



MAGRABAR[®]

ANTIFOAMS, DEFOAMERS AND RELEASE AGENTS
FOR FOOD PROCESSING



EUROPE
PORTFOLIO

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MÜNZING
CREATING ADDITIVE VALUE

MÜNZING is a highly regarded, privately owned company for specialty additives with headquarters in Abstatt, Germany. We have a global presence in over 40 countries and are a technology driven organization with an extensive staff of highly experienced R&D and technical service personnel in Europe, America and Asia.

MÜNZING's mission is CREATING ADDITIVE VALUE by solving our customers' formulation problems in various industries and applications like wood coatings, industrial coatings, printing ink, industrial fluids, food processing and specialty sectors. We offer state of the art technical service testing to all customers regardless of company size. Based on our holistic range of products, MÜNZING's technical service provides our customers best solutions in technical aspects at great value.



About MAGRABAR®

For more than 190 years, MÜNZING has been helping its customers perfect their products by creating specialty additives that are precisely right for them. Headquartered in Abstatt, Germany, our manufacturing plants in North America and Germany have broad synthesis and formulation capabilities to best serve our global customer base.

MÜNZING's additives have achieved worldwide recognition for their performance, quality and technical innovation. If you have a specific challenge, we have the technical expertise and laboratory capabilities to craft a unique solution.

In 2013, MÜNZING acquired the company MAGRABAR, thus creating synergies between its strong technical background in antifoams and defoaming with MAGRABAR's products and experience in food processing. The name of the acquired company still exists today as the registered brand name of MÜNZING's product line for applications in food processing: MAGRABAR®.

Our MAGRABAR® antifoams, defoamers and release agents product line has been developed for a wide range of applications in the food industry. We offer both liquid and powder products in a range of materials and concentrations, including options suitable for organic, non-GMO and identity preserved processing. Our organic products are certified by QAI.

Food Safety

MÜNZING produces the MAGRABAR® line of products for the food industry at the MÜNZING North America manufacturing site located in Clover, South Carolina, USA.

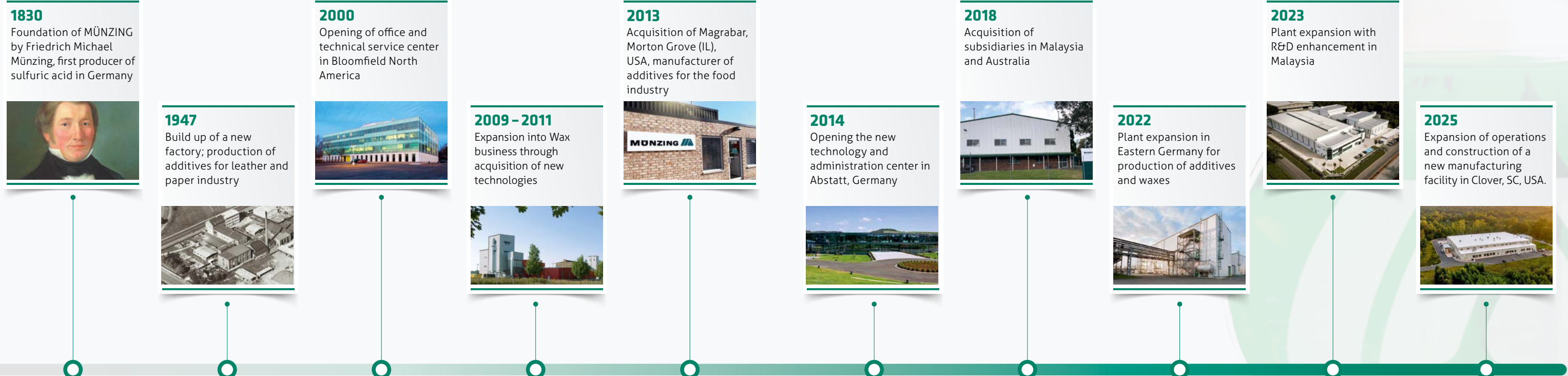
With over 40 years' experience in producing for the food industry, MÜNZING's high standards for quality and safety throughout all of our operations continue to be applied.

