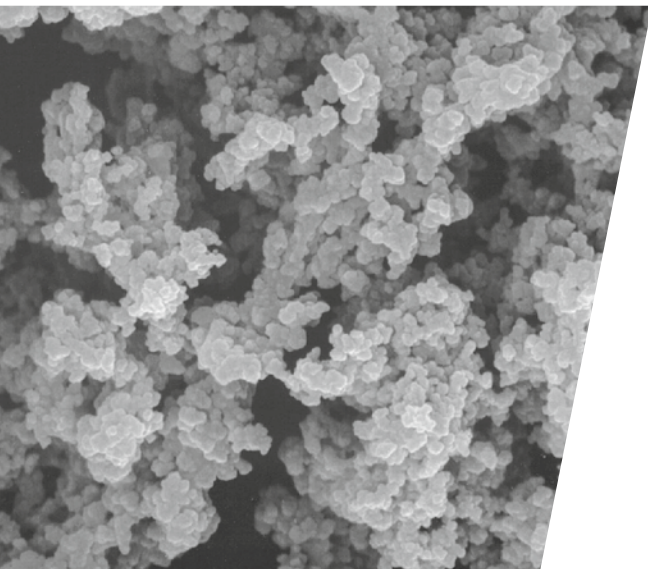




## Matting Agents

Polymethyl urea resin for matting of coated surfaces.



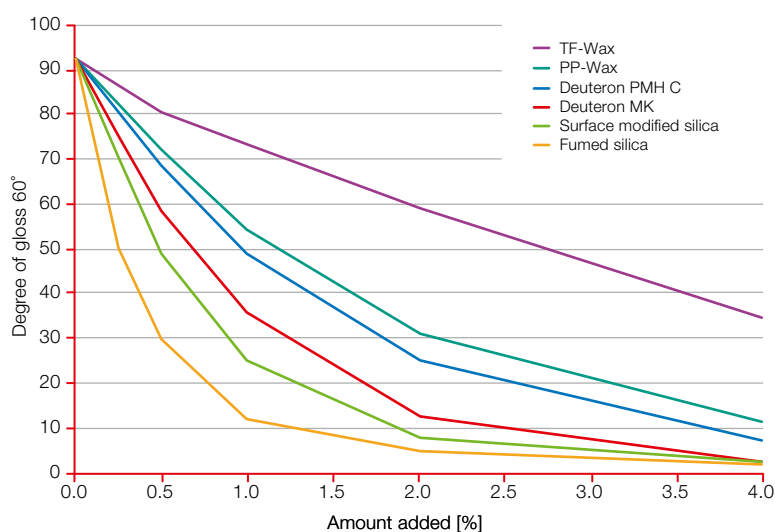
 **Deuteron**<sup>®</sup>  
ADDITIVES TO YOUR SUCCESS

## / Matting agents from Deuteron: Additives for perfect coated surfaces.

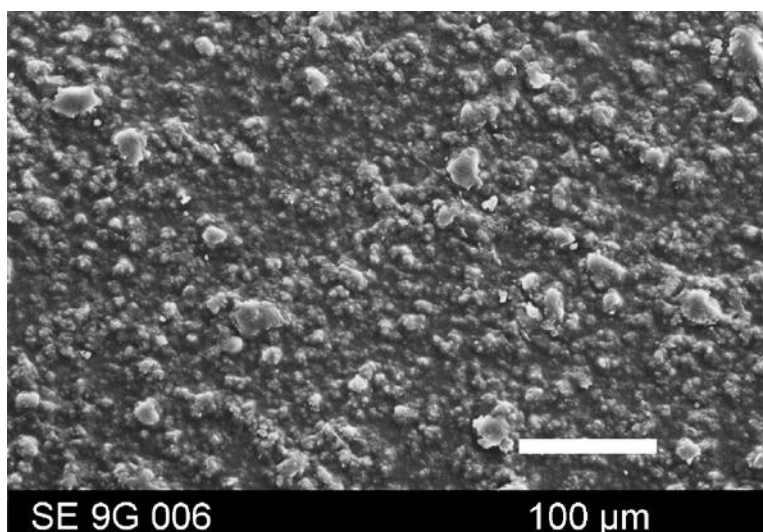
Organic matting agents based on polymethyl urea resin are important additives that are used in inks, paints and coatings. They optimise results and expand the possibilities for use where conventional agents have reached their limits.

