

Specialty Silicones Manufacturer Optimizes Processing & Product Quality With Pope

COMPANY PROFILE

AB Specialty Silicones is a US Manufacturer and Worldwide Distributor of specialty silicone chemicals. They are well known for their customer focus along with providing very high-quality products, service and technical expertise in silicone materials. AB's core brand Andisil®, encompasses a broad product catalog serving many industries including personal care, dental & medical, specialty chemical manufacturing, electronic encapsulation, adhesives & sealants, coatings, mold making, gypsum, mineral & fiber treatment, pulp manufacturing, roof coatings and others. One of several factors in common with the highest quality polymers, including silicones, is having a very low amount of residual volatiles.

CHALLENGES

In the early stages of product development, AB Specialty Silicones reached out to Pope Scientific to explore the best methods for producing low volatile silicone pre-polymers and polymers. Specifically, AB needed to respond to the demand for volatile-free silicone polymers for encapsulation in the LED industry. This particular application brought unique challenges. Silicones can be heat sensitive, leading to degradation including color change, (prohibited for LED applications). Typical batch mode boiling vessel methods for removal of cyclics and monomers were causing such degradation due to the long residence heating time of many hours.

SOLUTIONS

After Pope spent some time learning about the specifics of the application and its challenges, they collaborated with AB to develop the best method with strategies for optimizing the end product through lab trials and pilot plant process development. By utilizing short-path molecular distillation with Pope's Wiped-Film Still technology, the potential for final product degradation and discoloration is greatly reduced or eliminated through efficient equipment and design process, high vacuum, and decreasing the heat exposure time to a matter of seconds.

Once the processing techniques were finalized, Pope began production toll processing campaigns of the material in their Saukville, WI facility. Bill Marman, Pope's Tolling Supervisor was essential in aiding AB with process development and support throughout this initial project, as well as with future projects. "The original tolling run produced around 40 drums of the specialty low volatile silicone polymers," says Mac Penman, AB Specialty Silicones' General Manager.



AB Specialty Silicones Plant, Waukegan, IL



Pope Toll Processing & Pilot Facility, Saukville, WI

OUTCOME

In 2009, with in-depth collaboration, engineering and processing experience, Pope built AB a 9” Wiped-Film Distillation system to run in-house at their Waukegan, IL facility. Pope helped AB commission the system and was there throughout the installation, performing final equipment testing, process startup and training. They were able to duplicate the processing in-house that they previously had to contract out. “There has always been an open dialogue with Pope. From pricing, to engineering and sales, we’ve gotten great support. We have a great relationship,” says Penman. The new equipment provided AB the ability to increase production of specialty chemicals, often times with complex distillation requirements, for their customers.

Processing has been further optimized through enhancements such as additional control instrumentation and degassing componentry. In 2019, AB added a new Pope 12” Wiped-Film Distillation system to their facility. “The new equipment triples our capacity for producing low volatility materials. Production of high solids, low residual materials are important to meet the growing needs for high purity silicones in specialty electronic applications,” AB Specialty Silicones noted. In 2023, AB expanded again with a custom 20” Wiped-Film Distillation System. All of the product lines AB manufactures – vinyl, hydride, phenyl, and fluoro-functional silicones can be processed in the new equipment. Overall, through their partnership with Pope Scientific – including process expertise, toll processing, and equipment, AB has achieved the competitive advantage in producing high value materials and increased production capabilities.

ABOUT POPE

Pope Scientific Inc. has been at the forefront of manufacturing chemical processing equipment, engineered systems and laboratory apparatus for science and industry. Internationally known, Pope provides specialized technical expertise in the design and manufacturing of chemical processing equipment. We are solution driven – Our long history demonstrates how clients have brought routine and complex separation/purification/mixing applications to us to make their solutions a reality. Located north of Milwaukee, Wisconsin, in Saukville, Pope has 64,000 square foot manufacturing facility which houses our engineering, construction areas, technical and testing labs, glassblowing facility, shipping /storage and a fully equipped toll processing area.

Pope’s wiped film (short-path) molecular stills and evaporators, fractional column batch and continuous mode distillation systems, hybrid still systems, stainless steel pressure vessels, process vessel systems including reactors, mixing vessels and turnkey liquid processing systems, Nutsche filter-dryers, and cryogenic dewar flasks can all be found throughout the world in a wide array of production processing industries, pilot plants, laboratories, universities and institutes.



Pope 9” Wiped-Film Polymer Devolatilization System



Pope 12”, 2-Stage Wiped-Film Polymer Devolatilization System



Pope 20”, 2-Stage Wiped-Film Polymer Devolatilization System