



ETHOCEL™

Ethyl Cellulose Polymers for Industrial Applications



WHAT ARE ETHOCEL™ ETHYL CELLULOSE POLYMERS?

ETHOCEL™ Ethyl Cellulose (EC) Polymers are cellulose ethers that are derived from natural wood or other cellulosic materials. To obtain ETHOCEL™, wood pulp is treated with sodium hydroxide to form alkali cellulose, which is then treated with ethyl chloride to form ethyl cellulose.



DUPONT IS THE WORLD LEADER IN CELLULOSIC DERIVATIVES

ETHOCEL™ EC Polymers offer specific properties that are unique compared to other cellulose ethers. Most cellulose ethers, such as carboxymethyl cellulose or hydroxypropyl methylcellulose, are water-soluble. ETHOCEL™ EC Polymers are not water-soluble, making them an excellent choice for protecting materials and products against water.

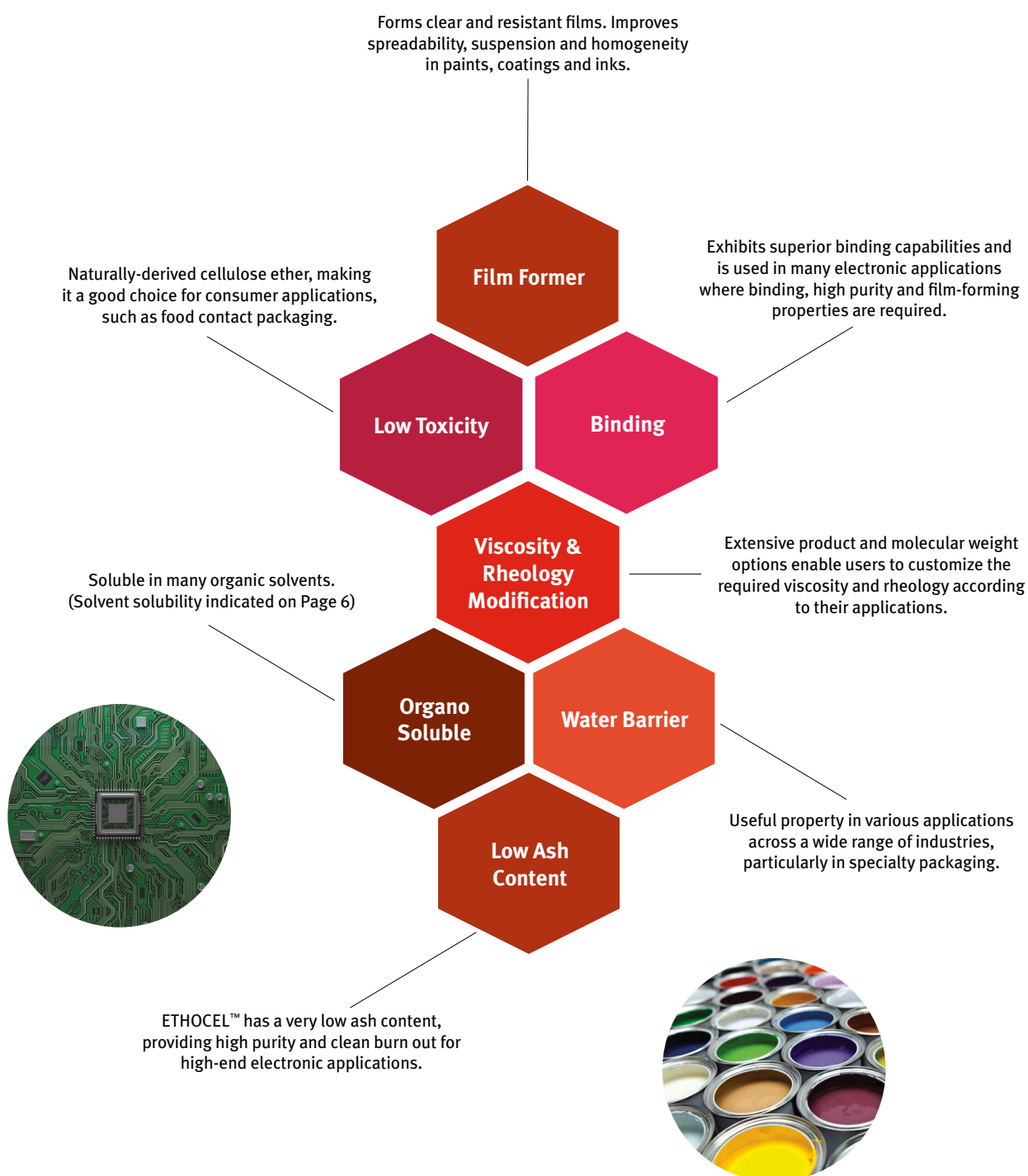
DuPont Nutrition & Health invented ETHOCEL™ EC Polymers and has continued to pioneer them for over 80 years. Like other cellulosic polymers in DuPont's Nutrition & Health portfolio, ETHOCEL™ can be fine-tuned to create customized solutions. ETHOCEL™ is backed by DuPont's world-class Research & Development team, regional Technical Application teams and regional laboratories. ETHOCEL™ EC Polymers are manufactured in our Michigan Operations plant in Midland, Michigan, USA.

