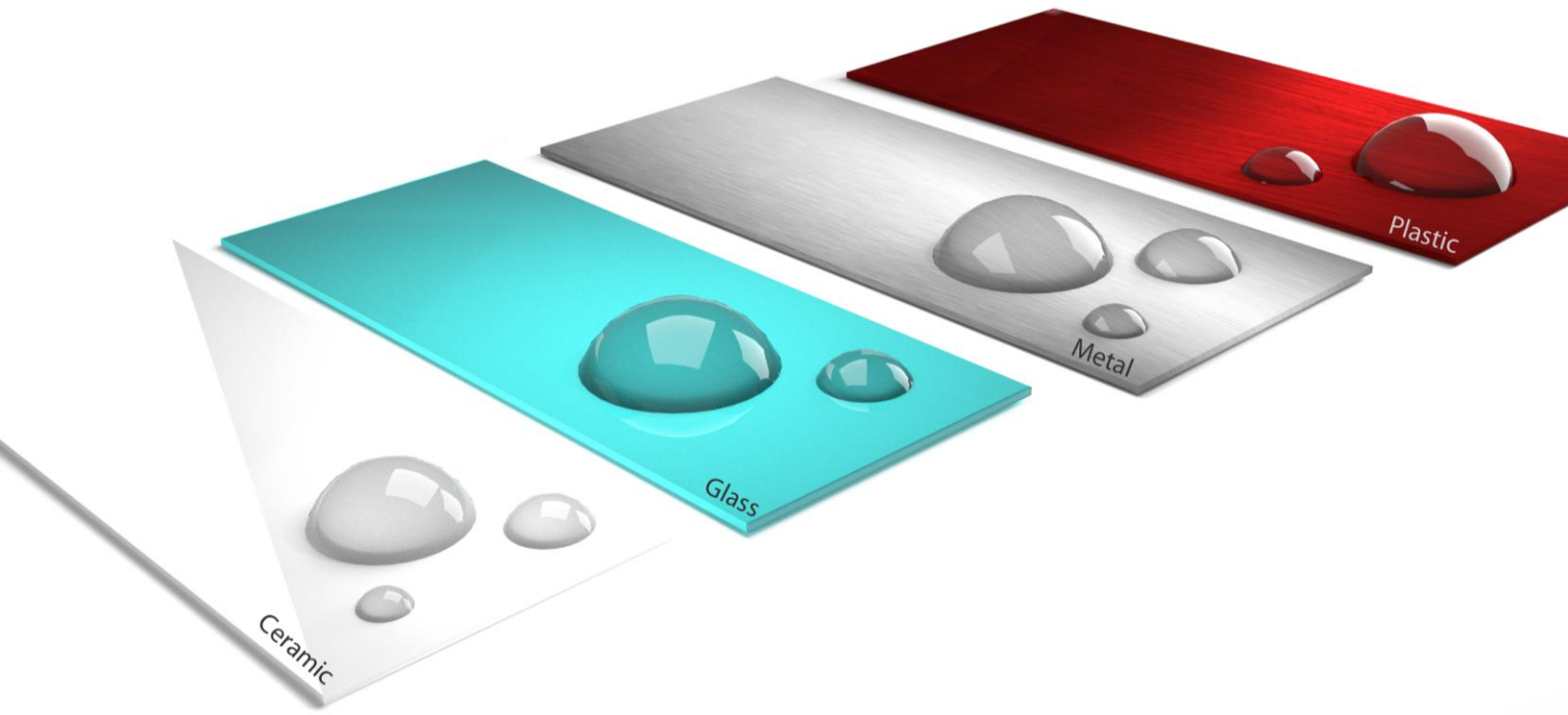
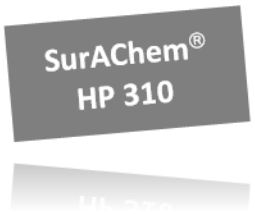
SurAChem® HP 310

HYDROPHOBIC COATING



Product Information

SurAChem® HP 310 Hydrophobic Coating



The SurAChem® HP 310 Hydrophobic coating is RoHS compliant in accordance with EU-Directive 2011/65/EC. All starting substances have been pre-registered according to the REACH Regulation (EC) No. 1907/2006.

1. Introduction

This instruction guide will ensure the proper use of the SurAChem® HP 310 hydrophobic coating and prevent eventual mistakes, which can lead to quality insufficiencies or adverse effects.

The SurAChem® HP 310 hydrophobic coating is a liquid system based on fluorine-modified silicic acid, which reduces greatly the surface energy and thus the wettability on a wide variety of material surfaces.