The site in Clover is a Global Food Safety Initiative (GFSI)-certified facility, operating under food GMPs and

a HACCP-based food safety plan audited to the SQF Food Safety Code by NSF. This site is dedicated to producing products for the food industry and MAGRABAR® products are allergen free, free from animal-derived ingredients and certified Kosher Pareve and Halal.



Additive Value Since 1830



Product Overview:
Processing Aids **

Product	Formulation Type	Percentage of Active 	Physical Condition	Percentage of Renewable *  and Water  Content	Processing Aid **	Food Additive ***	Non-GMO	Silicone Content	Fruits, Vegetables & Starch	Protein & Collagen	Dairy	Eggs, Meat & Seafood	Beverages, Broths & Soups	Bakery	Fermentation	Powder Mixes	Jams, Jellies & Syrups	Sweeteners	Clean in Place & Waste Water Treatment
ANTIFOAMS & DEFOAMERS																			
MAGRABAR® PD-602	Vegetable Oil		Liquid					< 1 %											
MAGRABAR® PD-3500	Vegetable Oil		Liquid					0 %											
MAGRABAR® SPI-244	Vegetable Oil Emulsion		Liquid					0 %											
MAGRABAR® 10-SN	Silicone Emulsion		Liquid					10 %											
MAGRABAR® 20-SN	Silicone Emulsion		Liquid					20 %											
MAGRABAR® 30-SN	Silicone Emulsion		Liquid					30 %											
MAGRABAR® PD-1414	Polyoxyalkylene Glycol		Liquid					< 1 %											
MAGRABAR® PD-4447	Polyoxyalkylene Glycol		Liquid					0 %	 	 		 			 				 
MAGRABAR® PD-4483	Polyoxyalkylene Glycol		Liquid					0 %											
MAGRABAR® MD-3500	Vegetable Oil on Solid Support		Powder					0 %											
MAGRABAR® MD-20-S FG	Silicone on Solid Support		Powder					20 %											
MAGRABAR® IP-661	Vegetable Oil		Liquid					< 1 %											
MAGRABAR® IP-3500	Vegetable Oil		Liquid					0 %											
RELEASE AGENTS																			
MAGRABAR® SE-1435N FG	Silicone Emulsion		Liquid					35 %	 						 				
MAGRABAR® SE-1435N FG RTU	Silicone Emulsion		Liquid					15 %	 						 				

All MAGRABAR® products which are available in EMEA are Kosher and Halal certified, suitable for vegetarian and vegan diets, and gluten free.

* = The renewable content is calculated by adding the percentages of the plant-based raw materials used in the product.

** = All MAGRABAR® products which are available in EMEA may be appropriately used as a food processing aid in the EU, as defined in Regulation (EC) No. 1333/2008.

*** = These products consist of ingredients with an E number or that are considered a food and as such may be appropriately used as a food additive in the EU, subject to certain use limitations; refer to the EU statement. Additional national regulations may apply.

