MÜNZING

CREATING ADDITIVE VALUE

NORTH AMERICA

ADDITIVES FOR WATER-BASED SYSTEMS:

COATINGS, INKS, ADHESIVES AND BUILDING PRODUCTS

In addition to providing innovative foam control and additive solutions, MÜNZING offers technical service testing to solve customer challenges by duplicating the customer process rather than relying on general formulation characteristics. We employ a wide range of test methods to reproduce the conditions that a coating experiences during manufacturing, packaging and application.

Product Line Overview 1

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Defoamers:

AGITAN® and DEE FO®

- Broad range of chemistries with tailored compatibility and persistence
- Balance of foam control and wetting performance
- Suitable for all water-based applications

Wetting and Leveling Agents:

METOLAT® and EDAPLAN® LA

- Wide range of products to tailor compatibility and foam tendency
- Designed to control surface tension and improve substrate and pigment wetting
- Improve film leveling and overall film quality

Pigment Dispersants:

METOLAT® and EDAPLAN®

- Polymeric dispersants for a wide variety of pigments and fillers
- Designed to prevent pigment sedimentation and flocculation, improve color strength and stabilize viscosity

Rheology Modifiers:

TAFIGEL®

- HEUR & HASE associative thickeners for water-based applications
- Range of products provide Newtonian or pseudoplastic behavior
- Tailored product selection to optimize sag, leveling, spatter, sedimentation and flow

Additives for Building and Construction:

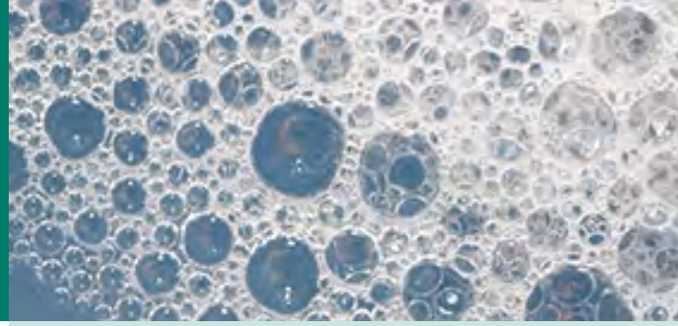
AGITAN® P

- Powder additives to control air content in cementitious systems

METOLAT® P

- Powder additives for cementitious systems to reduce shrinkage during drying and curing and to improve dispersion of particles and fibers

What is Foam?



Foam is a dispersion of a gas phase in a liquid system.

Foam Stabilization Mechanisms

- 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

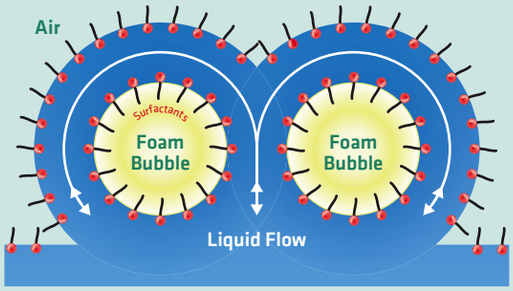
Defoamer Mode of Action

- Defoamers exist as droplets in the liquid and act to destabilize foam by:
  - Entering the foam 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

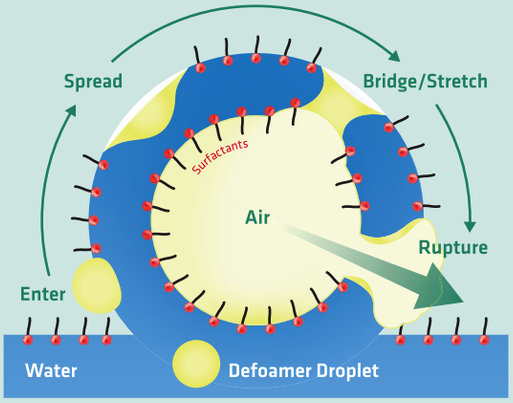
- When a defoamer is incorporated into a system, it disperses into fine droplets
- The droplets need to be the right size to break the foam
- If the defoamer droplets are too small, there is an insufficient amount to produce an overall impact
- Defoamer droplets that are too large will result in poor wetting
- More defoamer droplets of the optimal size will increase the rate of foam breakdown
- Ineffective/intense shearing or excessive/poor compatibility can negatively impact the droplet size
- Optimal defoamer selection requires the defoamer to have the appropriate persistence to shear and ease of incorporation, as described in the matrices as high (H), med (M), and low (L)