The SurAChem® HP 310 hydrophobic coating can therefore be used as hydrophobic and oleophobic wetting-, spreading- and flow blocker for adhesives, coatings, oils (in particular also silicone oil) and other polar and non-polar liquids. The application of the SurAChem® HP 310 hydrophobic coating results e.g. in the interruption of a flowing coating (or adhesive, oil etc.) in the desired interruption area/point, as seen in Figure 1a. Without such a pretreatment, the applied coating spreads in all directions on the material surface (see Figure 1b).

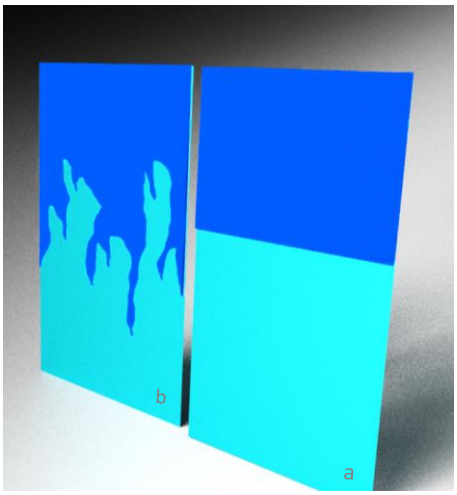


Figure 1: *Illustration of the SurAChem® HP 310 hydrophobic coating as a flowing blocker*

The SurAChem® HP 310 hydrophobic coating can be applied on surfaces, such as:

- Glass ✓
- Ceramic ✓
- Metal ✓
- Plastic ✓
- Composite ✓

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Figure 2: *Illustration of contact-angle on glass surface without (left) and with (right) the application of the SurAChem® HP 310*

On the surface, pretreated with the SurAChem® HP 310 hydrophobic coating (in this case glass surface), the droplets show a very large contact-angle (Figure 2 - right), while the droplets on the non-pretreated glass surface spread rapidly in all directions and show no angle detection (Figure 2 - left).

2. Surface Pretreatment

The surface to be treated should be free of grease. This can be succeeded using conventional methods, such as organic solvents or oxidizing acids.

The activation of surfaces with the SurASil® process (a combustion chemical vapor deposition method) for influencing the adhesion of coatings, adhesives and prints is very advantageous. The SurASil® process (illustration at Figure 3) provides a significant improvement in the adhesion by the deposition of a reactive silicate layer. This very thin silicate layer is formed via the combustion of a silane additive component in a fuel gas atmosphere.

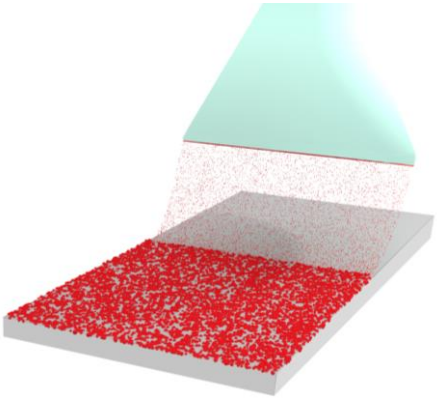

Figure 3: *Illustration of the SurASil® process*

3. Processing

The SurAChem® HP 310 hydrophobic coating can be applied via spraying, brushing, diving, with manual or automatic dispensing devices, as also with fine brushes or fiber pens. The application of the SurAChem® HP 310 hydrophobic coating should be as thin as possible.

The hydrophobic layer is only functional after it has been dried. The hydrophobic effect of the SurAChem® HP 310 can be improved by a short-term (3 to 5 min.) after-treatment at 80 °C.

4. Delivery Form

The SurAChem® HP 310 hydrophobic coating is available in bottles starting from 10 ml.

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5. Storage

The SurAChem® HP 310 hydrophobic coating is at approx. +5 °C stable for at least 12 months after delivery.

6. Instructions to Occupational Health and Safety

The SurAChem® HP 310 hydrophobic coating contains isopropanol. Pay attention to the solvent´s occupational health and safety regulations.

7. Performance

Graph 1 shows the hydrophobic effect of the SurAChem® HP 310 on different material surfaces.

The contact-angle of distilled-water droplets was measured on glass, ceramic, plastic (PVC) and metallic surfaces (aluminum). The various surfaces were coated with the SurAChem® HP 310, as also not coated, in order to observe the difference in contact-angle. The measurements were performed continuously in a period of 30 days, in order to observe the hydrophobic effect over a long period of time.

Figure 4 shows two different contact-angle measurements. High contact-angles designate a low surface energy and, as a result, a hydrophobic surface, whereas low contact-angles exhibit a high surface energy and thus a hydrophilic surface.

