

KYMENE™ 1500LV WET-STRENGTH RESIN

World-class Wet Strength. Moving toward cleaner, more sustainable products.



Solenis redefined wet strength when it introduced Kymene™ in the 1950s. Today, we continue to advance the technology to enhance performance and sustainability. Kymene™ 1500LV, the newest resin in the family, enables tissue and towel manufacturers to eliminate U.S. volatile organic compound (VOC) content and reduce their overall carbon footprints without sacrificing the performance they've come to expect from Solenis wet-strength additives. Plus, Kymene™ 1500LV resin offers an extended shelf life and temperature stability comparable to other conventional high-solids PAE wet-strength resins.

Leading the Market

At Solenis, our passion is to ensure our customers' success by delivering the most advanced chemistries in the industry. Nowhere is this more evident than in our Kymene™ family of wet-strength technologies. Solenis pioneered the Kymene™ chemistry in the 1950s and has, since then, maintained a steady and ongoing effort to improve the products to meet the evolving demands of papermakers across the world. As we continue to introduce new and improved generations of Kymene™, our goal is to help customers reduce their environmental impact, all while increasing product quality, driving enhanced productivity and reducing costs.

The launch of Kymene™ 1500LV wet-strength resin is a direct result of this commitment to continuous improvement. Solenis developed the product to accommodate a number of changing market conditions, including the adoption of the Globally Harmonized System, or GHS, and initiatives by some key retailers that are pushing consumer product manufacturers towards safer formulations and better ingredient transparency. The former defines and classifies the hazards of chemical products and communicates health and safety information on labels and safety data sheets using a globally consistent and standardized system. The latter marks a growing trend among larger companies and consumer-goods manufacturers to reduce VOC content and other dangerous substances.



Kymene™ 1500LV wet-strength resin enables papermakers in North America to deliver on aspects of their sustainability goals. As a Generation 1.5 (G1.5) resin, it provides excellent wet-strength performance in both recycled and performance towel, as well as packaging grades such as carrier board and liquid packaging board, yet still addresses a full range of customer compliance needs. It provides an attractive alternative for G1 customers who want to move to a cleaner product in a more cost-efficient manner without sacrificing quality.

The improved performance of Kymene™ 1500LV is made possible by higher functionality on the resin through both polymer optimization and precise functional group selection. Compared to G1 wet-strength resins, G1.5 resins have lower levels of hazardous, carcinogenic VOCs, including 1,3-dichloropropanol (1,3-DCP), 3-monochloropropan-1,2-diol (3-MCPD), aminochlorohydrin (ACH), polymer-bound CPD (PB-CPD) and total adsorbable organic halogens (AOX). At the same time, G1.5 resins deliver high solids, high performance, and have excellent storage stability.

The benefits of Kymene™ 1500LV include:

- High solids with the best efficiency and lowest overall cost-in-use
- A reliable, robust supply chain to ensure timely and uninterrupted delivery
- A high-performing chemistry that eliminates U.S. VOC content and helps reduce overall carbon footprints



A Flexible Product Line for Papermakers' Changing Needs

Solenis has created a wide range of Kymene™ products to meet the varying regional requirements and budgets of our customers. G1.5 wet-strength resins do not require CA Proposition 65 warnings and are a good option for papermakers who need to reduce their environmental impact but do not need the advanced quality or cost of our G2, G2.5 and G3 technologies. The full family of Kymene™ products gives mills great flexibility to build a cost-effective wet-strength program along a pathway of incremental improvements. The G1.5 product is a great next step for G1 customers looking to adapt to changing industry requirements, deliver products that are both functional and reduce environmental impacts.

As a G1.5 resin, Kymene™ 1500LV offers a number of advantages:

- Excellent storage stability and cost efficiency
- < 5,000 ppm DCP (dichloropropanol)
- < 500 ppm CPD (chloropropanediol)
- 26% solids
- CA Proposition 65 warning not required based on the results of a risk assessment
- No reproductive or mutagenic hazard labels required
- Zero US VOC content (tested by EPA 24 method)

An examination of the safety data sheets for Kymene™ 1500LV and competitive performance resins shows the difference in product characteristics:



RESIDUAL CLASS	PRODUCT	REPRODUCTIVE RISK	CA PROPOSITION 65 WARNING
G1.5	Kymene™ 1500LV*	Not classified	Not required based on the results of a risk assessment
G1	METRIX Armor 63525**	Cat 1B: May damage fertility or the unborn child	This product contains a chemical known to the State of California to cause cancer.
G1	Fennostrength 4063***	Cat 1B: May damage fertility or the unborn child	This product contains a chemical or chemicals known to the state of California to cause cancer, birth defects or other reproduction harm.

* Based on SDS information: North America, Solenis LLC, Version 1.1, Date: 02/22/2017

** Based on SDS information: North America, Nalco, Version 1.1, Date: 03/15/2018

*** Registered trademark of Kemira. Based on SDS information: North America, Kemira Chemicals, Inc. 09/20/2015

A Robust Supply Chain

The company operates 11 manufacturing plants across the U.S., four of which produce G1.5 Kymene™ 1500LV resins and put the new chemistry within easy reach of any mill, anywhere in North America. But Solenis offers far more than great products and a strong supply chain. Our highly skilled team of field sales representatives, applications engineers, and research scientists are focused on customer manufacturing excellence. Using data-driven optimization, they work with your mill staff to ensure our products work in your specific mill environment and contribute to your overall profitability.

Want to learn more about Kymene™ 1500LV and our full portfolio of wet-strength resins?

Contact your Solenis representative today or read more on www.solenis.com.



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.

All statements, information and data presented herein are believed to be accurate and reliable, but are not to be taken as a guarantee, an express warranty or an implied warranty of merchantability or fitness for a particular purpose, or representation, express or implied, for which Solenis and its subsidiaries assume legal responsibility.
®Registered trademark, Solenis or its subsidiaries, registered in various countries
™Trademark, Solenis or its subsidiaries, protected in various countries
*Trademark owned by a third party
©2018, Solenis
180051



Global Headquarters
Solenis LLC
Wilmington, Delaware
solenis.com