Our Deuteron matting agents are organic thermoset urea methanal polymers supplied in the form of finely ground powder. Because of the chemical and physical characteristics of this group of materials, no comparison can be made of their effects and they cannot simply replace silicate-based matting agents. They nevertheless open up special, useable characteristics for the user. With their chemical character and their structure they are well suited as sole or additional matting agents in a wide range of coating materials. In paint and lacquering applications, the 5 available ground and sieved Deuteron versions cover a large number of possible uses.

Organic matting agents based on polymethyl urea resin are not a replacement for  $\text{SiO}_2$  matting agents. They do however offer possibilities for optimisation where the limits of conventional matting agents have been reached. Their use helps in part to achieve a surface that could not be obtained with standard matting agents alone or that could only be partly achieved or only in combinations.



Gloss levels of different matting agents in a NC lacquer.



Scanning electron microscope image of Deuteron MK in a coated surface.

The Deuteron matting agents are organic thermoset urea methanal polymers available to you in the form of finely ground powder. With their chemical character and their structure they are highly suitable as sole or additional matting agents in many coating materials – and thanks to their high performance they are used by our customers all over the world. Profit from the versatile application possibilities our matting agents offer for your ink and coating tasks.

## / Advantages at a glance:

- Good matting effect
- Narrow particle size distribution
- No melting point (thermosets)
- Temperature resistant up to 200 °C
- Short-term curing temperatures up to over 300 °C
- Highly transparent in film
- High scratch resistance
- High resistance to polishing
- Stable in circular pipelines
- Shear resistant
- Chemical resistant
- No swelling in normal coating solvents
- No adverse effects on catalysts
- Can be overpainted and printed on
- Little influence on viscosity/rheology
- Can be cleaned and decontaminated
- Good gloss retention under weathering
- Increases resistance to metal marking
- “Pleasant” haptic – soft touch
- Soft effects are supported
- Positively affects block resistance
- Little influence on “Anfeuerung” effects
- Orientation additive for metallic effect pigments

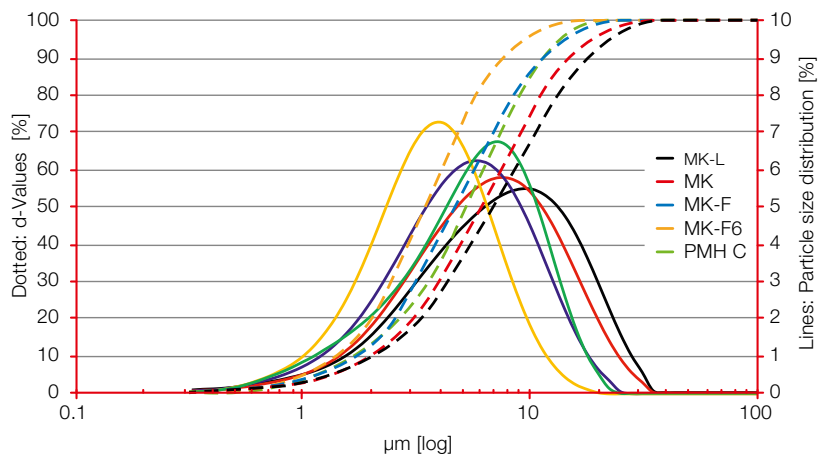


Deuteron matting agents can be used in aqueous, solvent-based and UV curing systems and in reactive and non-reactive systems. Because of the inherent moisture content of 10 - 12 %, these products cannot be used in moisture-curing systems. In all systems without film shrinkage, e.g. in 100 % UV coatings, solvent-free epoxide coatings or powder coatings, as with all other matting agents, a satisfactory result cannot generally be expected.

