

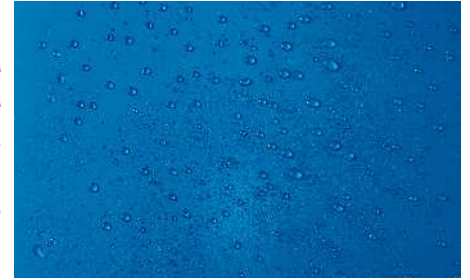


# Product Information: Vetro Power Nano Industrial Plastic Protect



## Field Of Application:

This nano surface protection system has been specially developed for the protection of plastic surfaces in industry and trade. Through the surface protection of Vetro Power Nano Industrial Plastic Protect, the surfaces receive hydrophobic, oleophobic and soil-repellent features. Grease and substances resulting from environmental pollution do not fully adhere to the surface and can therefore be easily removed from the protected surface.



## Composition:

SiO<sub>2</sub> dissolved in ethanol, is highly flammable (please see the corresponding material safety data sheet)

## Product Features:

- Hydro- and oleophobic
- Soil-repellent
- No change in look and feel
- Food-safe
- Reduced stress corrosion
- Resistant to high-pressure cleaners and steam cleaners up to 60 bar (depending on substrate)
- Temperature resistance: up to 450°C (peak temperature)
- Biocompatible
- Physiologically harmless
- Ecologically sound
- UV-stable

## Application:

Vetro Power Nano Industrial Plastic Protect is a ready-to-use solution that must not be diluted. A prerequisite for an optimal result is the pre-cleaning of the surface to be protected. The surface must be dry and absolutely free of soil, grease, dust and residues of cleaning agents. The recommended application techniques are as follows:

1. Spray the surface using HVLP nozzles followed by wiping the surface with a lint-free cloth that has been previously moistened with the product.
2. Wiping the product using a soft and lint-free cloth and polishing the surface afterwards.
3. dipping or brushing.

For all surfaces, we recommend processing an examination for stability and functionality in an inconspicuous area.

## Storage Temperature:

-5 °C to +30 °C

## Shelf Life:

The shelf life for an unopened (original) container is at least 2 years. Once opened, the product should be used within 6 months.

## Hardening Time:

As soon as the solvent (carrier liquid ethanol) is evaporated, the protected plastic surface can be stored, transported, entered and processed. The complete hardening is obtained at a 24-hour drying period at ambient temperature (20 °C/ rH65%), but the hardening process can be accelerated by additional warmth.

## Consumption:

The consumption depends on the application technique. The consumption is 2 to 5 ml/m<sup>2</sup>.

## Cleaning And Care Instruction:

Through treatment with Vetro Power Nano Industrial Plastic Protect, the surface has a smooth and stable protection that is resistant to conventional cleaning agents. Contamination can be solved with water. In case of stronger contamination, this can be solved with water and a mild cleaner with a pH of 5 to 7. The durability of the surface protection strongly depends on the kind and frequency of cleaning and care.

## Important Notice:

Due to the raw material used, different visual colour changes can happen. It can appear occasionally batch-related and does not constitute a reason for a complaint about the respective product.

Changes in colour in comparison to the original colour scheme can be caused by different surface structures, gloss levels, applications and influences of light. The absorbency of the surface, drying behaviour and weather influences during the application can also lead to slight colour changes on the surface. It does not constitute a reason for a complaint.

## Attention:

Only cleaning agents that are suitable for the surface are to be used.

## Containers:

Container sizes on demand.

**Warning Advice:** We recommend wearing suitable protective clothing. In case of contact with skin, immediately rinse off with water. Do not swallow. Avoid contact with eyes. In the case of contact with the eye or mucosa, immediately rinse off with water. In the event of symptoms occurring, seek medical treatment. Keep out of reach of children!

**General Advice:** Do not inhale atomised spray and the liquid product. Vetro Power is not liable for damages of the product, as a result of dirt entering the bottles and canisters, e.g. after opening the containers. Vetro Power is also not liable for improper application of the product if the surfaces have been recoated for any reason, without Vetro Power's prior written agreement, nor for any damage to or deterioration of the coating system arising from causes beyond the control of Vetro Power, including but not limited to impact, abrasion, mechanical damage, neglect, malicious damage, fire damage, pollution and abnormal weather conditions, neither for failure associated with exposure of the coatings to abrasive, chemical substances, abrasive scouring, hydrofluoric acid and highly alkaline chemicals such as bleach, potassium hydroxide and sodium hydroxide and/or if the coated surfaces have not been maintained in accordance with the supplier's recommended maintenance procedures. All information is based on today's state-of-the-art technology. As to the above-mentioned information, we do not lay a claim to completeness, these are only to be understood as possible examples for application areas. Due to a large number of surfaces and object conditions, the buyer/user is not relieved of the duty to professionally verify, in his own responsibility, that our materials are suitable for the intended purpose according to the respective object conditions. In all other respects, our general conditions of sale apply. If new product information is issued the validity of the old version expires.



