

# 646 Permanent Protect 5M

## GENERAL PRODUCT DESCRIPTION

**646 Permanent Protect 5M** is a high-performance ceramic coating designed for long-term coating of smooth surfaces such as metal, glass, plastic, or painted materials. It forms an ultra-thin, transparent protective layer that effectively shields the substrate from dirt, chemicals, UV radiation, and mechanical stress.

### Application Areas

- Anti-graffiti coatings on non-porous surfaces
- Easy-to-clean coatings for indoor and outdoor use
- Long-lasting protective layers for marine environments
- Surface coatings for vehicles (e.g. bodywork, rims)
- Post-treatment for cars (ceramic coating)
- Finishing of yacht and boat surfaces

## PROPERTIES

- Strong hydrophobic and oleophobic effect – repels water and oil
- Easy-to-clean effect – dirt can be easily removed
- High abrasion resistance – durable chemical bonding to the substrate
- Temperature and UV resistant – suitable for outdoor use
- Breathable and diffusion-open
- Resistant to many common household cleaners (except concentrated alkalis)
- Solvent-based (approx. 60% active content)
- Excellent anti-graffiti properties on non-porous surfaces
- Ceramic layer structure – heat-resistant up to 600 °C
- Full wipe on thickness = approx. 5 µm DFT.  
(Thickness after polishing = 0.5 µm; after buffing = 2 µm approx.)
- Can be spray applied up to a maximum thickness of 25µm
- VOC-containing (butyl propionate)
- Biostatic effect – inhibits the growth of microorganisms

## PRODUCT SPECIFICATIONS & CHEMICAL PROPERTIES

Property	Value
<b>Base</b>	Organometallic polymer in butyl propionate
<b>Active content</b>	≥ 60%
<b>VOC content</b>	Approx. 40% (400g/l)
<b>Flash point</b>	Approx. 37 °C (open cup)

<b>Layer thickness</b>	0.5-2 µm (recommended), max. 25 µm
<b>Density</b>	Approx. 900-930 kg/m <sup>3</sup>
<b>Ph value</b>	Not applicable (product is water-insoluble)
<b>Odor</b>	Slightly solvent-like
<b>Colour</b>	Colourless to slightly yellowish
<b>Consumption</b>	Approx. 5-10 ml/m <sup>2</sup> (up to 200 m <sup>2</sup> per litre)
<b>Temperature resistance</b>	Up to 600 °C (film integrity), 300 °C without discoloration
<b>Shelf life (liquid)</b>	12 months (unopened, stored appropriately)
<b>Storage</b>	5 °C to +25 °C
<b>Durability of coating</b>	2-5 years outdoors, significantly longer indoors

## PFAS INFORMATION

**646** contains no PFOA or PFOS. The fluorine content is below legal limits according to EU Regulation 2024/2462. The fluorinated additives used serve exclusively to optimize dirt repellence.

## APPLICATION & PROCESSING

### General

- Thoroughly clean and degrease surface (e.g. with isopropanol, ethyl acetate, or test benzine)
- Surface must be completely dry and free of grease
- Application temperature: 15–30 °C, relative humidity: 50–80%
- Avoid direct sunlight

### Wipe Application:

- Apply a few drops (5–10 ml/m<sup>2</sup>) to a microfiber cloth
- Spread evenly with light pressure in linear motions
- Polish with a soft cloth within 30 minutes
- Repeat if necessary

### Spray Application:

- Nozzle size: 0.8–1.0 mm / Pressure: 0.6–1.0 bar / Distance: approx. 20 cm
- Layer thickness (dry): 2.5–25 µm (depending on passes)
- Alternative: rotary bell (30,000 rpm, 2 bar, 0.2–0.4 m/s, 50–150 ml/min)

## CLEANING & CARE

Aggressive cleaners are no longer required. Surfaces can be cleaned easily with a mild cleaner (e.g., CCM Bio Cleaner Biosativa®). Regular cleaning prolongs the effect.

## QUALITY STANDARDS – TESTS

- Anti-graffiti test: NF 31-112 – Graffiti easily removable from non-porous surfaces
- Scratch resistance: up to 8H (according to ISO 1518)
- Sliding angle: < 25° – very good beading effect
- Gloss level: high gloss – visual surface enhancement
- Contact angle test: > 105°
- Abrasion test: ISO 11998 (200 cycles Scotch Brite, no visible effect)
- Scratch resistance: up to 8H (pencil hardness)
- Chemical resistance: coffee, wine, mustard, ketchup, alkalis, acids, MEK
- Temperature resistance: up to 600 °C (film integrity), 300 °C without discoloration

The active ingredients in **646 Permanent Protect 5M** are REACH-compliant in accordance with Regulation (EC) No. 1907/2006 and registered in the following chemical inventories: CAS, EINECS, TSCA (USA), AICS (Australia), CEPA (Canada), MITI (Japan).

## PACKAGING UNITS & VARIANTS

- 100 ml bottle (646-100)
- 500 ml bottle (646-500)
- 1 L bottle (646-1)

## SAFETY & TRANSPORT

- Dangerous goods: Yes (UN 2924, flammable liquid, 3 (8), packaging group III)
- Hazard statements:
  - H226 – Flammable liquid and vapor
  - H314 – Causes severe skin burns

Additional information:

- EUH066 – Repeated exposure may cause skin dryness
- Personal protective equipment: gloves, safety goggles, suitable protective clothing
- First aid: In case of contact with eyes or skin, rinse immediately with water and consult a doctor
- Storage: Cool, dry, and well ventilated. Open containers monthly for pressure relief.
- Nitrogen blanketing recommended during decanting

*HS Code 3208 9091*