



iff

Where science
& creativity meet

**Essential excipients & vital expertise.
The answers you need.**

PRODUCT PORTFOLIO FOR PHARMACEUTICALS



UNMATCHED PORTFOLIO MEETS UNWAVERING COMMITMENT

The makers of Avicel® and Methocel™. Delivering expertise, innovation, and a passion to solve for drug delivery.

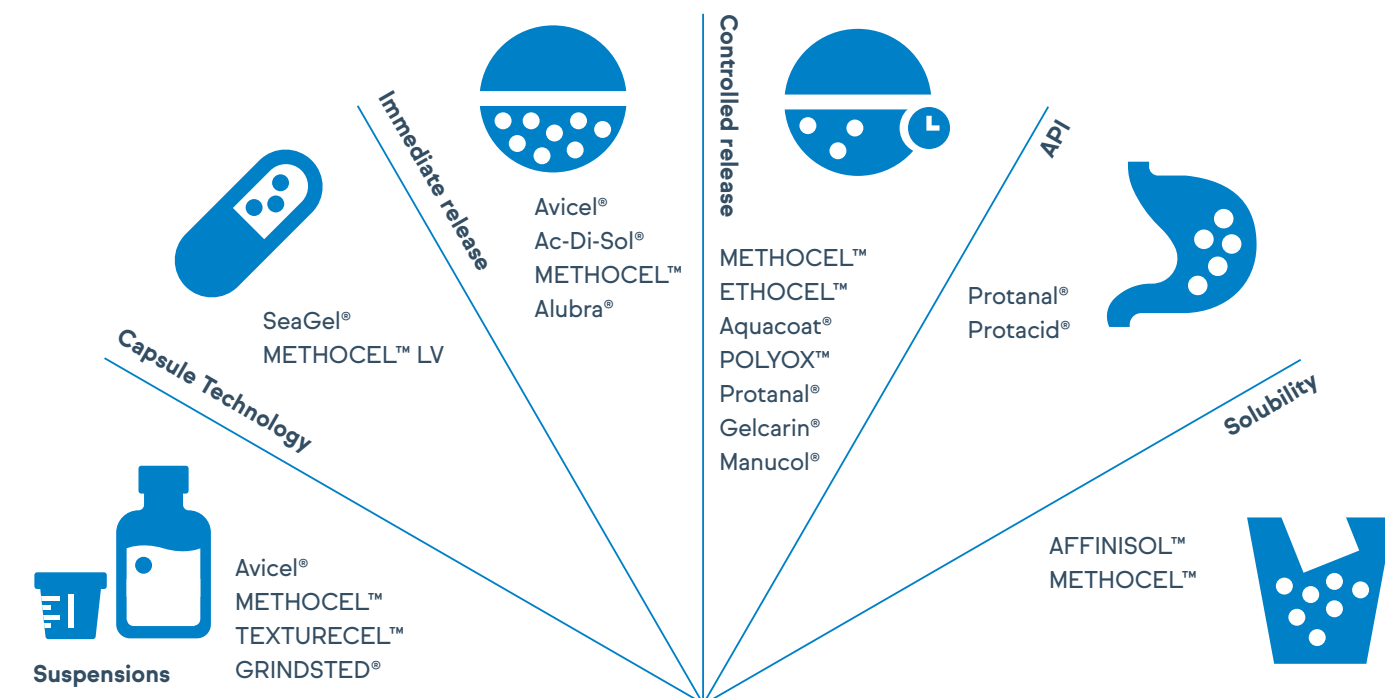
You've known us for decades as the makers of Avicel® and METHOCEL™ and many other strong brands, and we're building on that history while embracing a future of new possibilities.

With decades of vital experience in the pharmaceutical industry, we have a proven track record of working with customers around the globe to differentiate drug formulations and solve the toughest challenges.

Couple that with a commitment to quality, and global manufacturing and regulatory expertise, we can apply our talent and technologies to enable your goals, delivering what is best for you, when you need it.

We offer a unique range of well-known excipients designed to deliver performance and cost advantages in various oral solid dosage forms.

BROAD PORTFOLIO, BOUNDLESS OPPORTUNITIES



With a large manufacturing and technical footprint, strong R&D and a broad portfolio, we can provide high-quality, consistent solutions to our customers and help them deliver on the promise of a healthier life.



