

646 Permanent Protect 5M

Application Instructions

646 Permanent Protect 5M is an advanced, high-performance protective coating designed to provide durable, easy-to-clean surfaces with anti-graffiti properties. It forms a strong bond with a wide range of substrates, including steel, aluminium, glass, painted and lacquered surfaces, as well as selected plastics such as PC, PMMA and ABS.

APPLICATION BY CLOTH/WIPING METHOD

The wiping application method typically creates very thin coating layers with a thickness of approximately 0.5 to 1.0 µm.

Materials Required

- Application cloth: fine polyester microfiber cloth suitable for sensitive surfaces
- Polishing cloth or pad: polyester microfiber material



Substrate

- Suitable for various substrates, including aluminium, painted metals, lacquered surfaces, glass and most plastics.



OPERATING INSTRUCTIONS

1. Ensure that the surface is clean, dry and free from contaminants such as dust, oil or grease. If necessary, clean the surface using isopropyl alcohol (IPA), ethyl acetate or mineral spirits. Do not use detergents or water-based cleaning agents prior to the application of 646 Permanent Protect 5M.
2. Use the coating material as supplied. Do not dilute or modify the product unless specifically recommended.
3. Apply a few drops of the coating onto the application cloth. A dosage of approximately **5–10 drops per m²** is recommended.
4. Apply the coating evenly using light pressure in straight, overlapping strokes.
5. Within 30 minutes of application, gently buff the surface to remove excess coating and any visible irregularities. Circular polishing motions are recommended.
6. Repeat Steps 2 to 5 until the entire surface has been evenly coated.

APPLICATION BY SPRAY

Excellent high-gloss finishes can be achieved using either conventional spray equipment or automated rotary bell application systems. For optimum results, application should be carried out in a clean, low-dust environment. A cleanroom is not required but may further improve surface quality.

Materials Required

Conventional spray guns are commonly used for repair work, refinishing and precision coating applications. Automated rotary bell application systems are typically used in OEM production environments for high-volume coating applications.

Operating Instructions

1. Ensure that the surface is clean, dry and free from contaminants such as dust, oil or grease. If necessary, clean the surface using isopropyl alcohol (IPA), ethyl acetate or mineral spirits. Do not use detergents or water-based cleaning agents prior to the application of 646 Permanent Protect 5M.
2. Use the coating material as supplied.
3. Fill the spray gun reservoir with the coating material.
4. Apply the coating in accordance with the recommended spray parameters listed below.
Minimise airborne dust throughout the application process.

Substrate

- Suitable for various substrates, including aluminium, painted metals, lacquered surfaces, glass and most plastics.

Application Note

Lower spray pressure and smaller nozzle sizes generally produce a smoother, higher-quality surface finish.

Conventional Spray Application



Typical Equipment Brands:

SATA, DeVilbiss, Iwata, Sames Kremlin, Graco

Nozzle size: 0.8–1.0 mm

Pressure: 0.6–1.0 bar

Passes: 1–4 (cross)

Distance: 20 cm

DFT: 2.5–25 μm (depending on spray speed and number of passes)

Example DFT 6 μm

Nozzle size: 1.0 mm

Pressure: 1.0 bar

Passes: 2 (cross)

Distance: 20 cm

Automated Rotary Bell Application



Typical Equipment Brands:

Dürr, Sames Kremlin, Graco, Carlisle

Bell rotation: 30,000 rpm

Bell type: Smooth

Dress pressure: 2 bar

Vortex pressure: 0 bar

Distance: 20 cm

Speed: 0.2–0.4 m/s

Flow: 50–150 cm^3/min

DFT: 4–16 μm (depending on speed and flow rate)

Example DFT 12 μm

Speed: 0.4 m/s

Flow: 150 ml/min

Distance: 20 cm

SPRAY CANS

646 Permanent Protect 5M can also be applied using aerosol spray cans. Standard aerosol systems using propane/butane propellants are generally suitable for this application. Particular attention should be paid to the moisture (water) content of the propellant and any additives, as excessive moisture may initiate premature curing inside the aerosol can. To achieve a uniform, high-gloss coating, the optimum nozzle size, spray distance and spray pressure should be determined through preliminary testing. If necessary, the coating viscosity may be adjusted to suit the selected spray equipment. Suitable solvents include aprotic solvents such as butyl acetate or aromatic solvents such as toluene, where compatible with local regulations.

CURING CONDITIONS

- Recommended application temperature: 15–30 °C
- Recommended relative humidity: 50–80 %. As curing is moisture-activated, a relative humidity towards the upper end of this range is recommended to achieve optimum curing performance.



- Protect the coated surface from direct sunlight during curing.

Allow the coating to cure for at least 8 hours before washing, handling, bending or otherwise stressing the coated surface. Note: Full chemical and mechanical performance is achieved after approximately 7 days under recommended curing conditions.

STORAGE & HANDLING

646 Permanent Protect 5M is a moisture-curing coating that reacts with humidity in the surrounding air. To ensure optimum performance, avoid prolonged exposure of the product to ambient air after opening.

For best results, use the entire contents of the bottle during a single application whenever possible. If the remaining product is to be stored for future use, purge the container with dry nitrogen (N₂) before resealing to minimise moisture exposure and extend the product's service life.

After use, clean the bottle neck, cap and screw threads thoroughly to prevent cured material from forming and to ensure proper sealing of the container. Store the product in a tightly closed container in a cool, dry place away from direct sunlight and sources of moisture.