
who's responsibly solving for healthier lives?
we are.
Ashland™
always solving
ashland.com / efficacy usability allure integrity profitability™

ashland.com / efficacy usability allure integrity profitability™

Ashland™
always solving

Ashland's pharmaceutical business is core to the company's organic growth. As such, we're focusing resources on high value applications to meet customer priorities.

Well known for acetylenics, cellulosics, and film coatings, our polymers have a rich and diverse history supporting active pharmaceutical ingredient delivery. Using careful design and compositional selection, our scholarly, cited scientists possess the formulation and process expertise to match polymer architecture, material and physical characteristics to meet the challenges facing the most demanding pharma applications.

In addition to our commitment to pharmaceuticals and our foundational expertise, we offer the broadest range of excipients to compose effective oral solid dosage (OSD) and injectable pharmaceuticals. Deploying resources to build on our existing high impact and high value technologies, we are widening our portfolio of cellulose-based polymers (HPMC, HPC, CMC, HRC), growing our excipient portfolio for injectables/biologics, including the possibility for customization, and we're focusing on film coatings that live up to customer needs.

Our oral solid dosage and liquid dosage ingredients include controlled release agents, coatings, disintegrants, binders, rheology modifiers, and our expanding list of injectable excipient ingredients includes solubilizers, stabilizers, drug carriers, and other polymers used in long-acting formulations. These comprise Ashland's pharma portfolio, and it is the diamond at the center of Ashland.

Through direct-to-customer sales, along with select distribution partners, we reach more than 1,000 customers around the globe. They are our highest priority, and we back them with technical support when it's needed, anywhere in the world. Because we do business in ninety-five countries, we can source products and make them available whenever and wherever required. That makes us a reliable partner for the current and future needs of our global pharmaceutical partners.

Our products are primarily manufactured in-house, and we have been agile, resilient and steady, faring well during tough supply chain-related environments. For key product lines, the backwards integration strategy we employ enables the reliable supply our customers expect, and we possess the regulatory expertise to support our customers across all world regions. As the pharmaceutical industry moves towards new methods of manufacturing, the Ashland pharmaceutical business can skillfully match chemistry to evolving needs.

Ashland is investing in developing solutions for novel, fast growing therapeutics in the injectables and OSD marketplace. Leveraging exceptional strategic positioning and working collaboratively with our customers all over the world, we are helping to develop and deliver safe, high quality, effective ingredients for formulating and manufacturing medicine now and into the future.

Building on a strong reputation of trust, reliability, and high quality in this regulated space, Ashland is responsibly solving for healthier lives everywhere.

we are driving targeted innovation that leads to next generation products

oral solid dosage

We advance drug delivery by offering the broadest portfolio of cellulosic and vinyl pyrrolidone-based polymeric excipients available in the industry. Our success comes from achieving target release profiles, reducing our customers total cost in use, and improving speed to market while providing functional benefits like drug solubilization and rheology modification. We are a full-service pharmaceutical technology resource for controlled release, tablet binding, film coating and disintegration.

klucel™ hydroxypropyl cellulose (HPC) provides a remarkable set of physical properties for tablet binding, modified release, film coating, and hot melt extrusion.

klucel™ xtend HPC extended release matrix former is the new product in this line, offering unsurpassed process versatility and release profile efficiency. This step change product has been shown to match the release profile of widely used hypromellose controlled-release formulations with half the polymer concentration. Klucel™ Xtend HPC is the only cellulosic excipient that provides a compendial extended-release polymer option for hot-melt extrusion (HME).

benecel™ XRF HPMC are fine particle grades designed for optimal performance in large-scale, high speed tableting.

aquarius™ film coating solutions are practical, efficient, and elegant and they provide effective, high-quality coatings that offer an optimum balance of film strength and adhesion, even for challenging cores and release profiles. The line includes a titanium dioxide free option.

aquarius™ genesis film coating systems are new products in this line, offering significant improvements in film coating process productivity with high solids, exceptional adhesion and elegant tablet appearance; you can realize faster coating times and reduced energy usage.

plasdone™ polymers accelerate the development of formulations in both solid and liquid oral doses for spray drying and hot-melt extrusion solid dispersion applications. Members of this product line are the 'gold standard' in binder technology for wet granulation tablet processing, and anticrystallization and rheology modifier for oral-liquid dosages.

polyplasdone™ crospovidone superdisintegrant provides rapid disintegration as well as drug solubilization and stabilization. It is also used for dispersing oral suspensions.

