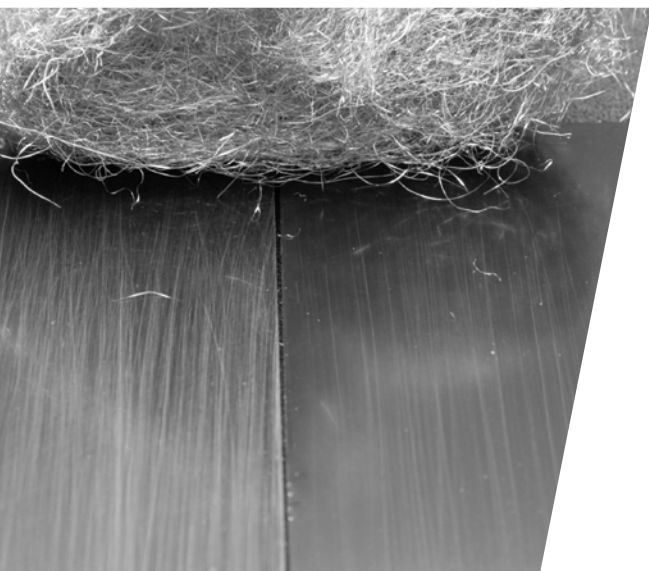




Surface Additives

Fine-ground preparations of polymethyl urea resins to modify friction, scratch resistance and haptics.



 **Deuteron**[®]
ADDITIVES TO YOUR SUCCESS

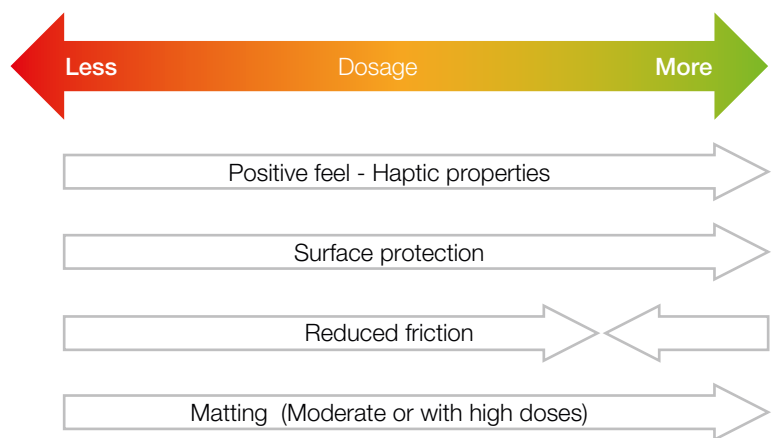
/ Surface additives from Deuteron: Possibilities for the modification of surfaces.

For many years, polymethyl urea resins have been used in solvent-based, solvent-free and aqueous coating systems as structure-modifying additives and even as matting agents. These substances enable exceptionally good surfaces with regard to their mechanical and physical properties.

Our Deuteron OG and SF products are fine-ground polymethyl urea resin plastics. These materials are thermosetting plastics and therefore have no softening range and/or melting point. This results in a number of benefits and properties that make them attractive for use as surface modification agents in coatings.

To improve certain properties such as block resistance, slip, matting or burnishing, it is often necessary to use waxes, silica or other solids. This may result in undesired side effects such as clouding, haze, reduced adhesion, embrittling or increased susceptibility to scratches and burnishing. Depending on the system and requirement profile, certain compromises must necessarily be made in the finished coatings.

With Deuteron OG and SF products you as the coatings formulator have a wide range of products available that make it possible to reduce or entirely prevent unwanted effects. You can also take advantage of versatile application options for surface design.



Dosage-dependent properties.

Our polymethyl urea resin-based surface additives have been used for many years by our customers to modify the friction, scratch resistance and haptics of coatings because of their special chemical character. The Deuteron OG and SF types offer you a wide range of products supplied in various forms and in different solvents and reactive diluents. Profit from the wide range of application possibilities and the flexibility of use of our products.

