

Advanced functional coating solutions for nutraceuticals

Improving product performance and consumer convenience

Eudraguard®



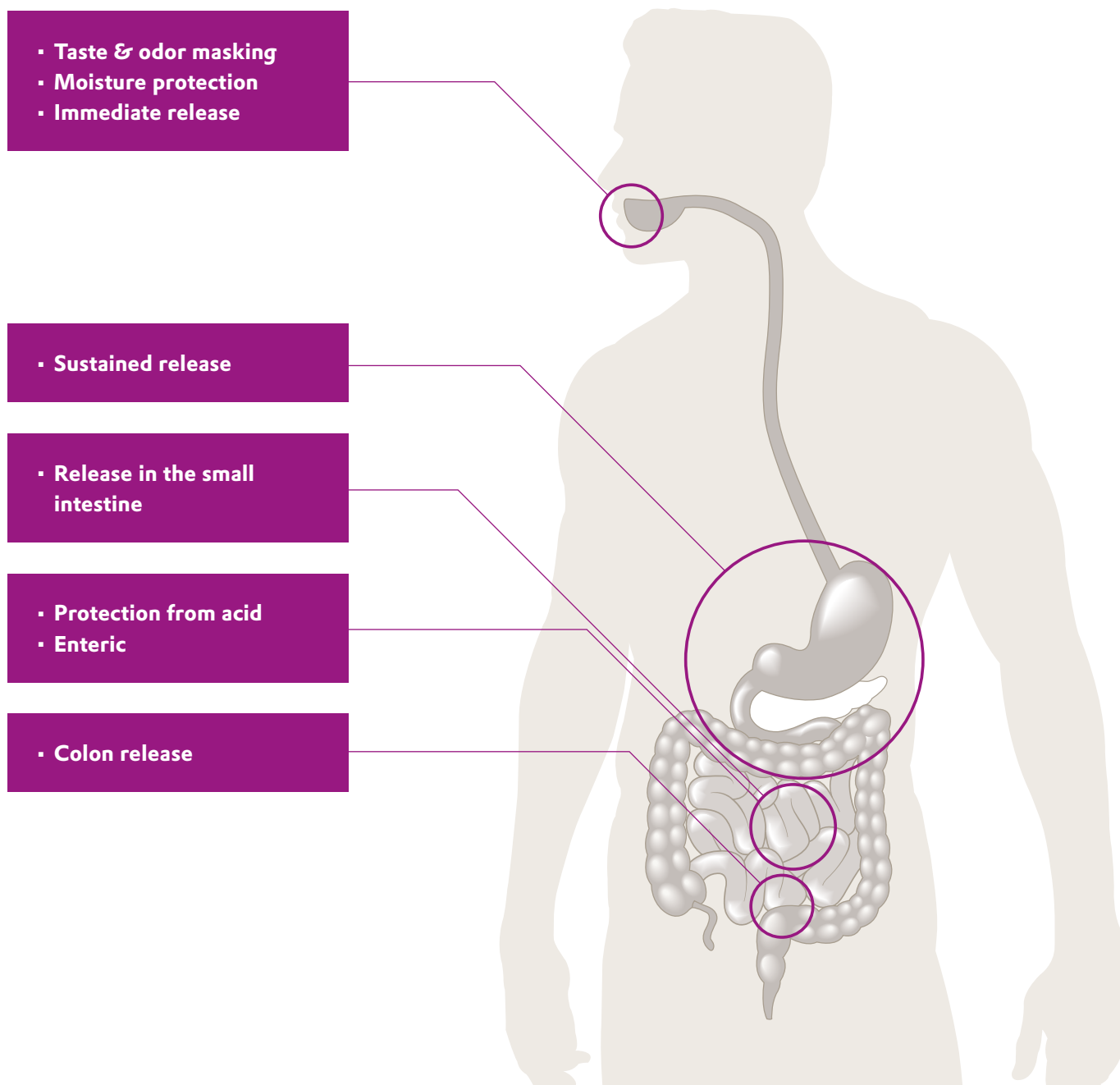
Leveraging our coating experience to enhance your product's performance

Consumers around the world have become increasingly health conscious and are aware of the relationship between diet and health. They are willing to do more to ensure their own well-being and want to know that dietary supplements are safe, effective, and of the highest quality. Regulatory standards for dietary supplements have also been strengthened.

