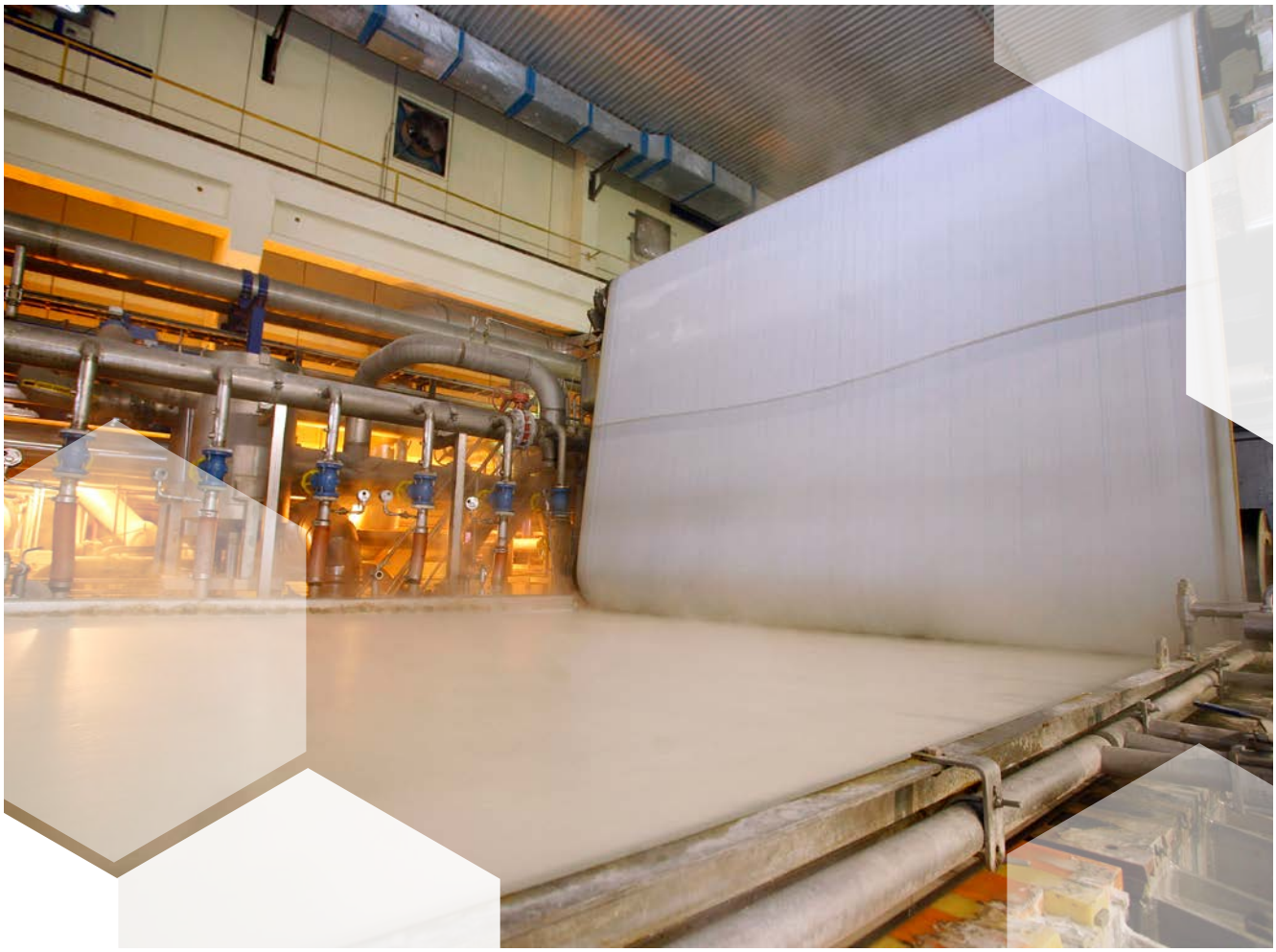
MICROSOL℠ ADVANCED RETENTION AND DRAINAGE SOLUTIONS

No Compromises: The Best Retention. The Best Drainage. The Best Formation.



Retention, drainage and formation are critical to good papermaking, but they are sometimes in opposition. Traditional chemical programs almost always force the papermaker to compromise, only able to fully optimize one or two of the variables while sacrificing performance on the others. Now, with the introduction of MicroSol℠, Solenis is changing the game. This revolutionary program combines a patented, structured polymer with a unique structured colloidal silica to provide graphic and specialty paper producers a no-compromise solution for maximizing retention and drainage without sacrificing formation. As a result, we create a wider operating window that increases flexibility, improves machine efficiency and reduces operating costs.

SOLENIS™
Strong bonds. Trusted solutions.

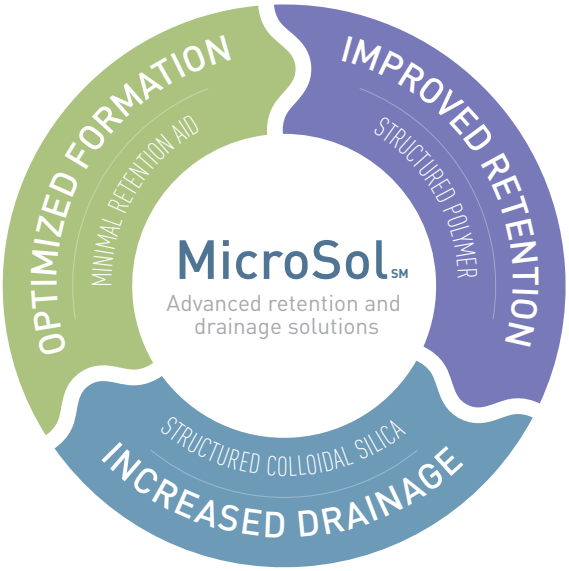
One Solution. Control of Three Papermaking Variables.