Foam Stabilization Mechanisms



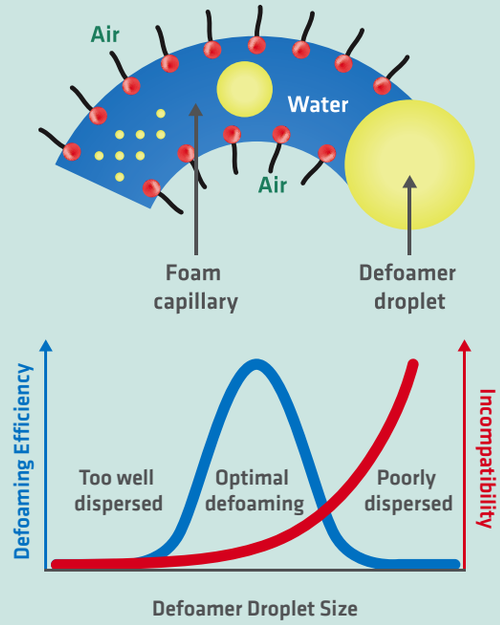
Schematic of foam bubbles on top of a liquid

Defoamer Mode of Action



Schematic of a foam bubble on top of a liquid

Defoamer Droplet Size



Architectural Coatings

Time-tested, cost-effective products that eliminate undesired foam during manufacturing and application.

		DEE FO® 2020A	DEE FO® 3010A	DEE FO® 97-3	DEE FO® 215	AGITAN® 282	AGITAN® 5091	DEE FO® 1015	AGITAN® 350	DEE FO® PI-35	AGITAN® 784	DEE FO® PI-320	AGITAN® 760	AGITAN® 786N
	Defoamer Type	M	M	M	M	M	M, POA	M, POA	POA	3D, E	3D, E	3D, POA	OMS, POA	OMS, POA
	Defoamer Solids	WA	WA, HS	MS	WA	HS	WA, HS	WA, HS	WA, HS	HS	HS			HS
Application	Emulsion Paints (matte/satin/eggshell)	●	●		●	○	●	●						
Application	Emulsion Paints (high gloss)									○	●	○	○	●
Application	Stucco/Textured/Plasters	○	○	●	○	○	●	●	●					
Application	Traffic Paint	○	●	●		○	●	○						
Application	Elastomeric Roof Coating	○		○	○		●	●	●			○		
Application	Grind Phase TiO_2/Fillers	●	●	○			●	●	●		●	○		●
	Ease of Incorporation/Emulsifiability	L	L	H	M	H	L	L	L	M	M	M	L	M
	Persistence to Shear	M	M	M	M	M	M	H	H	H	H	M	H	H

● = Primary Recommendation ○ = Secondary Recommendation L = Low M = Medium H = High

LEGEND - Defoamer Type and Solids:
E: Aqueous Emulsion; M: Mineral Oil; POA: Polyoxalkylene Technology; 3D: 3-Dimensional Polysiloxane; OMS: Organo-Modified Siloxane; WA: Wax; HS: Hydrophobic Silica; MS: Metallic Stearate

Industrial Coatings

A well-formulated coating is enhanced by the right defoamer – one that maintains gloss, clarity and coating integrity.

		DEE FO® 215	DEE FO® 3010E/50	AGITAN® 282	AGITAN® 350	DEE FO® PI-35	AGITAN® 784	DEE FO® PI-320	DEE FO® 718	AGITAN® 760	AGITAN® 786N	AGITAN® 155	AGITAN® 158
	Defoamer Type	M	M	M	POA	3D, E	3D, E	3D, POA	OMS	OMS, POA	OMS, POA	OMS, E	OMS, E
	Defoamer Solids	WA	WA, HS	HS	WA, HS	HS	HS		HS		HS	HS	HS
Application	Metal Primers	●	●		●		○			○	○	○	
	Metal Top Coats					○	○	●	○	●		○	●
	Anti-Corrosion Coatings		○	○	○	●	○			●	●	●	
	2K PU and Epoxy Coatings				○	○	○	○	●	●		●	
	Water-Based Alkyds	○				○	●	●					●
	Water-Based UV Coatings		○	○	○					●	○		
	Automotive Fillers	●	●		○		○			○		○	
	Automotive Basecoats	●	●	●	○	○				○	●	○	
	Automotive Clearcoats					○	●	●	○	●		○	●
	Can and Coil Coatings				○					●			○
	Ease of Incorporation/Emulsifiability	M	M	H	L	M	M	M	M	L	M	H	H
	Persistence to Shear	M	M	M	H	H	H	M	M	H	H	M	M

