

LEADERS IN MICROENCAPSULATION

Improved Performance Enveloping Your Products

Microencapsulation is the process of forming a strong shield around a microscopic particle to protect its core, which can improve the efficacy and performance of biological products.

Deep History and Expertise

Among the first to develop microcapsules, Milliken has been a leader in microencapsulation for over 70 years. Our innovations have obtained 115 patents and multiple awards while helping our partners achieve success by applying scientific excellence to solve complex challenges.

Advanced Microencapsulation Technology

We specialize in precision-engineered chemical microencapsulation processes such as coacervation, interfacial polymerization and in situ polymerization to create a custom designed wall around core materials, enhancing performance and stability to ensure optimal product efficacy.

Proven Across Industries at Large Scale

With more than 70 years experience encapsulating products for many industries including crop protection, our proven, scalable manufacturing capabilities can help meet your supply needs without compromising on quality.

Custom-Engineered Release Mechanism

Every application requires varying degrees of function, so determining a release profile to increase control and efficacy is one of the most important steps of microencapsulation.



Mechanical

Releases active ingredients when pressure or force breaks the capsule, ensuring targeted application.



Diffusion

Gradually releases active ingredients through the capsule wall for controlled, sustained effectiveness.



Dissolution

Dissolves the capsule in response to specific environmental conditions, releasing active ingredients as needed.

SUPERIOR PRODUCT DEVELOPMENT

Driving Innovation in Biological Products

Our microencapsulation technology can improve your biological products' performance by making them more reliable and compatible to give you an advantage over competitors.

Proven Biodegradable Crop Protection Encapsulation

By utilizing natural biological polymers (biopolymers), the encapsulation technology is biodegradable and aligns with the ECHA (European Chemicals Agency) microplastics regulation, delivering a major advantage without compromising on performance.

Our long history of encapsulation can be put to work for you. We've worked with leading companies globally to encapsulate:



SEMIOCHEMICALS



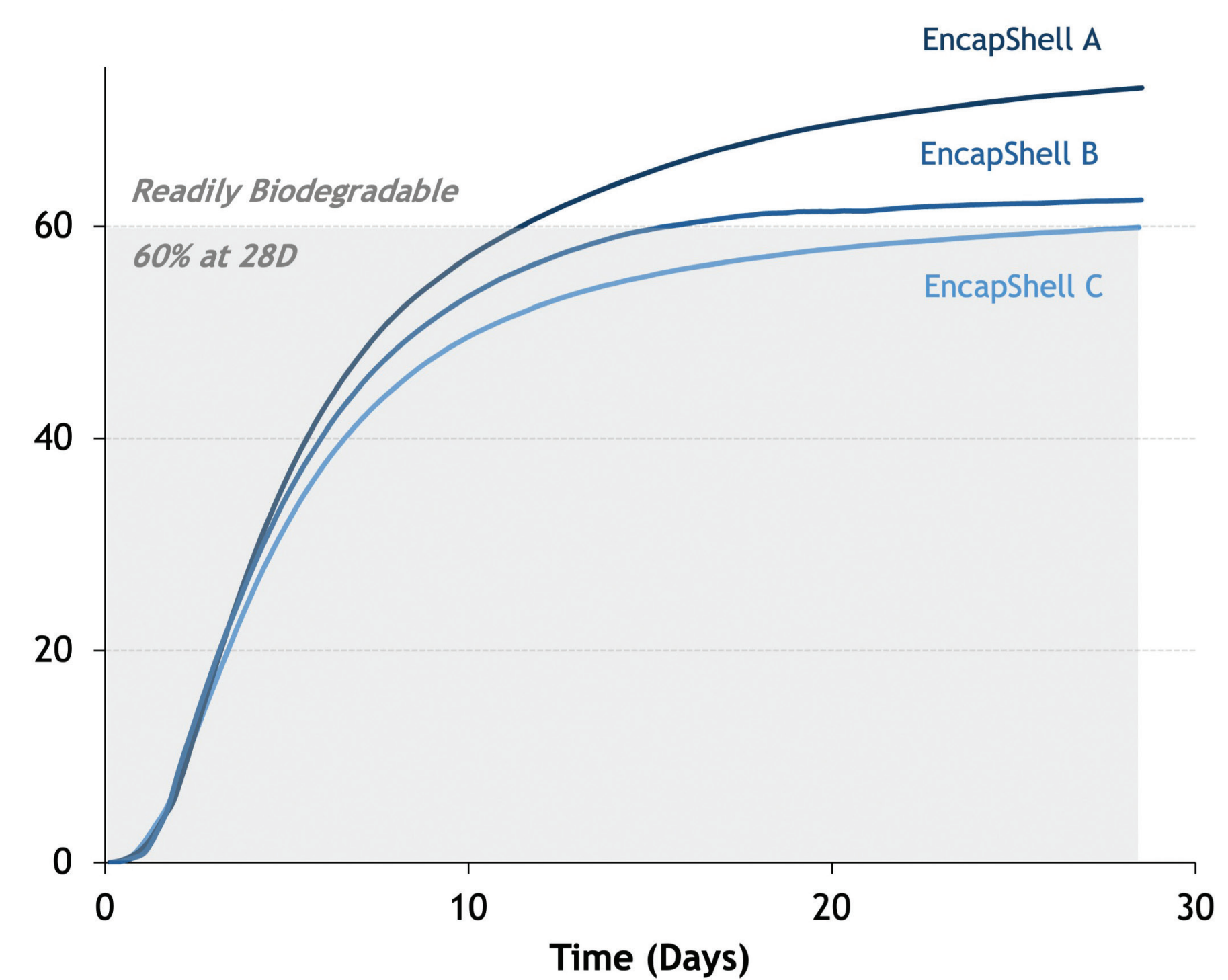
MICROBIALS AND SECONDARY METABOLITES



PLANT-DERIVED BIOCHEMICALS, FRAGRANCES AND EXTRACTS

Milliken has a variety of shell materials that meet readily biodegradable definition

Biodegradability percent, measured by OECD 301B



Custom-Engineered Performance Benefits

Extended shelf life and improved on-plant stability

Increased efficiency of active ingredients

Protects the integrity of active ingredients against external environmental influences

Extended control with controlled-release formulations

Compatibility of previously incompatible compounds

Reduced exposure and minimized off-target effects



Water Use Efficiency

Milliken's unique and proprietary technology platforms for soil surfactants leverage intelligent design to bring unique and high-value technological solutions to better deliver water to plants, which can encourage plant development and nutrient absorption, even in challenging soil conditions.



Colors and Coatings

Our portfolio of advanced colors, polymers and coatings deliver greater efficiency in every layer of coating to help improve seed protection and optimize seed treatment performance, including micro-plastic free options to meet regulatory requirements.

MILLIKEN AT A GLANCE

40+ Manufacturing locations



7,000+ Associates



15 Countries



11,000+ Products



- APPAREL
- AUTOMOTIVE
- HOSPITALITY
- INDUSTRIAL
- BUILDING & INFRASTRUCTURE
- CONSUMABLES
- MEDICAL
- MILITARY
- DURABLES
- PACKAGING



Seeking better performance from your biological products? Connect with Us.

Please contact your Milliken representative for further product information including chemical registrations, food contact status and other regulatory details. PLEASE NOTE: As each customer's use of our product may be different, the information we provide, including without limitation, recommendations, test results, samples, care/labeling/processing instructions or marketing advice, is provided in good faith but without warranty and without accepting any responsibility/liability. Each customer must test and be responsible for its own specific use, further processing, labeling, marketing, etc. All sales are exclusively subject to our standard terms of sale posted at www.milliken.com/terms (all additional/different terms are rejected) unless explicitly agreed otherwise in a signed writing. © Copyright 2024 Milliken & Company. All rights reserved. Milliken® is a registered trademark of Milliken & Company 10.9.2024