A RANGE OF FUNCTIONAL PROPERTIES

- Organo solubility
- Binder
- Forms clear and resistant films
- Water barrier
- Thermoplasticity
- Viscosity
(4 to 300 mPas in 5% solution)
- Rheology modification
- High purity:
combusts without residue
- Low toxicity
- No ionic charge
- Enzymatic resistance

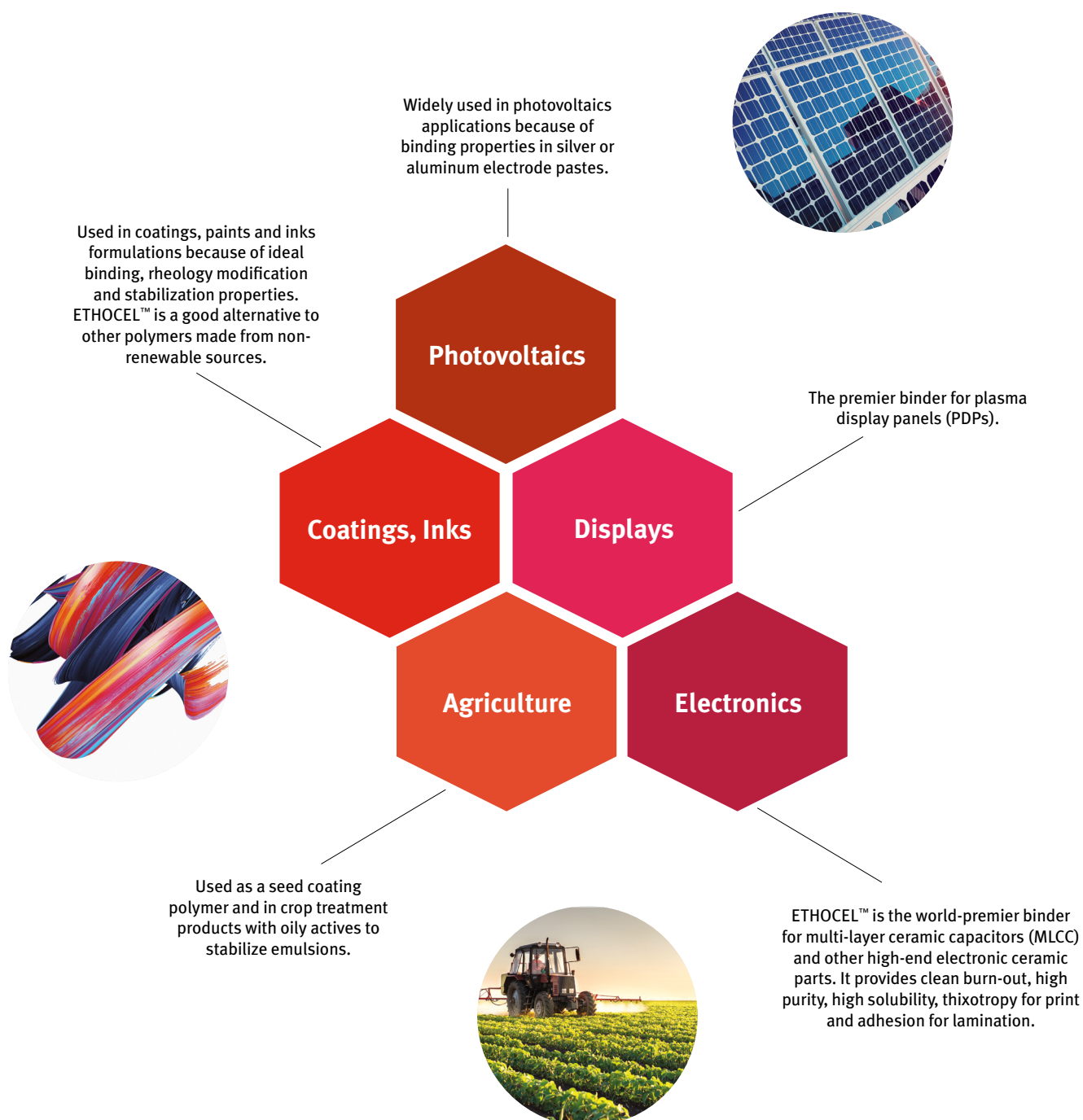


UNIQUE PROPERTIES DEVELOPED FOR YOUR APPLICATION NEEDS



ETHOCEL™ EC APPLICATIONS

ETHOCEL™ is a versatile polymer, soluble in many organic solvents. Though it can be used in a wide variety of applications, below are a few select examples.



OUR LARGE PRODUCT LINE OPTIMIZES YOUR APPLICATION PERFORMANCE

This product table highlights the key grades in our ETHOCEL™ family. Other product options are available depending on your specific application requirements. Please contact a DuPont sales representative to discuss product options.

PRODUCT	Viscosity (mPa·s)	Ethoxyl Content (Weight %)	Industrial Applications
ETHOCEL™ Standard 4	3.0 – 5.5	48.0 – 49.5%	Conductive pastes Printing inks Specialty coatings
ETHOCEL™ Standard 7	6.0 – 8.0	48.0 – 49.5%	Conductive pastes Printing inks Specialty coatings