/ Advantages at a glance:

- Smoothness and haptics
- Reduced static and dynamic friction
- Low surface roughness
- Scratch and polish resistant
- Metal marking resistant
- Orientation of metallic or other effect pigments
- Block resistant
- Dirt repellency
- Thermosets – no melting point
- Relatively high hardness
- Temperature-stable above 200 °C
– short-term resistance above 300 °C
- Resistant to common solvents
- Wax and silicone free
- Without wetting agent
- Without binder
- Recoatable

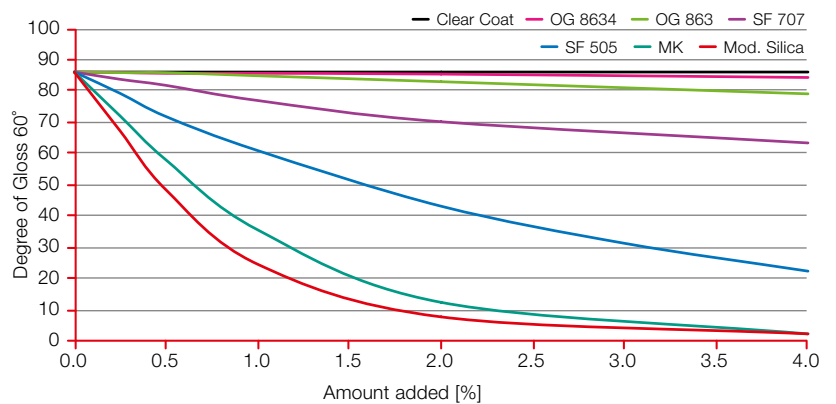


/ Effect on the gloss

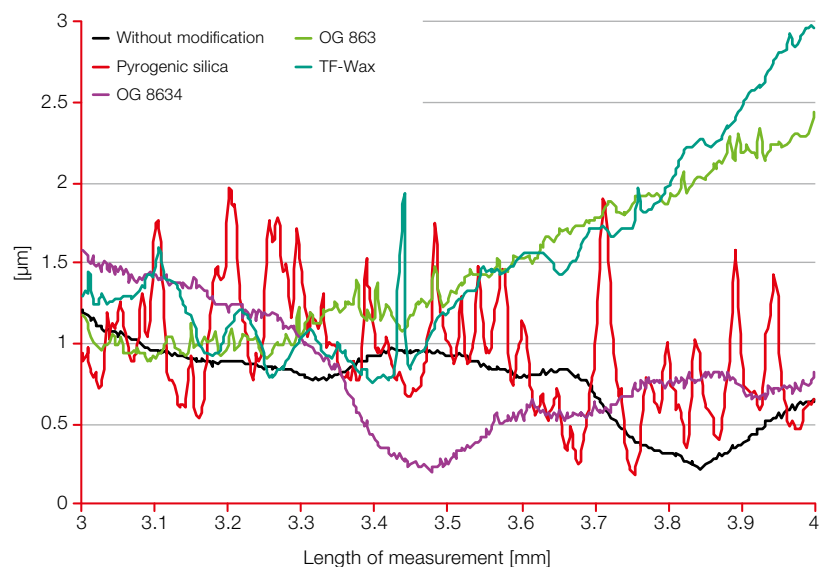
Compared to conventional particle-based surface agents (e.g. waxes), our OG and SF additives exert considerably less influence on the gloss level and transparency of the coating. The smaller the particles, the smaller the change in gloss level and the lower the effect on gloss and transparency, distinctness of image (DOI), haze or sheen. The exploitable dosage range for achieving the desired effects is relatively large. To reduce friction values, only small concentrations of the additive are required.

/ Influence on roughness

Our products' strong effects on the surfaces of most coatings are obtained due to their minimal influence on the surface roughness. Depending on the dosage and the ratio of binding agent solids to additive quantity, the particles are relatively uniformly arranged on the surface. If a surface is subjected to mechanical stress, the mechanical resistances of the additives must be overcome first before the actual surface is harmed. Protective effects are also naturally dependent on the overall behaviour of the coating (including elasticity, hardness and adhesion of the embedded particles). The relatively high hardness of the polymethyl urea resin particles can also cause an increase in mechanical resistances.



