



## » PRODUCT BULLETIN

# ColorMatrix™ Excelite™ Foaming Agents

## High performance liquid foaming additives for extrusion applications

### PRODUCT DESCRIPTION

Excelite™ high performance liquid foaming additives are specifically designed for vinyl, polyethylene and polystyrene foaming applications. Formulations typically feature a combination of exothermic and endothermic agents which, when under thermal decomposition, cause gas to evolve forming a cellular structure in the polymer matrix. Employing Excelite additives can help achieve density reductions, smoother surface finish, linear consistency and a tighter cell structure.

Our custom ColorMatrix™ dosing equipment makes Excelite additives suitable for use on all types of extruders (single and twin screw). Through accurate and consistent metering, Excelite additives enable greater control of production tolerances and improve linear consistency.

### HOW IT WORKS

Excelite additives typically contain 70%wt of active chemical foaming agent (CFA), dispersed in a liquid carrier, thus promoting greater product efficiency. Excelite additives are not subject to significant thermal exposure in the manufacturing process, so the formulations are optimized for decomposition during the customer process.

The carrier system is selected for optimal compatibility with the polymer network and the use of dispersants helps the CFA particles efficiently mix and disperse within the extrusion process. This provides enhanced cell structure and consistent foaming.

The combination of carrier selection and high active loading permits targeting of greater density reduction. With less impact on the manufacturing process, more CFA can effectively be introduced.

### TARGET APPLICATIONS

Excelite additives are available for numerous foaming applications, such as profiles, siding, decking, molding and pipe. The technology is highly suitable for printable sheet, where smooth surface finish and low density is a requirement. Specific grades are available to meet food contact requirements and also as nucleating additives for physical foaming agents.



## EXCELITE - COMMON FORMULATIONS

PRODUCTS	APPLICATIONS	DESCRIPTION/BENEFITS
<b>EXCELITE PF-1</b>	PVC sheet for digital print or trimboard; profiles & decking	Fine cell structure able to target low density; improves consistency and control over foaming process
<b>FOAM ADDITIVE-54</b>	PVC sheet for digital print or trimboard; profiles & decking	Finer cell structure than PF-1 promotes ultra smooth surface finish; improves consistency and control over foaming process
<b>PF-1E &amp; FA-54E ADDITIVES</b>	PVC sheet for digital print or trimboard; profiles & decking	Enhanced run time formulation reduces die lip build-up in PVC processes, leading to longer production run times
<b>FOAM ADDITIVE-33</b>	CaZn formulations for PVC sheet, profile, or trimboard	Promotes finer cell structure, higher cell density, and surface quality in CaZn PVC dryblends
<b>FOAM ADDITIVE-77</b>	HDPE sheet & plastic lumber	Industry-leading cell structure and cell density; achieves lower density without sacrificing quality; self-nucleating and able to increase extruder output rates up to 15%
<b>FOAM ADDITIVE-85</b>	Endothermic foam or nucleating additive for olefin and styrene polymers; plastic lumber, sheet applications and food packaging products	Can be used as a CFA or nucleating additive; nucleating capabilities promote fine cell structure and high cell density; achieves greater density reductions with more consistency and control
<b>FOAM ADDITIVE-37</b>	HDPE sheet & plastic lumber	Good cell structure and cell density in HDPE lumber; greater consistency and control over foaming process

## USAGE RATES

Typically Excelite additives are dosed between 0.2% and 1.2% depending on the polymer, application and the density requirement. Custom products are designed to address the specific needs of customer processes.

## EXCELITE CAN IMPROVE PRODUCTION EFFICIENCY

- The process operator has full control of density
- Minimizes product rejection due to unnecessarily high/low density
- Production should consistently target the bottom of the density specification
- Enables control over the reintroduction of regrind or reprocessed materials as a feedstock
- Enables the consistent foaming of products using higher percentages of regrind
- Carrier selection can promote longer run times, enabling increased line productivity through less plate-out or material build-up on die lips

## EXCELITE CAN IMPROVE SURFACE FINISH

Excelite additives create a fine, consistent cell structure within the extruded polymer, which determine the surface roughness. Consistency of surface both chemically and physically leads to more even wetting of the ink which ensures good dot definition—the key to higher quality digital print images.

## EXCELITE CAN ENABLE ENHANCED PRODUCTION QUALITY

Avient's ColorMatrix metering equipment is highly accurate and delivers Excelite additives directly into the extruder/molder feed throat. This enables a more continuous distribution of the foaming additive into the polymer matrix, improving uniformity of cell structure and reproducibility of density. This process allows greater control over production tolerances, thus reducing scrap rates, improving quality, and optimizing process capacity.

## EXCELITE VS POWDER



- Enables a greater level of density control, through consistent distribution in the polymer
- Simplifies and optimizes resin compounding capabilities (PVC dry blends)
- Enables greater control over foaming and expands processing window when re-introducing regrind
- Clean and highly accurate dosing process, with fewer of the health and safety concerns that can become apparent with powder CFAs

## EXCELITE VS PELLET

- Being significantly more concentrated, Excelite additive enables lower total cost to foam
- Can achieve lower density, less carrier influence
- Finer and tighter cell structure through better additive distribution
- Improved linear consistency of cell structure as ColorMatrix pumps continually meter output, giving greater stability over material dosing
- Improved plant working capital as lower let down ratios means less material is consumed and reduces inventory holdings



## TECHNICAL SUPPORT

- Avient has a market leading service team which understands foaming processes, we assist customers to deliver performance and production efficiencies with Excelite™ technology
- Please contact your local Avient representative for additional information on our line of foaming additives



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