



DOW WOLFF CELLULOSICS PHARMACEUTICAL EXCIPIENTS

USING INGENUITY AND SAVVY
TO HELP DESIGN HEALTHCARE SOLUTIONS

ENHANCING HEALTH WITH A PASSION FOR SCIENCE AND A HEAD FOR BUSINESS



A lot of ingenuity and inventiveness goes into making the medicines needed to stay healthy. For us, it's not just about the ingredients that make medicines. It's about a drive to help address important public health problems. At Dow Wolff Cellulosics, we know the pharmaceutical industry and the trends affecting the market. Our technical expertise and innovative product mix can help meet the latest consumer demands and market expectations, conquer formulation challenges and develop life-enhancing medicines - while saving time and money.

YOU HAVE BIG CHALLENGES - WE HAVE BIG SOLUTIONS

In the highly regulated and demanding pharmaceutical market, continuous innovation is vital to success. Whether expanding a portfolio with controlled-release medicines, searching for more cost-effective production methods, or making safer tablets that are easier to swallow or harder to counterfeit, trust Dow Wolff Cellulosics.

With our talented and experienced team, and our broad inventory of ingredients, we have what you need, so you can provide consumers what they want:

- **Improving efficiencies and lowering costs:**
We are driven to make manufacturing processes faster, simpler, and more cost effective so the focus is on the next ground-breaking medicines. With our coating solutions, coating time can be reduced by as much as 54% and equipment efficiency can be improved. Our family of polymers is also suitable for use in direct compression applications, a process that eliminates wet granulation, reduces waste, shortens development time and lowers manufacturing costs by as much as 30%.
- **Speeding up production time:**
We've created foam binder and granulation technology to accomplish the critical goal of maximizing the surface area to ensure even distribution of the liquid or liquid/binder throughout a moving powder bed. This innovation can make wet granulation processing faster, more reproducible and less costly than conventional spray processing technology.

- **Reducing tablet burden:**
Our market-leading controlled release delivery systems allow companies to expand their product portfolios and create medicines that offer people a more convenient way to manage their medical conditions.
- **Making tablets that are easier to swallow and harder to counterfeit:**
Our ingenuity has led to tablet coatings that are tough, printable, economical, and highly consistent. Our coatings are micro-thin, non-caloric, non-nutritive, non-allergenic, and more resistant to microorganism growth than those formulated with natural gums, sugar, and most other cellulose. By improving tablet coating and creating oral film forms of medicine, we're making medicine that is easier to swallow and digest. With our polymers, companies also are designing pills that are harder to crush and more difficult to dissolve, which can help to address medication abuse.
- **Formulating the medicines that provide people with immediate relief:**
When you're developing immediate release tablet and capsule medicines, we have exactly what you're looking for - polymers that provide good tablet hardness at a low concentration, flexibility across multiple manufacturing processes, compatibility with virtually all active and other ingredients, and compliance with global pharmacopoeia and regulatory requirements.
- **Making tablets suitable for all patients:**
Our polymers come from a renewable, plant-based resource. No animal fats or ingredients derived from animals are used, which appeals to anyone who prefers to use non-animal-based products, including people with religious and dietary restrictions.

For more than half a century, we have provided leading pharmaceutical companies with innovative, reliable products and solutions that help address the needs of patients. With our multi-functional excipients and technical expertise, we can help create efficiencies, improve formulation and delivery flexibility, and support cost containment. All that can add value to your business and to the customers you serve.

