

POWDER COATING

ADDITIVES



Powder Coatings

Powder Coatings can be considered one of the youngest coating technologies, with a history of only about 60 years. However, no other technology went through so many different innovative stages. Today, Powder Coatings have got to be real all-rounders: they need to resist heavy strains, such as scratching, rubbing and withstand long-term forces, such as sunlight, heat and cold.

Besides measurable values, the subjective perception of the customer is playing a major role – the senses of the customers want to be activated. Optical effects, such as gloss or matting let the coating look better, haptic effects, such as soft feel, enhance the products and provide a competitive edge. Different surface structures activate the customer's sense of touch.

CERETAN wax additives will help to meet these steadily growing demands. Just as the final products, our additives need to fulfill equally high requirements: they should aid in and optimize the production process. They need to be easy to use. They should preferably only be a small portion of the overall formulation. They need to assure a constantly high quality. Our round micronized CERETAN waxes will fulfill your demands and help you to inspire your customers to reach for outstanding performance. This brochure will help you find the best suitable products and optimize your Powder Coating.

Waxes for Powder Coatings

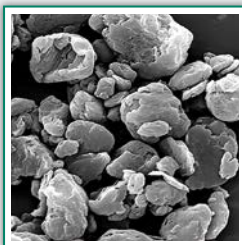
Powder Coatings mainly consist of resins, pigments, filler and additives. Waxes belong to the category of additives and have multiple functions.

They are being used for:

- » Improving surface properties
- » Improving the application during the coating process
- » Processing aid
- » Reducing damage during transport and storage

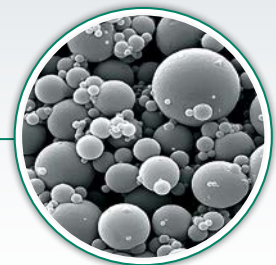
Effectiveness of micronized waxes

In the past, customers used waxes as powders with an average particle size of 200–500 µm for the production of Powder Coatings. Analytical chemists were of the opinion that the waxes would eventually melt and therefore optimal homogenization would be achieved. Detailed analyses of defects such as fogging, irregular gloss and rough surfaces showed that such irregularities could be avoided by perfect dispersion of all components. This conclusion leads to the fact that micronized waxes with an average particle size of 5–10 µm are more suitable for the dispersion than the formerly used powder waxes.



Air milled waxes

**The sphere makes
the difference.**



Spray micronized waxes

Non micronized vs. micronized waxes

Waxes, especially micronized waxes, have a great influence on the cost efficiency of the production of Powder Coatings. Micronized waxes melt earlier and therefore wet the pigment and fillers for a longer time span. The result is improved lubrication during the extrusion as well as the improved wetting of the pigments, resulting in superior color output.

Lab tests have proven that the use of micronized waxes reduces the electric power consumption. Flexible parts last longer and therefore the costs for maintenance and repairs are reduced, even with higher throughput.

Waxes as processing aids

In order to obtain the best results, it is necessary to add the wax at the beginning of the production stage. This will ensure a homogeneous dispersion of all components, including improved pigment wetting, hence better color output. The properties of the final coating are enhanced by even distribution of the components within the surface.

A subsequent addition is only recommended for special cases since it is very difficult to disperse a very small amount of wax homogeneously.

Production Process

Micronized waxes offer advantages to various production steps of Powder Coatings. In the following graph you can see that the areas highlighted in green are positively affected by the use of micronized waxes. In the so called pre-mixing stage the waxes offer advantages as a processing aid, such as better pigment dispersion and as lubricant during extrusion. In the post-adding stage the wax contributes additional surface properties for the end user, such as scratch and abrasion resistance.

Pre-mix or post-add

A very standard question regularly comes up regarding the addition of waxes – pre-mix or post-add? MÜNZING Micro Technologies recommends using waxes in the pre-mix in order to get the full advantages as a processing aid. All CERETAN waxes for Powder Coating applications can also be used in post-addition, however, it is necessary to have very good homogenisation equipment to assure a homogeneous mixture.