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## Vetro Power Coating For Improving The Durability Of Plastic Surfaces:

As part of an innovation project for a customer in Europe, our German technology product was tested for its effectiveness in improving the lifespan of plastic surfaces.

### **Problem:**

Plastic surfaces that are treated daily with cleaning and disinfecting agents can develop stress cracks, leading to premature failure of the surface and increased maintenance or replacement costs.

### **Test procedure:**

In a comparative study, the nanotechnology coating-treated and untreated polycarbonate discs were sprayed with disinfectant and cyclically loaded with 200 kg. The number of cycles, until the discs failed, was documented.

### **Results:**

- Without nano-tech coating: the discs failed at 340 and 700 cycles respectively.
- With nano-tech coating: the discs failed only after 1800 cycles.

### **Conclusion:**

Using the nano-tech product on plastic surfaces leads to a significant reduction in stress cracks. The Nano-tech coating makes the surface resistant to cleaning and disinfecting agents, thereby extending the lifespan of the plastic surface.

## Application Areas Of Industrial Manufacturing:

The Nano-tech product protects plastic panels from deposits that occur in industrial production and adhere to the plastic panels. It enables easy cleaning and supports the durability of the transparent machine components.



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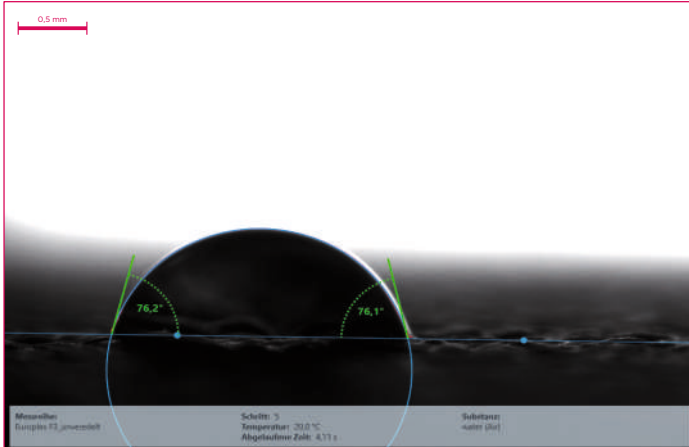
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## Illustration Of Performance:

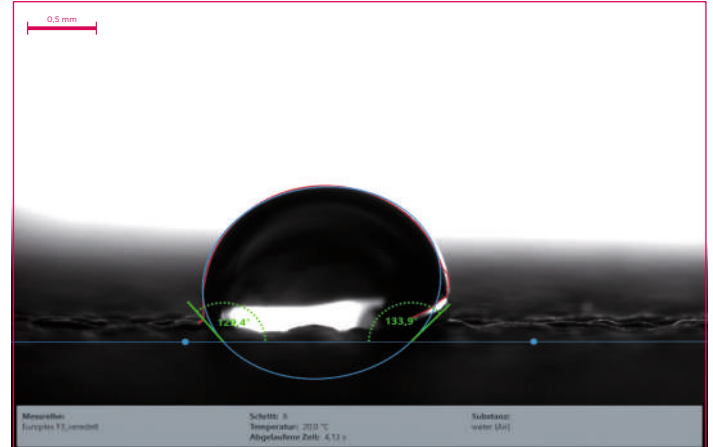
The contact angle of water on an untreated plastic surface:



**Contact Angle:**  
78,76°

**Free surface energy:**  
43,68 mN/m

The contact angle of water on the nano-tech treated plastic surface



**Contact Angle:**  
126,29°

**Free surface energy:**  
9,00 mN/m

In summary, the above measurements show a significant improvement in substrate properties when comparing untreated plastic surfaces to those treated with the nano-tech coating. The multifunctional coating barrier layer significantly optimizes the surface energy of the substrate, reduces adhesion, and extends the lifespan. The surface energy varies depending on the substrate and its composition.

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