ETHOCEL™ Standard 10	9.0 – 11.0	48.0 – 49.5%	Ceramics Conductive pastes Printing inks Specialty coatings
ETHOCEL™ Standard 20	18.0 – 22.0	48.0 – 49.5%	Specialty coatings Printing inks
ETHOCEL™ Standard 45	41.0 – 49.0	48.0 – 49.5%	Ceramics Conductive pastes Printing inks Specialty coatings
ETHOCEL™ Standard 100	90 – 110	48.0 – 49.5%	Ceramics Conductive pastes Low solid coatings Specialty coatings
ETHOCEL™ Standard 200	180 – 220	48.0 – 49.5%	Conductive pastes Low solid coatings Specialty coatings
ETHOCEL™ Standard 300	270 – 330	48.0 – 49.5%	Conductive pastes Low solid coatings
ETHOCEL™ Medium 70	63.0 – 77.0	45.0 – 47.0%	Conductive pastes Optical films

* All viscosity test solutions are prepared with 5% ETHOCEL™ and measured in an Ubbelohde viscometer at 25°C:

- for Standard products, solvent is a 80% toluene and 20% ethanol combination

- for Medium products, solvent is a 60% toluene and 40% ethanol combination

PROCESSING RECOMMENDATIONS FOR ETHOCEL™

ETHOCEL™ SOLUBILITY

The table below does not list concentrations or viscosities and is only intended as a general guide for the solubility of ETHOCEL™ Standard grades. In general, ETHOCEL™ polymers are most soluble in blends of aromatic hydrocarbons and aliphatic alcohols.

