

Challenge Accepted.

A SOLUTION FOR TAKING CONTROL



» CASE STUDY: EXCELITE™ CHEMICAL FOAMING ADDITIVES



HELPING PVC PROCESSORS OPTIMIZE PERFORMANCE, CONTROL AND EFFICIENCY IN THE EXTRUSION PROCESS

THE CHALLENGE

PVC sheet and profile extrusion processors were looking for ways to hit lower density targets while maintaining a high-quality cell structure. Typically, density and cell structure are viable to each other. The lower the density that processors used, the more they conceded a high-quality cell structure.

Density is measured in grams per cubic centimeters (g/cc) with every 0.01 g/cc reduction resulting in less material used. A decrease in density of just 0.01–0.02 g/cc can yield 4% annual savings in material consumption, while generating a 4% increase in extruder productivity. This small drop can be a game-changer in efficiencies for a typical PVC extruder.



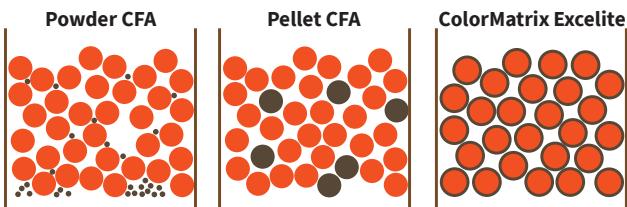
Typical CFA
Density 0.52 g/cc



Excelite CFA
Density 0.50 g/cc

THE SOLUTION

The Avient technical team leveraged its expertise in liquid colorants and chemical additives to scientifically engineer its line of ColorMatrix™ Excelite™ chemical foaming additives (CFAs) for PVC processing. The formulations were tailored to unique dryblend and extrusion processes to improve the dispersion, performance, and efficacy of the active CFA ingredients. For example, in several instances processors ran Excelite E-versions, which allowed longer production run times and less material plate-out on extruder die lips.



THE IMPACT

As tests and trials were conducted, it was shown that the Excelite dispersion interacted more intimately and consistently with PVC resin, essentially becoming part of the PVC resin matrix. When coupled with customized metering equipment from Avient, processors were able to achieve uniform distribution of active CFA content. The result was finer cell structure with a higher cell density, improved linear consistency and greater control over target densities. This gave processors control over gauge, thickness and weight throughout the entire extruded part, all leading to improved performance and quality.

To illustrate, in the same PVC dryblend (pictured below), Excelite significantly reduced density with little to no effect on cell quality. The result was lower production density with fewer voids in the extruded sheet or profile, leading to higher quality finished goods and a reduction in scrap rates. This ultimately resulted in improved overall plant productivity with strong density management, control over material consumption and increased extruder productivity. For these processors Excelite was established as the lowest total cost-to-manufacture solution.