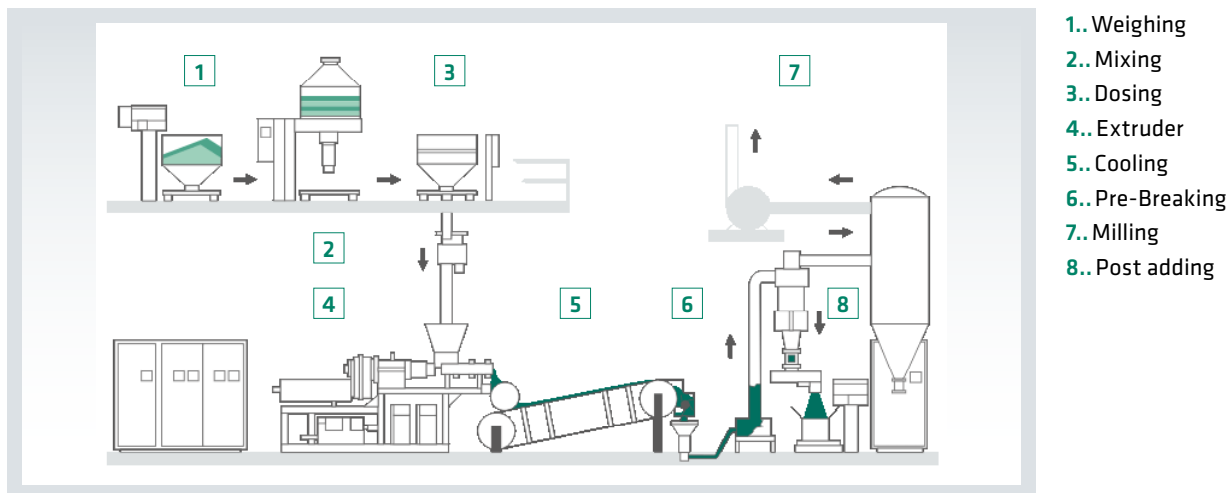


Figure | Production Process

Flexibility of Use

CERETAN round micronized waxes cause only very little electrostatic charge in comparison to traditional milled waxes. The unique spraying technology leads to a superior suitability for use in both kinds of spray application, either by Corona or Tribo spraying gun.

Improved surface properties

A homogeneously dispersed Powder Coating optimises the surface with following properties:

- » Gloss / Matting
- » Degassing
- » Scratch resistance
- » Surface texture

At the same time, also the secondary properties like internal porosity (bubbles) or cleaning properties (with solvents such as white spirit) show improvements.

Improved performance with substantial cost savings

Joint developments of MÜNZING together with major Powder Coatings producers have shown and proven that the CERETAN micronized waxes provide better results by using a lower addition level (10–20 %) of waxes in the Powder Coating formulation. CERETAN waxes do improve the Powder Coating production as well as the surface properties of the finished Powder Coating, while saving raw materials – hence, CERETAN products can be considered eco-friendly.

WAX PROPERTIES

Product	Type of wax	Drop point °C	Density of the wax g/cm ³	Viscosity of the wax mPas	Particle size	
					D ₉₉ µm	D ₅₀ µm
CERETAN MA 7008	EBS	143–151	0,98–0,99	20–40	8	3
CERETAN MA 7020	EBS	143–151	0,98–0,99	20–40	20	8
CERETAN ME 0980	Non polar Polyethylene	110–120	0,94–0,96	10–0	80	30
CERETAN MF 5108	PTFE	320–340**	2,15–2,25	–	8	5
CERETAN MF 5715	PE/PTFE	108–118	0,94–0,95	20–60	15	8
CERETAN MP 2120	Polypropylene	156–164	0,87–0,89	100–200	20	10
CERETAN MP 2180	Polypropylene	156–164	0,87–0,89	100–200	80	30
CERETAN MT 9120	Fischer Tropsch	112–120	0,94–0,98	10–20	20	7
CERETAN MX 2919	Functional blend	140–146	0,93–0,95	10–60	19	9
CERETAN MX 9718	Functional blend	134–142	0,96–0,98	5–15	18	7
CERETAN MX 9820	Polyolefine	111–119	0,94–0,95	20–60	20	7

** = Melting point

* The composition of the Powder Coating used was as follows: Polyester/Epoxy 70:30, Resin/Pigment 65:35 (pigment content: neutral filler and Titanium Dioxide, respectively Carbon Black Pigments)

Crockmeter-Test*

During the CROCKMETER Test (abrasion and rubbing test) the high quality of CERETAN waxes has been proven. In comparison to the reference sample, the surface impact (such as card board or Styrofoam) is highly reduced or there is no impact (no visible impact) at all. The results are as follows:

- » **CERETAN MF 5715** good
- » **CERETAN MXF 9820 D** better
- » **CERETAN MXD 3920** excellent
(no impact/no sanding mark visible)

Taber-Abraser-Test*

In comparison to the reference sample the **CERETAN MF 5715** achieved very good results during the Taber Abraser testing. The **CERETAN MXF 9820 D** shows the best results.

- » **CERETAN MX 9820** good
- » **CERETAN MF 5715** better
- » **CERETAN MXF 9820 D** best

For testing our CERETAN MXD 3920, the Taber Abraser test is not the recommended testing-method, due to the fact that the product with a coating of diamond-like hardness heavily abrades the ceramic wheel of the Taber Abraser giving false hardness results.