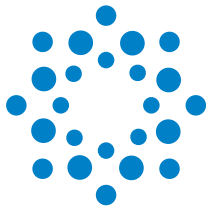
APPLICATION & INNOVATION CENTERS
WILMINGTON, DE, USA
BOMLITZ, GERMANY
HYDERABAD, INDIA
SHANGHAI, CHINA

R&D CENTERS
WILMINGTON, DE, USA
MIDLAND, MI, USA
HYDERABAD, INDIA
BOMLITZ, GERMANY

MANUFACTURING SITES
MIDLAND, MI, USA
NEWARK, DE, USA
INSTITUTE, WV, USA
PLAQUEMINE, LA, USA
BOMLITZ, GERMANY
STADE GERMANY
CORK, IRELAND
SANDVIKA, NORWAY
HAUGESUND, NORWAY
RAYONG, THAILAND

IFF: WHERE SCIENCE MEETS STABILITY. CREATIVITY MEETS CONSISTENCY.

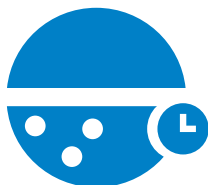
We have the excipients and ingredients that can help you meet your formulation needs. When you need a pharmaceutical answer and the technical expertise to put it to work quickly in your formulation, there are more reasons than ever to rely on us. Our products comply with the requirements of Food and Drug Administration (FDA), Food Chemicals Codex, Codex Alimentarius, United States Pharmacopeia (USP), National Formulary (NF), Japanese Pharmacopoeia, European Pharmacopoeia and British Pharmacopoeia. In addition, they can meet most requirements of Chinese Pharmacopoeia.



METHOCEL™ Cellulose Ethers are water-soluble polymers derived from cellulose. The METHOCEL™ product range encompasses methylcellulose and hydroxypropyl methylcellulose (Hypromellose) – each available in different grades, physical properties and a wide range of viscosities. They enable formulators to create tablet coatings, granulation binders, sustained release matrix systems and for controlled viscosity in liquid formulations.



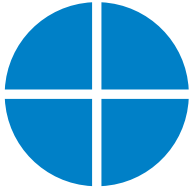
ETHOCEL™ Premium Ethylcellulose Resins are water-insoluble polymers. They are soluble in a wide range of pharmaceutically acceptable organic solvents used for spray coating. Their excellent compatibility allows use of ETHOCEL™ polymers with many basic ingredients across a broad array of pharmaceutical applications such as controlled-release matrix systems, multiparticulate coatings, and microencapsulation. They are also useful as non-aqueous granulation binders and in taste-masking of actives.



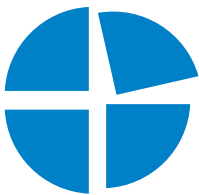
POLYOX™ Resins are nonionic poly (ethylene oxide) polymers. They possess thermoplastic properties, are fast-hydrating and very quickly form hydrogels. They are essentially tasteless, colorless, nonionic and non-caloric. Their unusual combination of properties makes them useful in a surprisingly broad array of pharmaceutical formulations such as osmotic pump technologies, tablet binding, mucosal bioadhesives and abuse deterrent applications.



AFFINISOL™ Hydroxypropyl Methyl Cellulose (HPMC) is a water soluble polymer that can help optimize solubility enhancement by maintaining stable solid dispersions and inhibiting API crystallization.



Avicel® PH represents the largest portfolio of microcrystalline cellulose standard and co-processed grades with legacy of superior quality for more than 50 years. Through continuous innovation, differentiated grades have been developed to make Avicel® PH an indispensable formulation tool, boosting productivity and meeting tough formulation challenges, in particular in wet and dry granulation and in direct compression applications.



Ac-Di-Sol® croscarmellose sodium is an internally cross-linked sodium carboxymethyl cellulose (NaCMC) that aids in the disintegration and dissolution of tablets, capsules and granules. Ac-Di-Sol®'s performance is attributed to its superior water uptake and rapid swelling properties. Ac-Di-Sol® shows superior performance at low concentration and is the choice of superdisintegrant for wet granulation and orally disintegrating tablets.



Aquacoat® pseudo latex aqueous dispersion of ethyl cellulose enables aqueous coating of multiparticulates and tablets. They are widely used for achieving controlled release profiles for tablets and multi-particulate dosage forms as well as for taste masking.



Protanal® and **Manucol®** Alginates are natural hydrocolloids that harness unique properties of brown seaweed. They are widely used in pharmaceutical controlled release applications as a gel former, thickener or stabilizer, as well as an API against acid reflux.