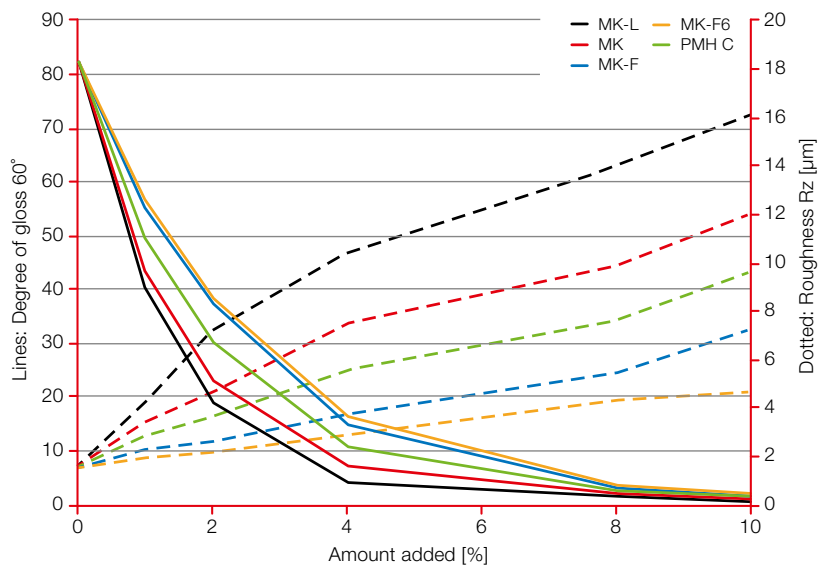
The particle size and particle size distribution of the matting agent define its matting properties and the smoothness of the surface.

In coating systems in which organic matting agents do not provide the desired reduction of the gloss level, the addition of small quantities of inorganic matting agents and/or waxes can be helpful. Care however should be taken because this may result in some loss of the benefits of the organic matting agents. In some cases synergistic effects can also be achieved. For special applications we offer a selection of our own compounds.

In each case the gloss level (reflectometer value) is a function of the particle size and the structure of the matting agent that is formed in the surface. With identical matting agent types the matting effect is directly proportional to the particle size. With increasing particle size the roughness of the surface and hence the mattness increase. The graph opposite shows the Rz values (i.e. the maximum roughness profile heights) against the gloss levels.



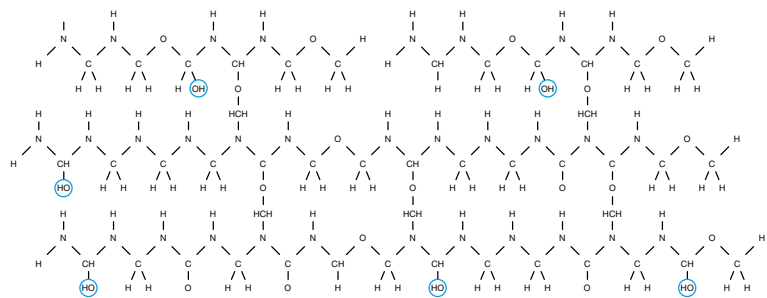
Comparison of the frequency of particle sizes and d-values.