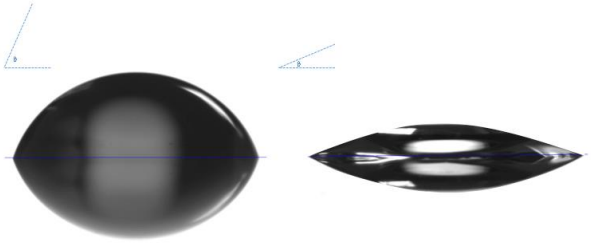

Figure 4: *Illustration of the contact-angle measurement process*

The surfaces coated with the SurAChem® HP 310 showed a significant increase in the contact-angle and thus an increase in the hydrophobicity, as compared to the non-pretreated surfaces. Glass and ceramic surfaces showed a higher contact-angle of up to 55%, while metal (aluminum) and plastic surfaces (PVC) had a higher contact-angle of up to 30%.

The hydrophobic effect of the SurAChem® HP 310 was not negatively affected over the period of time. Slight fluctuations were caused due to impurities (dust particles) and/or measuring tolerances.

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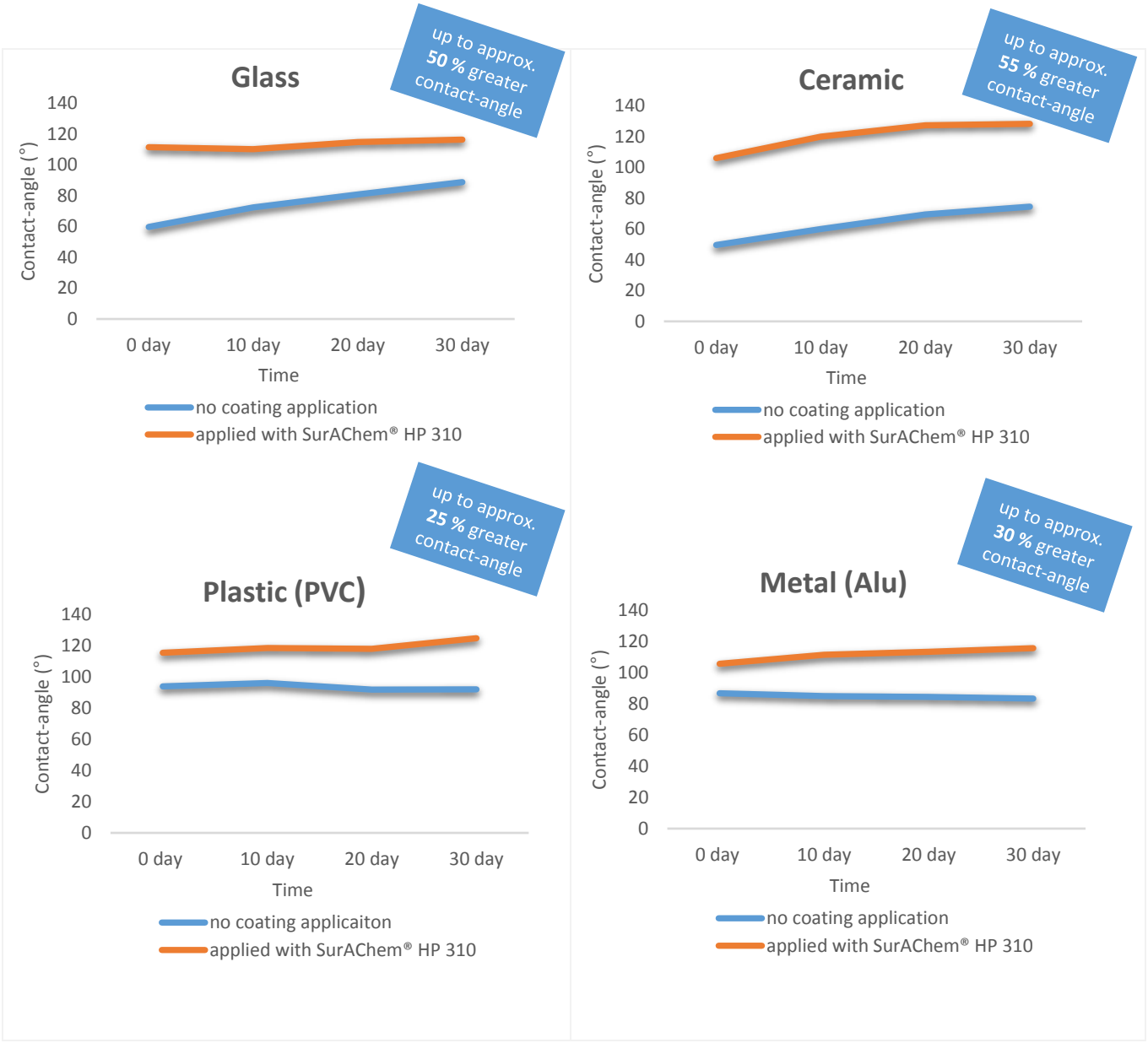

Graph 1: *Measurements of the contact-angle on glass-, ceramic-, plastic- und metal surfaces with and without the application of the* SurAChem® HP 310 hydrophobic coating

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