SeaGel® is a patented technology, developed using our unique knowledge of seaweed science, which enables manufacturing of carrageenan based soft capsules using existing soft capsule equipment. Seagel® capsules feature excellent thermal stability and high transparency and is a leading solution for vegetarian soft gel capsule.



Alubra® sodium stearyl fumarate is used as a hydrophilic lubricant in capsule and tablet formulations. The fumarate moiety of Alubra® increases its melting temperature, which allows for greater functionality at high press speeds while the stearate chain maintains the lubricity of the compound, supporting low ejection forces. Alubra® is an effective alternative to traditional magnesium stearate solutions and can reduce over-lubrication and incompatibilities with certain APIs.

PRODUCT CATALOG

Our proven technologies	Product brand name	Benefits
Hydroxypropyl methylcellulose	METHOCEL™	Controlled release matrix tablets, coating and vegetable capsule
Methyl cellulose	METHOCEL™	Thickening agent
Ethyl cellulose	ETHOCEL™	Controlled release coating tablets and multiparticulates
Sodium carboxymethylcellulose	TEXTURECEL™	Thickening agent
Polyethylene oxide	POLYOX™	Osmotic pump tablets and abuse deterrent
Hydroxypropyl methylcellulose for hotmelt extrusion	AFFINISOL™	Solubility enhancement
Sodium alginate/ Alginic acid	Protanal®, Manucol®, Protacid®	Anti-reflux and controlled release
Microcrystalline cellulose	Avicel®	Binder, compression aid and filler
Colloidal microcrystalline cellulose	Avicel®	Stabilization of liquid and reconstitutable suspensions
Croscarmellose sodium	Ac-Di-Sol®	Super Disintegrant
Sodium stearyl fumarate	Alubra®	Lubricant
Carrageenan	Gelcarin®, Viscarin®, SeaGel®	Vegetable soft capsules, Controlled release and veg soft capsules
Ethylcellulose aqueous dispersion coating / Cellulose acetate phthalic aqueous dispersion coating	Aquacoat®	Controlled release coating for tablets and multiparticulates
Pectin	GRINDSTED®	Short setting time, rapid demolding and uniform gel strength in dietary supplement applications
Xanthan	GRINDSTED®	Stabilization of liquid and reconstitutable suspensions
Ultrapure sodium alginate	PRONOVA®, NOVATACH™	Low endotoxin, ultrapure for biomedical applications
Ultrapure sodium hyaluronate	NovaMatrix®	Low endotoxin, ultrapure for biomedical applications



STABILITY. CONSISTENCY. ANSWERS. SO YOU CAN DO WHAT YOU DO BEST

IFF offers unique capabilities to meet customers' needs

Operational excellence

- Large manufacturing network
- Robust business continuity plans for all chemistries
- Global logistics capabilities that provide consistent and secure supply worldwide
- Commercial scale-up capabilities
- Digital capabilities to enhance efficiency and unleash capacity

Broad portfolio and product leadership

- Highest quality for consistent, reproducible performance
- Regulatory expertise through leadership in IPEC
- Global R&D and application development to offer product innovations, solutions and technical support

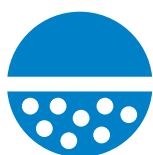
Technical depth and polymer design - from lab to market-development scale

- Ability to leverage fundamental chemistry knowledge into pharmaceutical applications
- Rapid R&D prototyping
- Market development scale-up

- Analytical capabilities to support QbD initiatives
- Ability to formulate and characterize a variety of drug delivery systems
- Deep understanding of the influence of polymer properties on end-use performance to guide formulation

Commitment to Quality

- Adding resources across our network for continued focus on quality control and quality assurance
- All manufacturing facilities are EXCiPACT certified.
- Quality by Design (QbD) components, such as historical manufacturing data and variability analysis (Multivariate Analysis) to improve scale up, robust manufacturing process, and lower manufacturing costs



Immediate Release



API



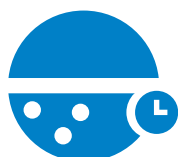
Binding



Taste Masking



Coating



Controlled Release



Capsule Technology



Disintegrants



Softgel



Solubility



Suspensions



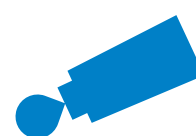
Lubricating



Stabilizer



Hydrophilic Matrix



Topical Application



Where science
& creativity meet