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Wood Coatings

A wide range of chemistries to meet the demands of a diverse industry.

		DEE FO® 215	AGITAN® 282	DEE FO® 3010E/50	DEE FO® 97-3	AGITAN® 351	AGITAN® 784	DEE FO® PI-320	AGITAN® 760	AGITAN® 786N	AGITAN® 155	AGITAN® 158
	Defoamer Type	M	M	M	M	POA	3D, E	3D, POA	OMS, POA	OMS, POA	OMS, E	OMS, E
	Defoamer Solids	WA	HS	WA, HS	MS	WA, HS	HS			HS	HS	HS
Application	High Gloss Enamels	○	○				○	●	●	○	○	●
	Varnish/Clear Coating						○	●	●		○	●
	Wood Stain	○		○		○	●			●	○	
	Wood Protective Coating	●	●	●	●		○		○		○	
	2K Polyurethane Coatings					○	○	●	○		○	●
	Water-Based UV Coatings		○	○		○			●			
	Ease of Incorporation/Emulsifiability	M	H	M	H	M	M	M	L	H	H	H
	Persistence to Shear	M	M	M	M	M	H	M	H	H	M	M

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E: Aqueous Emulsion; M: Mineral Oil; POA: Polyoxalkylene Technology; 3D: 3-Dimensional Polysiloxane; OMS: Organo-Modified Siloxane; WA: Wax; HS: Hydrophobic Silica; MS: Metallic Stearate

Adhesives

Air bubbles reduce the strength of your bond. Defoamers provide the opportunity to make a good product even better.

		DEE FO® 215	AGITAN® 5068	DEE FO® 2020E/50	DEE FO® 3010E/50	AGITAN® 282	DEE FO® 97-3	DEE FO® PI-12	DEE FO® 1015	AGITAN® 351	AGITAN® 784	AGITAN® 786N
	Defoamer Type	M	M	M	M	M	M	M, POA	M, POA	POA	3D, E	OMS, POA
	Defoamer Solids	WA	WA	WA	WA, HS	HS	MS	WA, HS	WA, HS	WA, HS		HS
Application	Pressure Sensitive Adhesive	●	●	●	○	○	○	●				
	Laminating/Clear Coat/Release Liner	●	○	●		●		○			●	●
	Envelope/Label	○	●	●			○	●		○		
	Packaging	●	●	●	○		○	○				○
	Wood Glue	●	○		○	○	●	○		○		●
	Construction	○	●	●		●	●		●	○	○	
	Natural/Neoprene/Nitrile Latex	○	●				●			●	●	○
	Acrylic/EVA/VA Latex	●	●	○	○	●		●		○	○	
	Gelatin/Casein/Starch	●	○			○					●	○
	Polyvinyl Alcohol	○	○		○	●				●		
	High Viscosity	●	●	●					●	●	○	○
	Ease of Incorporation/Emulsifiability	M	M	M	M	H	H	H	L	M	M	M
	Persistence to Shear	M	M	M	M	M	M	M	H	H	H	H
	FDA 175.105	✓	✓	✓	✓		✓	✓	✓	✓	✓	
	FDA 176.210			✓	✓				✓	✓		

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Printing Industry

Achieve the delicate balance between compatibility and foam control to reduce film defects.