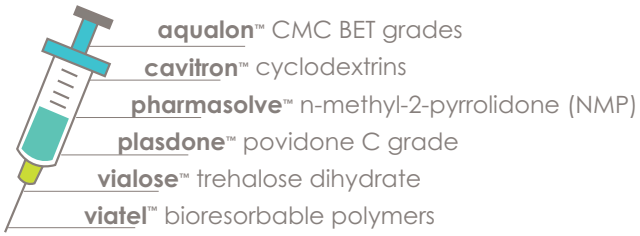
plasdone™ S-630 copovidone is a highly compressible powder, making it an excellent tablet binder for direct compression and dry granulation. It is often used with poorly compressible actives to improve tablet breaking force and lower friability. More recently, these polymers have been used in solid dispersions to increase solubility and thereby increase bioavailability of poorly soluble APIs.

natrosol™ excipient is effective in delivering drugs in liquids, gels, syrups, and semi-solid dosage forms, solving dosing challenges such as rheology, texture, suspension, consistency, and stability. By modifying viscosity Natrosol™ excipients improve both patient satisfaction and product shelf life. Natrosol™ also offers new solutions to advance drug delivery in controlled release tablets.

injectables

Enroute to global leadership in polymers and excipients for injectable formulation needs that include solubilizers, stabilizers, viscosity modifiers and long-acting injectables, Ashland is unique in this segment because we offer single sourcing of key excipients along with experienced technical support to solve complex formulation challenges.

excipients for injectable formulations



- injectable formulations require excipients of the highest quality
- Ashland's high-quality excipient portfolio meets industry standards

viatel™ bioresorbable polymers control release over time. These polymers are the building blocks for developing long-acting injectable depots, an established technology to improve therapeutic efficacy and patient compliance. Viatel polymers are typically formulated into microspheres, solid implants, nanoparticles, or in-situ depots. All Viatel™ bioresorbable polymers can be custom produced with defined chemical structures, molar masses (molecular weight or inherent viscosity) and selective terminal end groups.

vialose™ trehalose dihydrate is a premier performance sugar resistant to acid hydrolysis and enzymatic cleavage. It is used to protect and shield biologic APIs, recombinant proteins, and monoclonal antibodies (mAbs) from degradation and aggregation and to stabilize and protect valuable components during the lyophilization process.

aqualon™ CMC BET sodium carboxymethylcellulose are viscosity modifiers for diluents and excellent suspending agents, easily dispersible in water, and compatible with most active ingredients.

pharmasolve™ (N-methyl-2-pyrrolidone) is one of the best and most versatile solvents to dissolve compounds with low aqueous solubility. It is the preferred solvent for long-acting in-situ forming depots.

cavitron™ cyclodextrins (hydroxypropyl betacyclodextrin) are the perfect substances for increasing solubility and enhancing bioavailability. They are manufactured to high purity standards for low bioburden and endotoxin.

Ashland brings deep technical expertise in polymers with a broad geographic reach for multiple end-use applications. These capabilities are leveraged through trusted collaborations with customers who share the common goal of improving health and welfare across the globe, leading to happier lives for you and your family from childhood to advanced age.

regional centers

North America
Wilmington, DE USA
Tel: +1 877 546 2782

Latin America
Mexico
Tel: +52 55 52 76 6169
Brazil
Tel: +55 11 36 49 0435

Europe
Switzerland
Tel: +48 22 3955322

Middle East, Africa
Istanbul, Turkey
Tel: +00 90 216 538 08 00

India
Maharashtra
Tel: +91 22 62828700

Asia Pacific
Singapore
Tel: +65 9721 7129

ashland.com

The information contained in this brochure and the various products described are intended for use only by persons having technical skill and at their own discretion and risk after they have performed necessary technical investigations, tests and evaluations of the products and their uses. Certain end uses of these products may be regulated pursuant to rules or regulations governing medical devices, drug uses, or pesticidal or antimicrobial uses. It is the end user's responsibility to determine the applicability of such regulations to its products. All statements, information, and data presented herein are believed to be accurate and reliable, but are not to be taken as a guarantee of fitness for a particular purpose, or representation, express or implied, for which seller assumes legal responsibility. No freedom to use any patent owned by Ashland, its subsidiaries, or its suppliers is to be inferred.

The regulatory information available in the Ashland's Color Guide is provided as initial general guidance only. Prior to selecting a color and film coating formulation, we strongly recommend contacting Ashland to confirm the acceptability of use for your specific application and target market. The information contained in this document is not to be relied upon for that purpose. Each customer is responsible for determing the regulatory acceptablility of the finished product in their specific application and markets

ashland.com / efficacy usability allure integrity profitability™

Ashland™
always solving