

Water-thinnable one-coat system with high flexibility

Steel furniture, e.g. for the office sector, is often coated using powder, liquid or electrodeposition coatings. In many applications, these coating techniques are combined, which makes it necessary for systems to conform with one another in terms of gloss level, surface and colour shade.



High aesthetic and surface requirements

Optimal matches

Successful introduction of a water-borne baking coating in the functional furniture industry

When opting for liquid coatings, solvent-based baking systems are often used. Based on the requirements placed on these, FreiLacke's fundamental idea was to develop a corresponding water-borne baking system. The system coating concept, high aesthetic and surface requirements and application under series production conditions were the key tasks surrounding the development of a modern baking system that would also meet environmental standards. FreiLacke was able to attract project partners in the steel furniture industry for the development of a corresponding baking coating system. Below you will find an example describing how one German steel furniture manufacturer successfully switched to the new system.



Optimal matching of gloss level, surface and colour shade

The task Together with Mauser Einrichtungssysteme GmbH & Co. KG from Korbach, part the Vauth-Sagel Group, FreiLacke was confronted with the challenge of finding an alternative to the hitherto used solvent-based coating.

The following basic points were agreed:

- VOC reduction by 70 percent.
- Excellent conformity with the electrodeposition coating used.
- Significant increase in flexibility with regard to custom colour shades.

The new water-borne, single-coat system was successfully launched on the market during the course of 2013.



Images 1 and 2: Office equipment of Mauser Einrichtungssysteme GmbH & Co. KG in standard colour shades (left) and in combination with custom colour shades (right)

Outstanding properties

Specifically designed for steel furniture

Properties The FREIOTHERM-Hydrocoat WO1890H system series was specially developed for the steel furniture industry and fulfils all current requirements in the furniture and office equipment sector. DIN 68861 was a key variable when drawing up the requirements specification here. All mechanical and chemical requirements such as

- scratch resistance
- chemical resistance
- resistance to abrasive wear

were met.

Product	FREIOTHERM-Hydrocoat WO1890H
Substrate and pretreatment:	Steel + degreasing, iron phosphate coating
Application:	Robot with pneumatic atomiser, one gun inside and outside; 1.4 mm nozzle, coating delivery by piston pump (translation 3:1, ring main 5 bar)
Baking conditions:	10 min./150 °C

Test method	Unit	Target	Actual
Gloss level, 60° angle	GU	30-40	38
Layer thickness	µm	25 +-5	27
Buchholz hardness indentation	o. E./mm	120/<0.8	>120
Cross-cut without Tesa tear	Gt	0	0

Salt spray test DIN EN ISO 9227 NSS	Unit	Target	Actual
Adhesion DIN EN ISO 2409 before testing	Gt	0	0
Load duration	h	168	168
Creepage from scribe	mm	<6	2
Adhesion DIN EN ISO 2409	Gt	1	0
Colour shade			
Colour space according to DIN 6174 (CIELAB), colorimeter (X-Rite SP64-D65/10°)			
Colour difference	DeltaE	<0.3	0.25

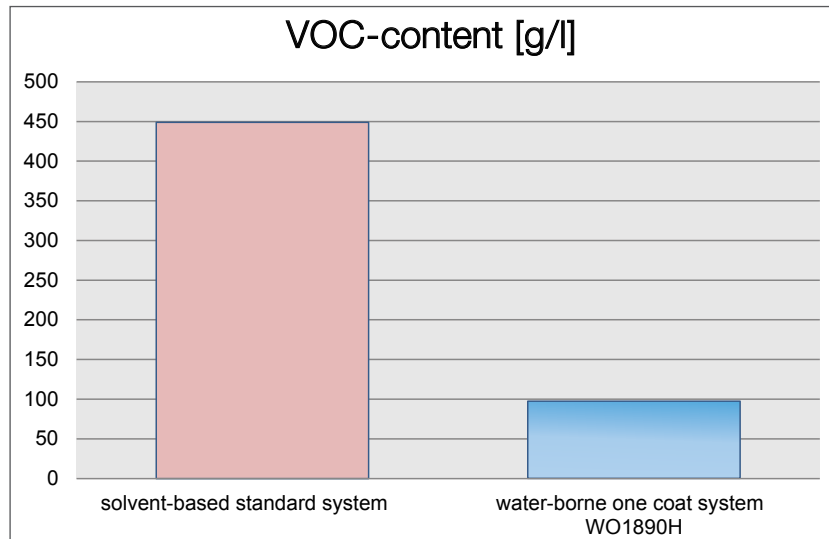
Table 1: Technical data and test values for the water-thinnable one-coat system



Fig. 3: Results of salt spray test after 168 hours: Creepage 2 mm

Excellent system compatibility with powder and electrodeposition coatings

Optimisation
of VOC balance



Comparison of VOC content in solvent-based standard system and water-borne one-coat system

**Colour shade variety
for the smallest of
batches**

Thanks to the continual development of the WO1890H system series, the WO1860H system series came into being to meet the need for high flexibility with regard to custom colour shades. This mixing system enables RAL, NCS and custom colour shades to be produced fully automatically, directly on site and in small quantities with the same product quality. This achieves significant optimisation in the range of colour tones for very small batches.

**System coating
solutions.
Two coating
processes =
one result**

Another outstanding feature is the compatibility of liquid coating surfaces with the electrodeposition coating process at Mauser. Freilacke's system coating expertise formed an appropriate base for this.

The results at Mauser, which uses a state-of-the-art wet-coating process with coating robots, are surfaces that meet the highest standards in the field of steel furniture coating. In combination with surfaces from the electrodeposition coating process, the end product is high-quality furniture with a uniform appearance in terms of colour, gloss and surface.

In another steel furniture application, the WO1890H water-borne single-coat system is combined with electrodeposition coatings and powder coatings with the same tremendous result. So you can even get the same result with three different coating processes.

Summary

The introduction of one-coat system WO1890 demonstrates how Freilacke has successfully provided the steel furniture industry with an extremely efficient water-borne coating solution: a coating characterised in particular by high surface quality and excellent system compatibility with powder and electrodeposition coatings.

Are you interested? Then get in touch with our experts.

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