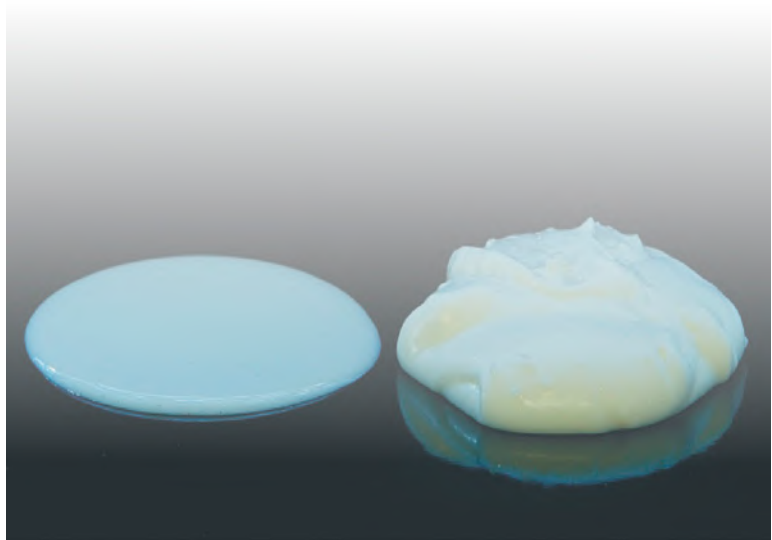
Gloss level in relation to surface roughness.

# Additives to your Success.

A major advantage is the reduced influence on viscosity and rheological behaviour compared to that of  $\text{SiO}_2$  matting agents. Although the quantities required of our organic matting agents might be higher in some cases (for the same gloss levels), the developer has greater freedom of formulation with regards to viscosity adjustments etc.



Chemical structure of PMU.



Example for viscosity and thixotropy difference in a 1K aqua parquet varnish with 10% additions of, respectively: left: Deuteron MK, right:  $\text{SiO}_2$ .

Product		Oil absorption	Bulk density approx.	Particle size approx.		Remarks
				d50	d90	
DEUTERON MK-L	PMU-Powder	333	140	7.3	17	Heat resistance up to 200 °C, light fast and weather resisting
DEUTERON MK	PMU-Powder	325	150	6.3	13.8	Heat resistance up to 200 °C, light fast and weather resisting
DEUTERON MK-F	PMU-Powder	278	150	4.6	10.6	Low particle size, used primarily in thin film systems
DEUTERON MK-F6	PMU-Powder	251	120	3.5	6.5	Low particle size, used primarily in thin film systems
DEUTERON PMH C	PMU-Powder	167	220	5.5	12.1	Very low influence on viscosity
DEUTERON PMH F	PMU-Powder	180	300	6.8	14.5	Combination of micronized thermosetting matting plastics
DEUTERON PMH M	PMU-Powder	180	325	7.7	17	Combination of micronized thermosetting matting plastics
DEUTERON MM 659	PMU / SiO <sub>2</sub>	238	100	7.4	17.1	For UV-curing systems
DEUTERON MM 669	PMU / SiO <sub>2</sub> / Filler / Wax	183	150	6.3	14.5	For UV-curing systems
DEUTERON MM 680	PMU / SiO <sub>2</sub> / Filler	230	100	6.7	13.9	2-component PU-systems
DEUTERON MM 682	PMU / SiO <sub>2</sub>	182	145	6	12.8	Coil coating systems
DEUTERON MM 684	PMU / SiO <sub>2</sub> / Filler	206	120	6	13.3	Do it yourself systems
DEUTERON MM 823	PMU / PTFE-Wax	288	150	6.3	17.3	PTFE modified, excellent heat resistance

g Palatinal  
N/100g      kg/m<sup>3</sup>      μm

Typical values of organic matting agents.



### / Deuteron: First-class products for the coatings industry

DEUTERON GmbH has 30 years of experience in the production and sales of additives including: matting agents, conductivity agents and UV initiators. In the course of our company's 30-year history, we have become an important partner for the paint, lacquer and coatings industry – we operate nationally and internationally and are represented all over the globe. We serve you with the dependability and close business relationship that only an owner-operated, medium-sized company can offer – and we also have the expertise of a global provider. Get in touch with us! We are happy to be of assistance and to help find individual solutions for your needs.

### / Visit us on the Internet



You can find detailed information on all our products at [www.deuteron.com](http://www.deuteron.com). Matting and texturing agents, surface additives, UV initiators and much, much more: We supply first-class products and look back on more than 30 years of experience as an important partner for the coatings industry.

This brochure intends to give technical advice without warranty and does not claim to be complete.

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