Evonik, producer of the world-renowned EUDRAGIT® polymers, has over six decades of experience with pharmaceutical coating development. This experience has been used to develop our EUDRAGUARD® portfolio.

Experts at Evonik have developed the EUDRAGUARD® toolbox to enable targeted delivery of health ingredients to all parts of the gastrointestinal (GI) tract.

As the next generation for nutraceutical formulations, EUDRAGUARD® coatings provide an exceptional sensory experience and can be tailored to specific requirements, while addressing key challenges of nutraceutical coatings.



A broad range of functional coating applications with EUDRAGUARD®



ENABLES SUSTAINED RELEASE

- Increases the amount of a health ingredient taken up into the body
- Gives the body a constant supply of the health ingredient
- Increases consumer compliance by requiring only one dose per day



INCREASES CONSUMER COMPLIANCE

- Improves taste
- Masks odors
- Improves swallowability



ELIMINATES ENVIRONMENTAL FACTORS

- Controls chemical reactions
- Reduces chemical degradation in contact with water
 - Enhances reaction between incompatible ingredients
- Controls physical changes
- Reduction of mechanical stability
 - Discoloration, colour changes
- Prevents microbial growth



ALLOWS DELAYED RELEASE

- Reduces burping
- Prevent irritation of the gastric mucosa
- Suitable for acid sensitive health ingredients
- Avoid scolonialization of bacteria in the wrong place
- Suitable for health ingredients sensitive to enzymes or mechanical stress



BIOAVAILABILITY ENHANCEMENT VIA SOLUBILITY ENHANCEMENT

EUDRAGUARD® improves the amount of a health ingredient which is taken up in the body

Contact our technical experts to find out which EUDRAGUARD® product is suitable for your target application and how best to formulate it. healthcare@evonik.com

EUDRAGUARD® – a unique portfolio of functional coatings for dietary/food supplements



EUDRAGUARD® portfolio

Key benefits across the product line

- Smooth and even finish for visual appeal
- Swallowability improvement
- Low weight gain of polymer needed*
- Quick and easy suspension preparation
- Short spraying times
- Low spraying temperature
- No batch-to-batch variation
- Non-animal derived
- Works on all types of oral solid dosage forms: tablets, hard-shell and soft-gel capsules, larger multiparticulates
- May be used on conventional coating equipment
- Regulatory status: suitable for use in Dietary/Food supplements in E. U., U. S. and other countries

EUDRAGUARD® protect

Tastes good, stores well

EUDRAGUARD® protect

- Single polymer
- Can be formulated on individual demand

EUDRAGUARD® protect ReadyMix

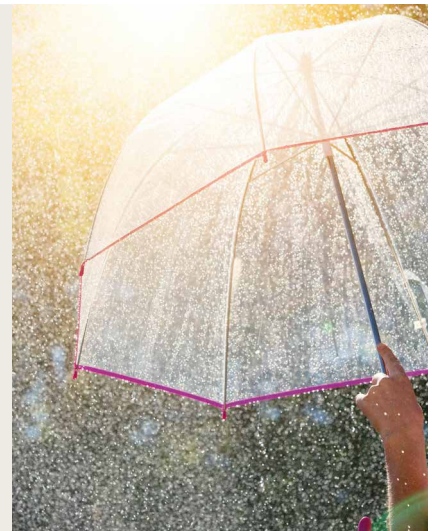
- Fully formulated system, ready to use
- ReadyMix: ready to start and saves time

Release

- Instant release in the stomach

What makes it unique?

- Single polymers can be used as coating (aqueous or organic), in Hot Melt Extrusion or via spray drying



EUDRAGUARD® control

Controlled delivery

EUDRAGUARD® control

- Single polymer
- Can be formulated on demand

Release

- Sustained release
- Delayed release in the small intestine in combination with sodium alginate

What makes it unique?