		DEE FO® 215	DEE FO® 300F	DEE FO® 3010E/50	DEE FO® PI-12	DEE FO® 1537A	AGITAN® 351	DEE FO® PI-547	DEE FO® PI-35	AGITAN® 784	DEE FO® PI-320	DEE FO® PG-2	AGITAN® 155	AGITAN® 150	AGITAN® 158	AGITAN® 786N	AGITAN® 760	DEE FO® 725E
Defoamer Type		M	WO	M	M, POA	M, E	POA	POA	3D, E	3D, E	3D, POA	3D, POA	OMS, E	OMS, E	OMS, E	OMS, POA	OMS, POA	OMS
Defoamer Solids		WA	WA	WA, HS	WA, HS	WA, HS	WA, HS	HS					HS	HS	HS	HS		HS
Application	Corrugated Paper	●	●	○	●		●	●	○	○			●	○		○		
	Coated Paper	○	○		○				●	●	●			●	○	○	●	●
	Film & Foil	●	●	○	○			○	○	●	●	○	○	●	○	●	●	●
	Overprint Varnish	○	○		○			○	○	○	○			○	●	●	●	●
	Metallic Ink	○	○				●	○		○		●	○	○			●	●
	Ink Jet														●		○	○
	Screen Ink	●		○			●		○	○			○	○	●		○	○
	Fountain Solution									○	●	●	○	●				○
	Press-Side	○		○		●							●	○				○
Ease of Incorporation/ Emulsifiability		M	H	M	H	H	M	M	M	M	M	L	H	H	H	M	L	H
Persistence to Shear		M	M	M	M	L	H	H	H	H	M	H	M	M	M	H	H	M
FDA 175.105		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓
FDA 175.300			✓				✓		✓*	✓*							✓	
FDA 176.170		✓	✓	✓	✓	✓	✓	✓	✓*	✓*								
FDA 176.180		✓	✓	✓	✓	✓	✓	✓	✓*	✓*								

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LEGEND - Defoamer Type and Solids:
E: Aqueous Emulsion; M: Mineral Oil; WO: White Oil; POA: Polyoxalkylene Technology; 3D: 3-Dimensional Polysiloxane; OMS: Organo-Modified Siloxane; WA: Wax; HS: Hydrophobic Silica; ✓*:Limited

Grinding Pigments

Long-term defoamer persistence allows efficient and effective production.

		DEE FO® 215	DEE FO® 3010A	DEE FO® 1015	DEE FO® 806-102	AGITAN® 351	DEE FO® PI-16P	DEE FO® PG-2	DEE FO® PG-20	AGITAN® 5230	AGITAN® 786N	AGITAN® 760
	Defoamer Type	M	M	M, POA	M	POA	POA	3D, POA	3D, POA	3D, POA	OMS, POA	OMS, POA
	Defoamer Solids	WA	WA, HS	WA, HS	HS	WA, HS	HS				HS	
Application	Carbon Black	●	●	○	○	●	●			●	○	○
Application	Phthalocyanine Blue & Green (e.g. Crude Blue, PBI 15:3, PG 7...)			○		●	○	●	●	○		○
Application	Carbazole Violet					○	○	●	●	○		○
Application	Organic Red/Yellow (e.g. PR 22, PR 57:1, PY 14...)			○	●	●	○		○	○	○	○
Application	Titanium Dioxide	●	●	●	○	●				○	○	
Application	Transparent Iron Oxide								●	○	○	○
Application	Opaque Iron Oxide	○	●	●	●				○		○	
	Ease of Incorporation/Emulsifiability	M	M	L	L	M	L	L	L	L	M	L
	Persistence to Shear	M	M	H	M	H	H	H	H	H	H	H

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Wetting and Leveling Agents

Control surface tension to improve substrate wetting, leveling and overall film quality.