Completely Soluble	Moderately Soluble	Insoluble
Clear Solutions	Hazy Solutions / Swollen Gels	No Interaction
Aromatic Hydrocarbons	Acetates	Aliphatic Hydrocarbons
Chlorinated Hydrocarbons	Esters	Mineral Spirits
Monohydric Alcohols	Alkyl Ethers	Glycols
Glycol Ethers	Naphtha	Glycerol
Ketones	Turpentine	Water

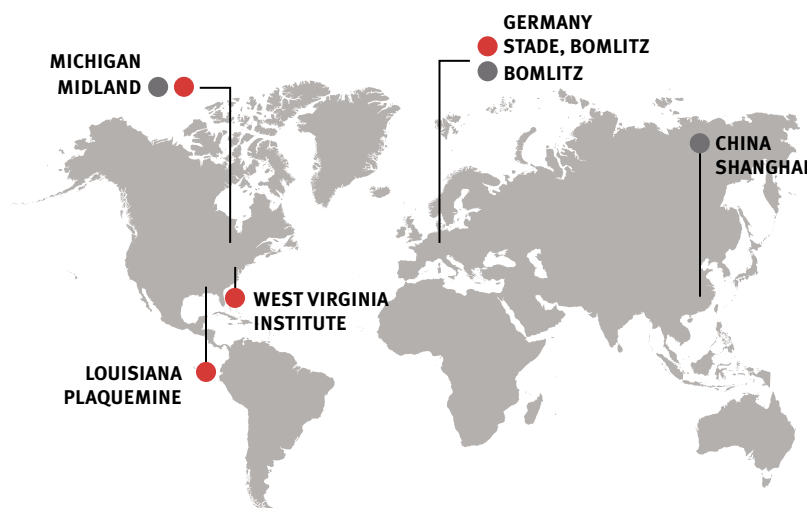


DUPONT GLOBAL SPECIALTY SOLUTIONS

- Global manufacturing and technology footprint
- Robust business continuity planning procedures and standards
- Sales and technical support network for local customer support
- Three technical support and development (TS&D) facilities
 - » Bomlitz, Germany
 - » Midland, MI, U.S.A.
 - » Shanghai, China

GLOBAL SPECIALTY SOLUTIONS MANUFACTURING & RESEARCH SITES

5 production sites, 3 R&D/Technical Support and Development (TS&D) centers



WHAT WE DO

ETHOCEL™ EC Polymers for industrial applications, are available only from DuPont Global Specialty Solutions and its distributors. Global Specialty Solutions, a business unit of DuPont Nutrition & Health (N&H), manufactures cellulosic polymers alongside other N&H portfolio products. The dedicated Global Specialty Solutions team commercializes DuPont products into various global markets.

OUR CORE VALUES

More than just goals, our core values reflect the way we work every day with our customers and partners in communities around the globe:

- Safety & Health
- Environmental Stewardship
- Respect for People
- Highest Ethical Behavior

WHO WE ARE

We are innovative problem solvers, drawing on deep application understanding and market insight to help our customers turn challenges into high-value business opportunities.

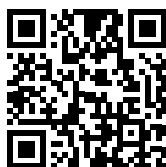
[Learn more at dupontspecialtysolutions.com](http://dupontspecialtysolutions.com)



CONTACT OUR KEY OFFICES

Connect with DuPont sales and application experts to further explore integrating ETHOCEL™ into your application.

dupontspecialtysolutions.com



PRODUCT SAFETY

When considering the use of any DuPont products in a particular application, please review our latest Material Safety Data Sheets first to ensure that your intended use can be accomplished safely. For Material Safety Data Sheets and other product safety information, contact our DuPont experts. Before handling any other products mentioned in the text, obtain available product safety information and take necessary steps to ensure safety of use.

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