Optimizing retention, drainage, and formation (RDF) is a balancing act for papermakers. Each of these variables is equally important: improved drainage can speed up the machine, resulting in increased production. It can also allow for more water to be added to the headbox to help generate better formation. Improved retention can lead to lower wet-end chemical use, lower sewer losses, and improved strength. And formation is directly related to sheet integrity, strength, and overall aesthetics. However, standard retention aid polymers are "anti-formation" aids, and standard silica products can help drainage but do very little for retention. It's an ongoing challenge to optimize all three variables without sacrificing at least one.

To overcome these challenges, Solenis has introduced MicroSol℠ advanced retention and drainage solutions — a revolutionary combination of technologies that dramatically widens the papermaking operating window, enabling graphic and specialty paper producers to optimize RDF and, most importantly, stay competitive through increased productivity and superior product offerings.

Sweating the Science.

Solenis researchers and applications specialists have been studying the science of RDF for decades. In fact, we significantly changed the retention and drainage landscape when we introduced PerForm™ SP advanced retention and drainage aids in the early 2000s. PerForm™ SP molecules are highly anionic, three-dimensional structures that interact readily with cationic sites on fibers, fines and fillers in the forming paper. The SP structured polymer provides a high level of ash retention distributed evenly to increase strength retention and formation. Early generations of PerForm™ SP set the bar for both first pass and first-pass ash retention. Now, with the introduction of the fourth generation of PerForm SP, Solenis has raised the bar even higher, and SP continues to be the best ash retainer on the market. Period.



To compliment this technology, Solenis also developed a portfolio of colloidal silicas, marketed under the brand PerForm MP, that offer a unique microstructure. The PerForm™ MP colloidal silica portfolio was developed with attention to its particle size, surface area, structure, surface modification, and solids content to ensure optimal performance in today's paper machine processes. PerForm™ MP structured silica adds to the retention initiated by the SP molecules yet promotes excellent drainage. Taken together, PerForm™ SP and PerForm™ MP offer a unique one-two punch that, finally, gives papermakers the ability to maximize retention and drainage without sacrificing formation.

Part of a Complete RDF Program

With MicroSol℠, graphic and specialty paper producers now have a total solution for superior retention, drainage and formation. The end result is a controllable program with a linear dosage response that offers papermakers an improved operating window with ultimate flexibility. The table below describes the best practices of a MicroSol℠ RDF program.

COMPONENT*	FEED POINT	DOSAGE (#/TON)	COMMENTS
PerForm™ SP Structured Polymer	Post Screen	0.75–1.25	Minimal standard retention aid polymer needed for powerful ash retention and fully controllable drainage. Flexibility to use either PerForm™ SP or MP individually or both together for optimal performance. Depends on customer needs and process.
PerForm™ MP Structured Colloidal Silica	Post Screen	0.4–1.0	
Alum or PAC (polyaluminum chloride)	Thin Stock	2.0–4.0	May or may not be needed; if necessary, typically use mill alum.
Cationic or Anionic Polyacrylamide	Pre or Post Screen	0.4–0.8	Significantly reduced dosage compared to competitive microparticle programs. Solenis offers full range of products — dry, emulsion, aqueous-dispersed polymers (ADP) — with numerous molecular weights and charge densities, including high charged, FDA-approved cationic.

*Optimal program for each machine determined by lab testing. Solenis has no limitations on how MicroSol programs are applied due to recent acquistion of Telioform patents.

Advanced Application Technology

For optimum results, mills that adopt a MicroSol℠ RDF program should also consider installing PerForm™ V-Max injection nozzles, which were developed to improve polymer and water efficiencies for paper manufacturing operations that are unable to use freshwater for high-volume, high-velocity mixing. Designed by Solenis engineers and incorporating a deep understanding of paper machine system dynamics and water and polymer chemistries, V-Max maximizes injection velocity to ensure proper distribution of the chemistry. The V-Max 1000 is designed for PerForm™ SP and other polymeric products and enables the papermaker to use white water for post dilution. The V-Max S is designed specifically for structured colloidal silica and while freshwater is still used for dilution, the V-Max S minimizes the volume of water needed for optimal injection velocity.

The Best Products Supported by the Best People

Technologies like MicroSol℠ are born in Solenis labs, but they are always backed by hands-on, in-mill experience. Solenis sales and service professionals serve as the key bridge between research and real-world papermaking. They work side-by-side with mill staff and machine operators, becoming familiar with your operation and applying this knowledge to design a MicroSol℠ program built around the unique operational characteristics of your equipment and processes.

These customer-facing professionals are, in turn, supported by a dedicated team of applications specialists who are

knowledgeable in papermaking unit operations, wet-end chemistry, automation, and water treatment. These experts are especially adept at troubleshooting problems and specifying best practices to ensure repeatable results.

Working together and using the MicroSol℠ platform, we can help you design and build an advanced RDF program that offers best-in-class drainage and dewatering without compromising retention or formation. This allows for greater flexibility, a wider operating window and, finally, an uncompromised ability to optimize on-machine efficiency, quality and speed.

More Information

For technical advice and insights on how the MicroSol℠ technology can help you build your competitive edge, talk to a Solenis expert today.

Solenis

Strong Bonds. Trusted Solutions.

Solenis supplies specialty chemicals for water-intensive industries, including the pulp and paper, oil and gas, chemical processing, mining, biorefining and power markets. Whether you want to increase production, develop new products, reduce costs or simply do more with less, we can help. With our innovative technologies, passionate people and unrivaled experience, Solenis is ready to deliver the solutions you need.

To learn more, contact your technical sales representative or visit us online.

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