- Flexible polymer suitable for diverse dosage forms
- Aqueous-based coating system

* only synthetic polymers – not available with EUDRAGUARD® natural



EUDRAGUARD® biotic

Targeting the colon

EUDRAGUARD® biotic

- Single polymer
- Can be formulated on demand

Release

- Delayed release in the colon

What makes it unique?

- Flexible polymer suitable for diverse dosage forms
- Aqueous-based coating system

EUDRAGUARD® natural

Flexible formulation with starch

EUDRAGUARD® natural

- Single polymer
- Can be formulated on demand

Release

- Instant release in the stomach
- Delayed release in the small intestine in combination with sodium alginate

What makes it unique?

- Maize starch-based
- Aqueous-based coating system



Sodium alginate

Enteric protection in combination with EUDRAGUARD®

Sodium alginate

- Combination polymer with other EUDRAGUARD® types

Release

- Delayed release in the small intestine in combination with EUDRAGUARD® control or EUDRAGUARD® natural

What makes it unique?

- Aqueous-based coating system

Regulatory & Quality

Evonik has built its reputation on excellent quality and product safety. We maintain the highest standards, both voluntarily and by strict adherence to legislation. Selecting only the highest quality raw materials and ensuring excellence in product manufacturing and supply is our daily business.

To ensure the highest product quality systems such as HACCP are implemented, EUDRAGUARD® products are non-GMO and non-animal derived.

EUDRAGUARD® protect, control and biotic as well as sodium alginate have been certified as Halal.

All EUDRAGUARD® production sites have ISO 9001 certification.

All our EUDRAGUARD® products are made in the EU.

In the European Union, all EUDRAGUARD® products are approved as food additives. In the US, they are GRAS or listed in 21CFR as food additives.

EUDRAGUARD® natural is approved for use in many food categories, usually without quantity limits.

EUDRAGUARD® protect, control and biotic have been evaluated and legally approved solely for use as solid dietary/food supplements within the allowed quantity limits as defined by EFSA and listed in the product specification.

EUDRAGUARD® It is neither evaluated nor legally approved for any other application, including but not limited to conventional human food or any application for animals.

EUDRAGUARD® may be used in the following countries*

	EUDRAGUARD® protect	EUDRAGUARD® control	EUDRAGUARD® biotic	EUDRAGUARD® natural	Sodium alginate
EU	+	+	+	+	+
US	+	+	+	+	+
China	+	+	+	+	+
India	+	+	+	+	+
Mexico	+	+	+	+	+
Brazil	+	+	pending	+	+

*other countries on request

Evonik assumes no liability whatsoever for improper use for any application other than pre-dosed solid dietary/food supplements.

Seamless support across the entire process until the product is in your hands

With our formulation development laboratories across the globe, we are close to our customers and their demands.

Our expertise in formulation development allows our experts to support you in differentiating your product and helping to shorten the time-to-market for your product development.



● Development laboratories ○ Headquarter



FORMULATION DEVELOPMENT

- Different coating technologies are available, for example, drum coating, fluid bed coating
- Different technologies for solubility enhancement are available, for example, hot melt extrusion, spray drying
- Coating on different delivery forms are available, for example, tablets, hard capsules, soft capsules, larger multiparticulates
- Different coater sizes available in the lab
- Technical and HACCP compliant samples of coated dosage forms can be produced in our lab

TECHNICAL SUPPORT

- Comprehensive support on customer in-house formulation development
- Formulation development for customers
 - Scale-up and production support at customer or CMO
 - In-house training
 - Workshops

ANALYTICAL TESTINGS

- Proof of the functionality, for example, disintegration tests, dissolution tests
- Microscopic evaluation, for example, scanning electron microscopy

NETWORK OF CONTRACT MANUFACTURING ORGANIZATIONS

- We have a broad network of CMOs which we can recommend in case you have no in-house coating capabilities

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