Further MAGRABAR® products on Page 9–11

 = Polyoxyalkylene Glycol

 = NSF H1 and 3H

 = Silica Free

 = Silicone

 = Vegetable Oil based

Product Overview: Processing Aids** and Food Additives***

Product	Formulation Type	Percentage of Active 	Physical Condition	Percentage of Renewable*  and Water  Content	Processing Aid**	Food Additive***	Organic	Non-GMO	Silicone Content	Fruits, Vegetables & Starch	Protein & Collagen	Dairy	Eggs, Meat & Seafood	Beverages, Broths & Soups	Fermentation	Powder Mixes	Jams, Jellies & Syrups	Sweeteners
ANTIFOAMS & DEFOAMERS																		
MAGRABAR® J-305	Mono- and Diglycerides (E471)		Liquid						0 %		 			 			 	
MAGRABAR® J-305 IP	Mono- and Diglycerides (E471)		Liquid						0 %		 			 			 	
MAGRABAR® PD-920	Mono- and Diglycerides (E471)		Liquid						0 %		 	 		 			 	
MAGRABAR® 2010	Vegetable Oil		Liquid						0 %									
MAGRABAR® 2015	Vegetable Oil		Liquid						0 %									
MAGRABAR® 2020	Vegetable Oil		Liquid						0 %									
MAGRABAR® 2025	MCT Oil		Liquid						0 %									
MAGRABAR® MD-4925	Vegetable Oil on Solid Support		Powder						0 %									
MAGRABAR® MD-4965	Vegetable Oil on Solid Support		Powder						0 %									
MAGRABAR® MD-4975	MCT Oil on Solid Support		Powder						0 %									
ANTIFOAMS & DEFOAMERS: MADE WITH ORGANIC CERTIFIED INGREDIENTS																		
MAGRABAR® 3001	Vegetable Oil		Liquid						0 %									
MAGRABAR® 3202	Vegetable Oil		Liquid						0 %									
MAGRABAR® 3303	Vegetable Oil		Liquid						0 %									
ANTIFOAMS & DEFOAMERS: ORGANIC CERTIFIED US/EU RECIPROCITY (95%)																		
MAGRABAR® MD-3000	Vegetable Oil on Solid Support		Powder						0 %									
MAGRABAR® 4000	Vegetable Oil		Liquid						0 %									
MAGRABAR® 4020	Vegetable Oil		Liquid						0 %		 	 	 	 				
MAGRABAR® 4035	Vegetable Oil		Liquid						0 %									

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 = Food Grade Glycerides

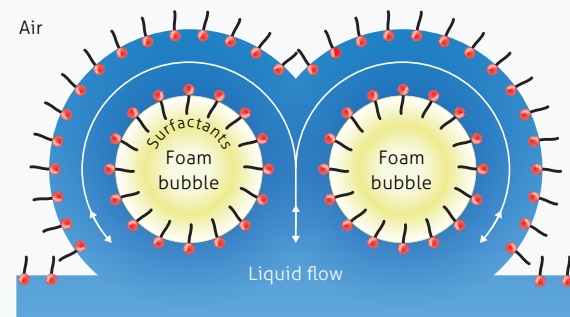
 = Silica Free

 = Vegetable Oil based

 = Certified Ingredients: Contains > 90% ingredients of agricultural origin. 100% of these agricultural ingredients are certified organic. These formulations have been verified by Quality Assurance International (QAI), are registered with the Washington State Department of Agriculture (WSDA) Organic Program and have been prepared without ingredients and methods which are excluded by Regulation (EC) No 834/2007 and Regulation (EC) No 889/2008.

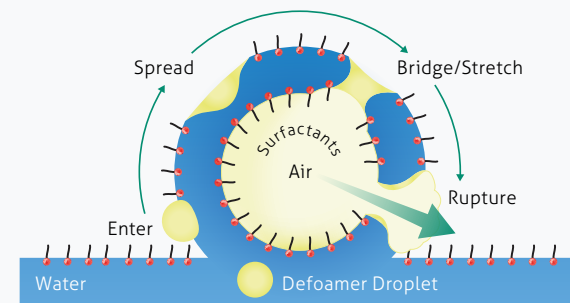
 = Organic Certified US/EU Reciprocity (95%) by Quality Assurance International (QAI) US-ORG-050. Imported into the EU and distributed by MÜNZING CHEMIE GmbH, certified by Lacon (DE-ÖKO-003).

