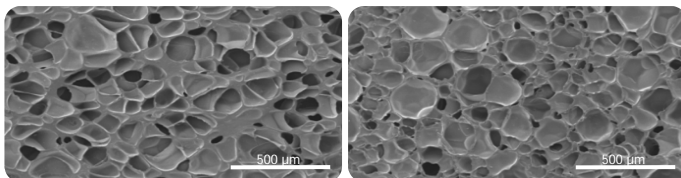


Fig 2. Characteristics comparison of two crosslinked EVA foams formed with ADCA & Alve-One® solutions

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



Foamed with ADCA Foamed with Alve-One® products

Fig 3. Cross-linked EVA foam structures

✓ Under the same process conditions, the **cellular structure of both foams is comparable with similar average cell size**.

Images obtained with SEM (Scanning electron Microscopy)

A READY-TO-USE FOAM

When foamed with Alve-One® solutions, products **do not emit any pungent 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**.

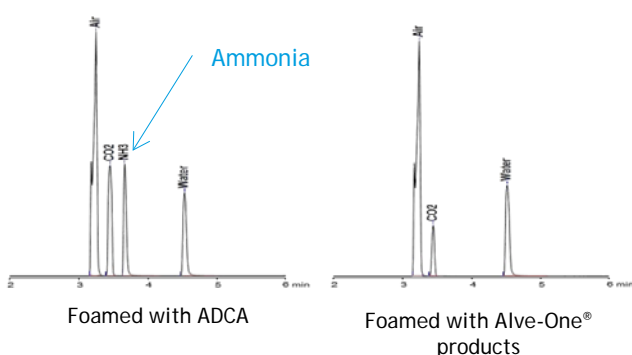


Fig 4. Gas emitted by crosslinked EVA foams when manufactured using Alve-One® products and ADCA

✓ 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 5. 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 6.).

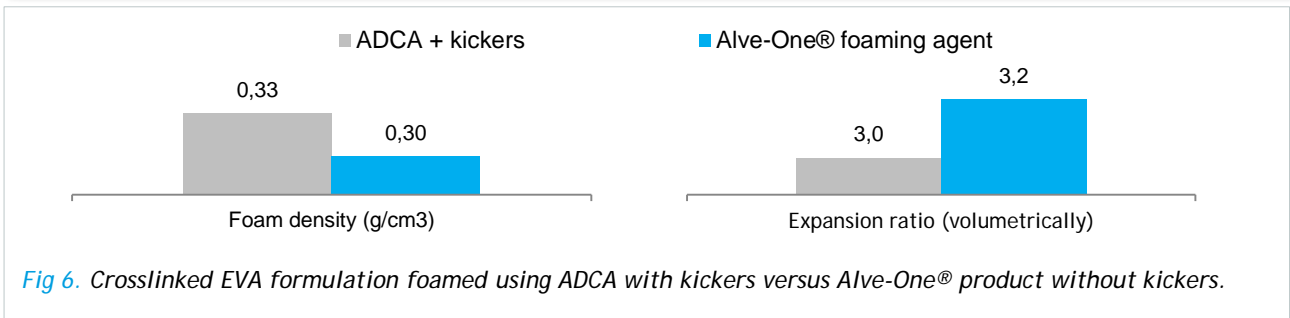


Fig 6. Crosslinked EVA formulation foamed using ADCA with kickers versus Alve-One® product without kickers.

✓ 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.

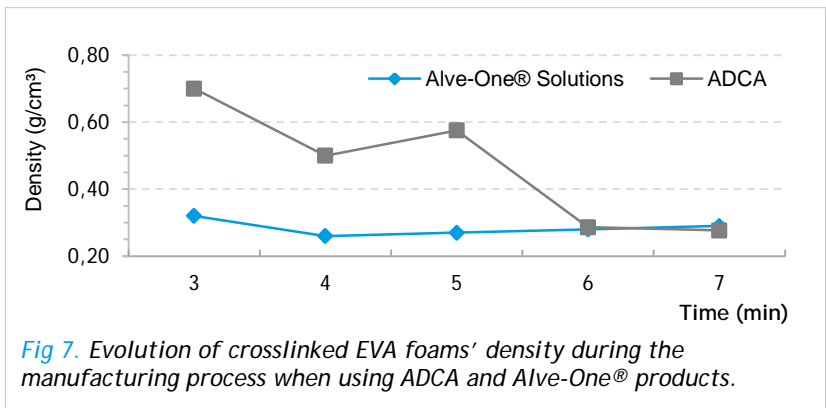


Fig 7. Evolution of crosslinked EVA foams' density during the manufacturing process when using ADCA and Alve-One® products.



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)



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