OUR FAMILY OF PRODUCTS INCLUDES:

- METHOCEL™ Cellulose Ethers:**
 The METHOCEL™ Premium family of products offers exceptional flexibility and a broad range of water-soluble polymers with a valuable combination of properties that typically can't be found in other water-soluble polymers. METHOCEL™ polymers can be used as thickeners, binders, film formers, and water-retention agents, and they function as suspension aids, surfactants, lubricants, protective colloids, and emulsifiers. In many applications, two, three or even more ingredients may be needed to do the same job performed by one METHOCEL™ product, saving both money and time.
- ETHOCEL™ Ethylcellulose Resins:**
 With their non-ionic, water-insoluble nature, the ETHOCEL™ family of products is a natural choice when working with water-sensitive pharmaceutical active ingredients. ETHOCEL™ can be paired with water-soluble active ingredients and water-soluble excipients, including METHOCEL™ cellulose ethers. ETHOCEL™ can be just the right ingredient to help develop a range of important medicines, including those requiring controlled release properties. We offer nine different ETHOCEL™ products providing a wide-range of formulation flexibility. These include a variety of molecular weights, which translates into a range of viscosities in solutions to meet product or process requirements.
- POLYOX™ Water-Soluble Resins:**
 POLYOX™* is a family of non-ionic, high molecular weight, water-soluble poly (ethylene oxide) polymers. They provide a proven solution across multiple manufacturing processes, and have a long history of successful applications in pharmaceutical products, providing a range of excellent properties that can help deliver important pharmaceutical innovations. POLYOX™ are white, free-flowing hydrophilic powders supplied in a wide variety of molecular weight grades, allowing manufacturers to select from many options to control dosage size, matrix release profiles and production methods while maintaining consistent flow properties and tablet performance.

Our products comply with requirements of the U.S. Food and Drug Administration (FDA), the Food Chemicals Codex, the International Codex Alimentarius and/or US Pharmacopoeia (USP) or National Formulary (NF). Premium cellulose ether products also can meet the requirements of Japanese, British, and European Pharmacopoeias.

A VERSATILE ARRAY OF PROPERTIES

All of our products are essentially tasteless, colorless, odorless, non-ionic and non-caloric, offering an array of properties that help meet formulation challenges.



TYPICAL PROPERTIES	METHOCEL™	ETHOCEL™	POLYOX™
Water-soluble	●		●
Organo-soluble	●	●	●
Gel forming	●		●
Film forming	●	●	
Mucoadhesive	●		●
High swelling	●		●
Viscosifying	●	●	●
Hydrophilic	●		●
Hydrophobic		●	
Thermoplastic		●	●
Drug solubilizer	●		●

WHATEVER YOU NEED, WE CAN HELP YOU DELIVER

When you need a pharmaceutical excipient and the technical back-up to put it to work quickly in your formulation, there are more reasons than ever to rely on us. We have the excipients that can help you meet your formulation needs.

APPLICATIONS	METHOCEL™	ETHOCEL™	POLYOX™
Controlled release matrix tablets	●		●
Controlled release coatings	●	●	
Microencapsulation		●	
Conventional tablet coating	●		
Solvent-based coating for barrier or taste masking properties	●	●	
Direct compression	●	●	●
Conventional wet granulation	●		●
Solvent-based granulation		●	
Foam binder granulation	●		
Melt extrusion	●	●	●
Bulk laxatives	●		
Creams, gels and ointments	●		●
Ophthalmic preparations	●		
Suspensions	●		
Antacids	●		
Mucosal ioadhesives			●

This table is designed as a general overview of Dow Wolff Cellulosics products. Please contact your local representative for detailed technical information applicable to your individual requirements.

THE WORLD'S BEST PROBLEM SOLVERS FOCUSING ON THE WORLD'S BIGGEST HEALTH CHALLENGES

When you want to innovate, look no further than Dow Wolff Cellulosics. Our diverse, experienced team provides value beyond just ingredients - we serve as your trusted, valued collaborator in driving innovation and new technologies that will deliver medicines the world needs:

- Resolve technical issues involving excipient behavior
- Assist in selection of the right product to optimize formulation needs
- Support novel pharmaceutical applications
- Understand and address emerging and future needs in the pharmaceutical market
- Create significant efficiencies, improve formulation and delivery flexibility, and support cost containment
- Aid in drug safety and efficacy through new formulations
- Manage and extend product portfolios

We offer solutions to help create medicines faster and more efficiently - that way, you can invest more in developing new life-changing and life-saving medicines.

CONTACT US TODAY TO LEARN MORE

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