		METOLAT® 288	METOLAT® 1299	METOLAT® 388	METOLAT® 355	METOLAT® 700	METOLAT® 725	METOLAT® 750	METOLAT® 775	METOLAT® 780	METOLAT® 7010	EDAPLAN® LA 402	EDAPLAN® LA 403	EDAPLAN® LA 414	EDAPLAN® LA 413
	Type	Anionic Ester		Nonionic								Acrylic Co-Polymer		Organo-Modified Siloxane	
Application	Substrate Wetting	●	●			●	●	●	●	●	○				○
	Leveling & Anti-Cratering	○	○			●	●	●	●	●		●	●	●	●
	Wetting of Pigments & Fillers		●	●	●	●				○	●				
	Aqueous Systems	●	●	●	●	●	●	●	●	●	●	●	●		●
	Non-Aqueous Systems			●	●							●	●	●	●
	Low Foaming			○	○			○	●	●		●	●	●	○
	Inks	○	○					●	●	●					
	Adhesives	●	●			○	○	●	●	●					
	Overprint Varnishes	●	●			○	○	●	●	●					
	Industrial & Wood Coatings	●	●					○	●	●			●	●	●
	HLB (Griffin Method)	-	-	10.5	14	12.5	11	10	9	9	12.5	-	-	-	-
	FDA 175.105	✓	✓	✓					✓	✓		✓	✓		
	FDA 175.300	✓	✓	✓											
	FDA 176.170	✓		✓		✓	✓	✓	✓	✓	✓				
	FDA 176.180	✓	✓	✓		✓	✓	✓	✓	✓	✓				
	FDA 176.210	✓	✓	✓											✓

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All wetting and leveling agents are APEO free.

Pigment Dispersants

Effective particle wetting and dispersing are necessary for high-quality, stable products.

	METOLAT® 390	METOLAT® 392	METOLAT® 394	EDAPLAN® 490	EDAPLAN® 492	EDAPLAN® 494	EDAPLAN® 395	EDAPLAN® 396	EDAPLAN® 930	EDAPLAN® 397	EDAPLAN® 470*	EDAPLAN® 472*	EDAPLAN® 480	EDAPLAN® 482	EDAPLAN® 516	METOLAT® 514
Chemistry	Fatty Derivative Copolymer	Olefinic		High MW Copolymer						Poly glycol ester	High MW Acrylic-Based Polymer				Acrylic-Based Polymer	
Charge	Anionic			Nonionic		Anionic				Non-ionic	Anionic					
% Active	55	45	55	40	35	50	30	35	100	100	50	50	85	85	20	34
Solvent	Water								-	-	BDG		Water			
Application: Inorganic Pigments			○	●	○	●	○	○	○	○	○	○	○	○	●	○
Application: Organic Pigments	●	○	○	●	●	○	○	●	○	○	○	○	○	●		
Application: Carbon Blacks		●		○	●	●		○			○	○	○	○		
Application: Transparent Iron Oxides			●	●	○	●	○									
Application: Fillers			○	●	○	●	○	○	○	○	○	○	○	○	●	●
Suitability	Water								Water & Solvent				Water			
Typical Dosage in Delivery Form on Organic Pigment %	40 - 100	30 - 100	10 - 60												---	---
Typical Dosage in Delivery Form on Inorganic Pigment %	---	---	0.5 - 20												0.1 - 1.0	0.1 - 1.0

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All products are APE free and recommended for water-based systems except where noted.
* EDAPLAN 470 (AN= 110 mg/KOH), EDAPLAN 472 (AN= 75 mg/KOH) need to be neutralized prior to use for water-based systems (TDS).

Rheology Modifiers

HEUR and HASE thickeners to optimize flow, sag, leveling, spatter and sedimentation.

	TAFIGEL® PUR 60	TAFIGEL® PUR 61	TAFIGEL® PUR 64	TAFIGEL® PUR 65	TAFIGEL® PUR 40	TAFIGEL® PUR 41	TAFIGEL® PUR 44	TAFIGEL® PUR 48	TAFIGEL® PUR 50	TAFIGEL® PUR 54	TAFIGEL® PUR 45	TAFIGEL® PUR 80	TAFIGEL® PUR 82	TAFIGEL® PUR 85	TAFIGEL® AP 75N	TAFIGEL® AP 15	TAFIGEL® AP 16	TAFIGEL® AP 20	TAFIGEL® AP 30
Rheology Profile	Strongly Pseudoplastic				Pseudoplastic						Newtonian				Pseudoplastic			Strongly Pseudo-plastic	
Type	Nonionic Polyurethane				Nonionic Polyurethane						Nonionic Polyurethane				Anionic Copolymer Emulsion				
Solvent	BTG + water	Water	BTG + water			Water	BTG + water		Water	BTG + water		Water						White Oil	
Active Content (%)	40	25	40	20	40	20	40		21	20	40	20		25	31	29		31	32
Application: Brush and Roller						●	●	●	●	●	●	●	●	●	●	●	●		
Application: Spray Applications	●	●	●	●	○	○	○	○	○	○						○	○		
Application: Sag Resistance & Anti-Settling	●	●	●	●	○	○	○	○	○	○					●	●	●	●	
Application: Systems Difficult to Thicken	○	●	●	●				●						○	●	●	●	●	●
Application: Pigment Concentrates															●	●	●	●	●
Application: KU Builder	●	●	●	●	○	○	○	○	○	○									
Application: ICI Builder												●	●	●	●				
APE Free	✓	✓	✓	✓	<0.1%	✓	✓	✓	0.05%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
FDA 175.105		✓							✓	✓		✓	✓		✓				