How Defoamers Work



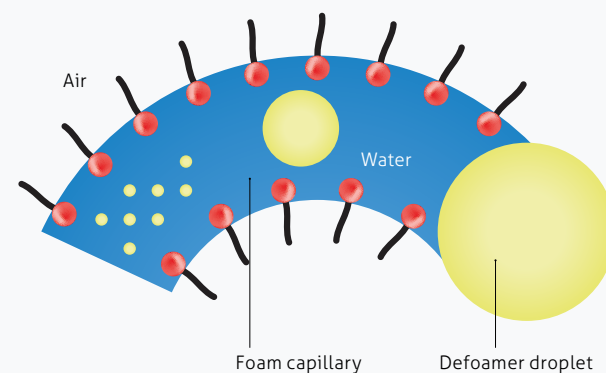
Foam stabilization mechanism

- » Foam is naturally unstable
- » Bubbles must rise to the surface to break
- » Drainage of the liquid surrounding the foam bubbles leads to rupture
- » Stability of foam comes from surfactants that hinder drainage



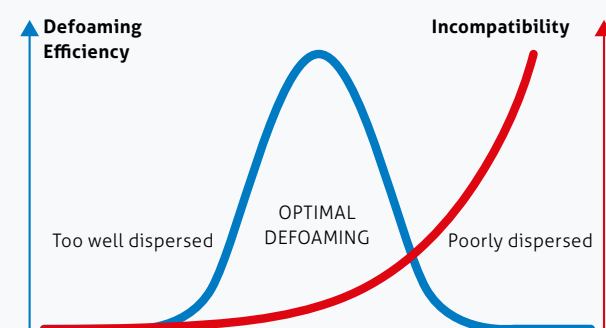
Defoamer mode of action

- » Defoamers exist as droplets in the liquid and act to destabilize foam by:
 - » Entering the foam bubble surface
 - » Spreading along that surface and thinning the liquid layer by forcing drainage
 - » Bridging the liquid layer to rupture the bubble
- » The defoaming process is governed by surface and interfacial tensions
- » The surface tension of the defoamer droplets must be lower than that of the liquid



Defoamer droplet size

- » The defoamer droplets need to be the right size
- » If the defoamer droplets are too small, there is an insufficient amount to produce an overall impact
- » Defoamer droplets that are too large will result in poor compatibility
- » More defoamer droplets of the optimal size will increase the rate of foam breakdown



MAGRABAR® Product Features

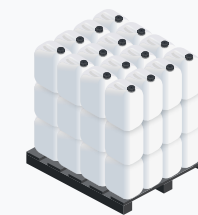
- » Exceptional initial and long-lasting defoaming
- » High performance across a range of industries and applications
- » Products derived from a range of materials and formulations to provide choice in determining best cost in use for each application
- » May be appropriately used as food processing aids in the EU. Some products may be appropriately used as food additives
- » Options for organic, non-GMO and identity preserved processing available

Packing units

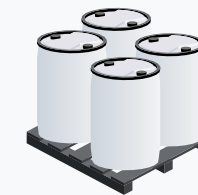
MAGRABAR® products are available in a range of packaging options to support our customers' needs. With a nominal capacity of 208l, plastic drums are the primary packaging for our liquid products. Product net weights range from 195 kg to 204 kg. Our largest liquid packaging is an Intermediate Bulk Container (IBC), nominal capacity 1040l, holding 998 kg. The smallest liquid packaging is an 18l square container with a handle. These pails hold 18 kg.

For powder products we offer two sizes of fiber drums, each with a plastic liner. The larger 208l drum holds from 91 kg to 136 kg, depending on the product. The smaller 49l fiber drum is filled to 18 kg for all powder products. All packaging includes tamper evident closures and numbered seals when appropriate.

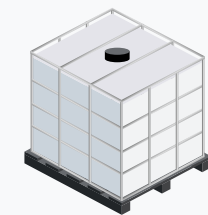
Packaging units for our liquid products



- » Pail: 18l
- » Weight: 18 kg net
- » Units per pallet: 48 pcs. (3 layers à 16 pcs.)



- » Plastic Drum: 208l
- » Weight: 195–204 kg net
- » Units per pallet: 4 pcs.



- » IBC: 1m³ / 1040l
- » Weight: 998 kg net
- » Units per pallet: 1 pcs.

Packaging units for our powder products



- » Fiber Drum small: 49l
- » Weight: 18 kg net
- » Units per pallet: 18 pcs. (2 layers à 9 pcs.)



- » Fiber Drum: 208l
- » Weight: 91–136 kg net
- » Units per pallet: 4 pcs.



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