Degassing	Matting	Scratch resistance	Abrasion resistance	Surface hardness	Slip	Structure	Anti Graffiti
●●	●●	●	●		●		
●●	●●	●	●		●		
●		●	●	●	●	●	
		●●	●	●●	●●		●●
	●	●●	●	●	●		●●
	●●	●	●	●			
	●●	●	●	●		●●	
	●●	●●	●	●	●		
●	●●	●	●	●	●		
●●	●	●	●	●	●		
	●	●	●	●	●		●

● Recommended ●● Highly recommended

CERETAN coated waxes

The unique MÜNZING spraying technology enables us to coat additives on the surface of our round micronized waxes.

The coating of micronized waxes offers various advantages to the customer:

- » Two products in one
- » Difficult to disperse additives can be dispersed easily
- » The amount of additives can be reduced
- » The amount of wax can be reduced
- » Improved performance of the additive
- » Reduced number of production steps
- » Additives are evenly distributed
- » No settling of additives

MÜNZING recommends especially for Powder Coatings the following coated waxes which have proven their high efficiency:

» CERETAN MAB 7055

Amide wax coated with Benzoin, this product enables you to reduce the amount of Benzoin contained in your Powder Coating and provides excellent flow and leveling by reduced yellowing.

» CERETAN MXF 9820 D

PTFE coated functional blend, which helps to reduce the amount of PTFE used in your system by more than 10%. It provides better clarity and improved surface properties due to immediate performance of PTFE on the surface.

COATED WAX PROPERTIES

Product	Type of wax	Coating	Drop point °C	Density of the wax g/cm ³	Viscosity of the wax mPas	Particle size	
						D ₉₉ µm	D ₅₀ µm
CERETAN MAB 7055	EBS	Benzoin	135–145	0,98–0,99	20–40	55	8
CERETAN MXF 9899	Functional blend	PTFE	108–118	0,94–0,95	20–60	–	50
CERETAN MXF 2999	Functional blend	PTFE	140–146	0,93–0,96	20–100	–	50
CERETAN MTZ 9335	Fischer Tropsch	Zinc	108–116	0,94–0,95	10–20	35	15
CERETAN MXD 3920	Functional blend	Coating of diamond-like hardness	138–146	0,94–0,95	5–15	20	7
CERETAN MXF 9820 D	Functional blend	PTFE	108–118	0,94–0,95	20–60	20	8

Safety data Further information about all mentioned products can be found in the corresponding Material Safety Data Sheet. Moreover, information concerning hazard class designation, safety measures, exact handling and storing as well as information on disposal regulations can be found in the MSDS.

» **CERETAN MXD 3920**

Functional blend with a coating of diamond-like hardness, which provides superior surface hardness. It is harder than pure PTFE and can be used in lower amounts.

» **CERETAN MTZ 9335**

Zinc-compound coated wax, which provides excellent matting at higher curing temperatures starting from 180–230 °C, where standard matting agents fail.

Degassing	Matting	Scratch resistance	Abrasion resistance	Surface hardness	Slip	Structure	Anti Graffiti
●●	●●	●	●		●		
	●	●	●	●	●	●●	●
	●	●	●	●	●	●●	●
	●●	●●	●	●	●		
	●	●●	●●	●●	●		●
	●	●●	●●	●●	●		●●

● Recommended ●● Highly recommended

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Contact

MÜNZING CHEMIE GmbH

Münzingstrasse 2
74232 Abstatt
GERMANY
Phone +49 7131 987-0
Fax +49 7131 987-125
E-Mail info@munzing.com

MÜNZING CHEMIE Iberia S.A.U.

Carrer Temple, 15 1° derecha
ES08911 Badalona (Barcelona)
SPAIN
Phone +34 93 5722075
Fax +34 93 5722683
E-Mail iberia@munzing.com

MÜNZING

Micro Technologies GmbH

Dr.-Bergius-Strasse 16-24
06729 Elsteraue
GERMANY
Phone +49 3441 829 10-22
Fax +49 3441 829 10-20
E-Mail ceretan@munzing.com

MÜNZING North America

1455 Broad Street, Suite #3
Bloomfield
NJ 07003-3003
USA
Phone +1 973 279-1306
Toll Free +1 800 524-0055
Fax +1 973 338-0420
E-Mail info@munzing.us

MUNZING Mumbai Pvt. Ltd.

Raheja Chambers 2nd Floor,
233 DBS Business Center,
Nariman Point
Mumbai 400021
INDIA
Phone +91 982 0853126
E-Mail india@munzing.com

MÜNZING

International S.a.r.L.

23, rue Aldringen
L-1118 LUXEMBOURG
Phone +352 2627 1520
Fax +352 2627 1530
E-Mail benelux@munzing.com

MÜNZING Shanghai Co.Ltd.

Rm 1701B-1703A
No. 20, Lane 1228, ZRT Tower
Jiangchang Rd.
Shanghai 200072
P.R. CHINA
Phone +86 21 6149 1561
Fax +86 21 6149 1563
E-Mail info@munzing.cn