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BTG: Butoxytriglycol

Additives for Building and Construction

Powder additives to control air entrainment, shrinkage and particle wetting to improve the aesthetics and physical properties of cementitious materials.

		AGITAN® P 801	AGITAN® P 803	AGITAN® P 813	AGITAN® P 823	AGITAN® P 8850	AGITAN® P 841	AGITAN® P 840	AGITAN® P 845	METOLAT® P 871	METOLAT® P 872	METOLAT® P 874	METOLAT® P 530	METOLAT® P 590	METOLAT® P 588	METOLAT® P 854
Type of Additive		Powder Defoamer								Powder Anti-Shrink			Powder Wetting Agent			
Chemistry		Mineral Oil, Polyglycol				Veg Oil, Polyglycol		Polyglycol		Glycol	Aliphatic Alcohol, Glycol		SN	Glycol	Poly-glycol Ester	AA
% Active		65	65	50	65	25	55	30	40	55	50	50	90	45	30	35
Application	Self-Leveling		○	○	●	●	●	●	●	●	●	●	●	●	●	●
	Thin Sets		○		●	●	●		●	●	●	●	○	○	○	○
	Stiff Products	●				○	○		●	●	●	●	●	●	●	●
	Joint Fillers, Grouts & Mortars	●				○	○		●	●	●	●	●	●	●	●
	Gypsum & Lime	●					○		●	○	○	○				
	Powder Paints	●	●		●	○	○		●	●	●	●	●	●	●	●
	Construction Adhesives					●	●		●	●	●	●	●			
	Premix Pigment Powder	●	●		●	○	○		○	●	●	●		●	●	●

● = Primary Recommendation ○ = Secondary Recommendation

SN = Sulfonated Naphthalene Condensate, Anionic; AA = Alkylalkoxylate, Nonionic

Additional Products

Specialty Additives

OMBRELUB 533

- Hydrophobing agent for inks and coatings
- Stable fine dispersion of calcium stearate in water
- Increases slip and anti-blocking
- Improves sandability of wood coatings

OMBRELUB 730

- Additive for prolongation of open time of plasters and facade paints
- Stable fine dispersion of fatty derivatives in water
- Prevention of crack formation

ZINPLEX 15

- Crosslinking agent for carboxylated binders
- Ammonia zinc oxide solution
- Improved resistance against water, detergents and solvents
- Increased blocking resistence

ULTRASPERSE WPP

- Waterproofing powder
- Blend of water repellent components and water reducing agents
- Improves workability and reduces water-cement ratio

Defoamers for Non-Aqueous Systems

FOAMTROL 110, DEE FO® 135,
DEE FO® 718, DEE FO® XKF-1B

Dispersants for Non-Aqueous Systems

EDAPLAN® 935 and 930
METOLAT® LA 524

Silicone Emulsions for Foam Control

Industrial Grade: FOAMTROL 10L
Food Grade: MAGRABAR® 5-SN, 10-SN, 20-SN, 30-SN

Additional Products

Wax Additives

CERETAN®

- Spherical shape for improved wetting and dispersing
- Wax combinations and coated wax for improved slip, scratch and rub resistance
- Ceretan WD series is water-dispersible; highly stable 50-60% concentrate with ease of incorporation

LUBA-print®

- Aqueous and solvent wax dispersions
- Ease of incorporation
- Excellent formulating value
- Wide variety with narrow particle size distribution

For a complete listing of wax products, refer to our Wax Additives brochure at www.munzing.com/en/literature/product-brochures/

MÜNZING
CREATING ADDITIVE VALUE

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