Gloss level comparison for different matting agents in NC lacquer at various concentrations



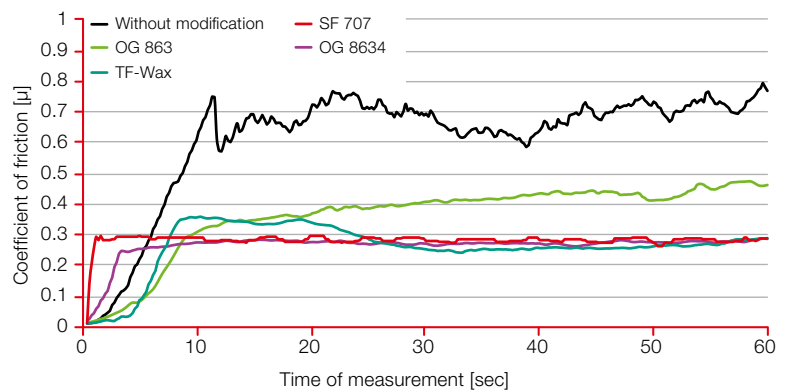
Comparison of the surface roughness created by various

/ Influence on friction

Because of the tiny, relatively hard polymethyl urea resin particles distributed evenly on the surface, the haptics (subjective touch sensation), i.e. the perception of the smoothness, is much improved. This effect occurs even with low dosages. Our OG and SF products allow friction coefficients to be achieved that match those of wax products. In some cases it is even possible to achieve values in the region of PTFE products. Each of our surface additives is available in three different particle sizes, with d99 values between 12 and < 3.5 µm.

/ Deuteron SF-powders

Our Deuteron SF 707 and SF 505 are micronised powders constituting special types of PMH-grindings. Since these products are offered as powders with various particle size distributions, they are suitable for use in nearly all systems in all layer thicknesses. The particle size distribution of Deuteron SF 707 corresponds roughly to the coarser OG-types. Deuteron SF 505 is a bit higher in the range of our standard-matting agents. It can generate surface properties such as haptic effects, smoothness, anti-blocking and lowering the coefficient of friction. Especially the wax-like surface effects are advantageous if wax products cannot or should not be used. It does not impair the recoatability even if high quantities are used. Significant effects are already attainable, even in very small quantities, starting at approx. 0.1 %.



Comparison of friction coefficients of several surface additives in 2K acrylic varnish at 0.5 % agent content

Product	Delivery form	Solvent / Reactive Thinner	Active content approx.	Particle size approx.		Systems
				d50	d99	
Deuteron OG 861	Dispersion	Shellsol A 150 ND	32	3.5	12.0	Solvent based
Deuteron OG 8612	Dispersion	Shellsol A 150 ND	25	2.3	7.0	Solvent based
Deuteron OG 8614	Dispersion	Shellsol A 150 ND	20	< 1.5	< 3.5	Solvent based
Deuteron OG 863	Dispersion	Isopropyl alkohol	32	3.5	12.5	Water based / solvent based
Deuteron OG 8632	Dispersion	Isopropyl alkohol	32	2.3	7.0	Water based / solvent based
Deuteron OG 8634	Dispersion	Isopropyl alkohol	32	< 1.5	< 3.5	Water based / solvent based
Deuteron OG 8670	Dispersion	Water	22	3.5	12.5	Water based
Deuteron OG 8672	Dispersion	Water	22	2.8	8.0	Water based
Deuteron OG 8674	Dispersion	Water	22	< 2.0	< 5.0	Water based
Deuteron OG 8803	Dispersion	DPGDA	30	3.5	12.0	UV - radical curing
Deuteron OG 8805	Dispersion	DPGDA	30	2.8	8.0	UV - radical curing
Deuteron OG 8807	Dispersion	DPGDA	30	< 2.5	< 7.0	UV - radical curing
Deuteron OG 8820	Dispersion	TMP(EO)3TA	30	3.5	12.0	UV - radical curing
Deuteron OG 8822	Dispersion	TMP(EO)3TA	30	2.8	8.0	UV - radical curing
Deuteron OG 8824	Dispersion	TMP(EO)3TA	30	< 2.5	< 7.0	UV - radical curing
Deuteron SF 505	Powder	-	100	7	18	All
Deuteron SF 707	Powder	-	100	4	12	All
			%	µm	µm	

Typical values of our surface additives.



/ 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. 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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