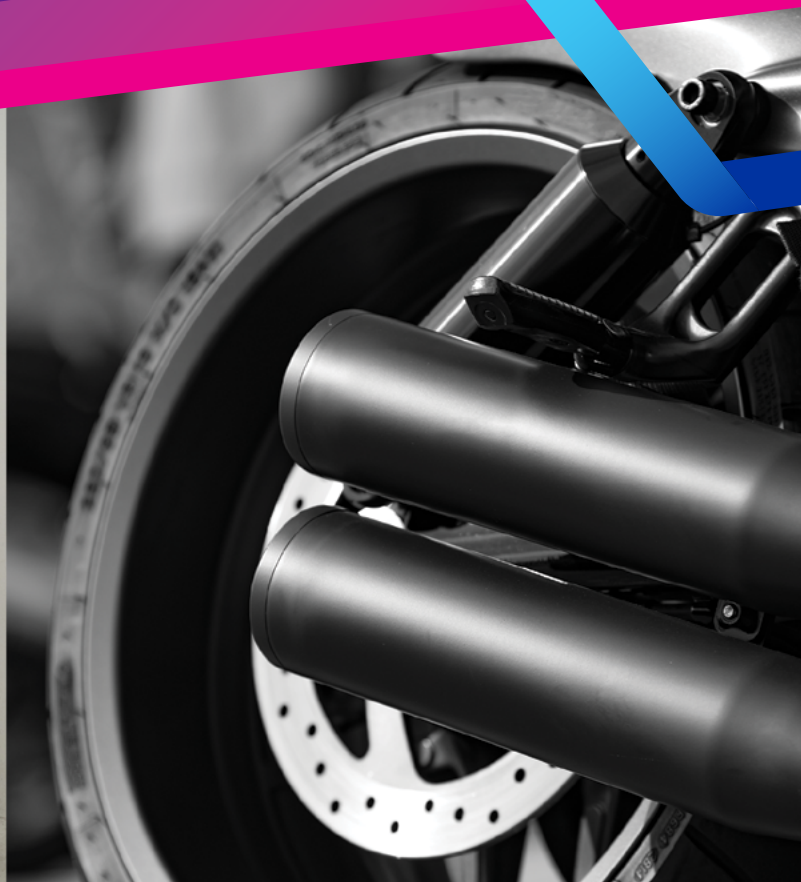




Industrial
Coatings

Silicone Based Coating Process Guidelines



Silicone based coating system description

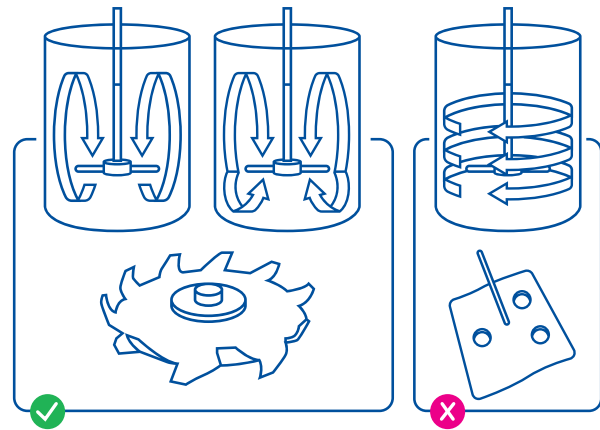
- Silicone-based coatings are materials formulated with silicone chemistry, offering high thermal resistance.
- The liquid coating is applied using atomizing spray techniques.

1. Substrate Preparation

- Parts must be degreased and cleaned prior to sand-blasting.
 - Thermal or chemical degreasing methods are acceptable, provided they are compatible with the substrate material.
 - Alkaline washing followed by neutralization and a demineralized water rinse is recommended.
- All surfaces to be coated should be sand-blasted using corundum (aluminum oxide) 60-80 mesh to achieve a consistent appearance.
 - Target surface roughness: Ra 2-3 micron and Rt 15-20 micron.
 - Since the Ra value depends on the substrate, initial trials are recommended to determine the optimum sand size and air pressure for each substrate type.
- After sand-blasting:
 - Remove residual dust, debris, and other pollutants thoroughly.
 - Use high-pressure air for dust removal.
 - Repeat alkaline washing followed by neutralization and a demineralized water rinse as a cleaning method.
- For different substrate pre-treatment requirements, please contact technical support.

2. Product Preparation

- Always refer to the specific product Safety Data Sheet (SDS) for correct product handling.
- Ensure that all components and materials are at room temperature, between 15 and 35°C, before starting the process.
- Thoroughly mix the material for at least 5-10 minutes to achieve a homogeneous consistency, especially for products like the zinc-rich primer ThermoZinc.
- Proper mixing should create a continuous vortex, allowing for high shearing and thorough mixing from the bottom to the top of the container.



- PPG recommends using a cowells stirrer to achieve this optimal mixing. Although some mixers provide continuous stirring, they may not generate sufficient turbulence to properly re-homogenize the material.
- After mixing, filter the material through a nylon cloth or bag as specified in the Technical Data Sheet (TDS).
- The coating does not have pot life limitations.

3. Product Application

- Coating applications must be performed on clean, well-pretreated surfaces.
- For one-coat systems, apply an approximate final dry thickness of 15-35 microns after curing (refer to the product data sheet for details).
- For the two-coat system (Primer + Topcoat), apply the topcoat on the ThermoZinc primer wet on wet (no drying in oven), flash off time specified in the ThermoZinc Technical Data Sheet (TDS).
- Topcoat dry film thickness should be generally around 20 - 25 microns, obtaining a total, Primer + Topcoat, dry film thickness of 40 - 50 microns after curing
- Use HVLP spray or air mix guns with a nozzle diameter of 1.0-1.4 mm, as recommended in the technical data sheet for the product.
- Application can be manual or automatic, including robotic systems, and can be performed with conventional or electrostatic methods.
- Optimal product distribution, brightness, and smoothness are achieved with air pressure set between 2 and 3 bar.
- The air supply line should be equipped with traps to remove water and oil; these traps must be drained and serviced frequently.
- Always control coating thickness to maintain performance and refer to the specific product TDS for the recommended thickness range.



4. Handling parts, drying, curing

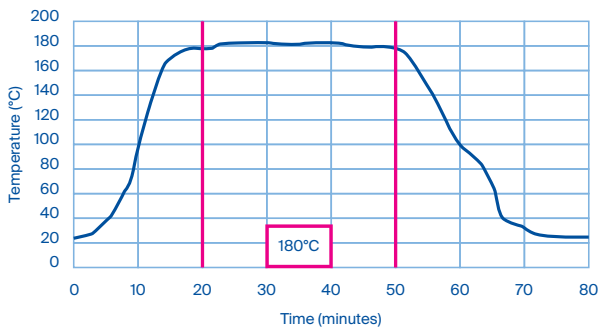
- Thermal stabilization should be performed as soon as possible after the coating process, except for the air-dry product series.
- The thermal stabilization must be conducted in an oven equipped with an extraction system suitable for removing fumes and vapors.
- The oven temperature should be raised gradually to reach a peak metal temperature of 180°C, maintaining this temperature for 30 minutes to cure the metal part.
- This initial curing process allows for safe handling and packaging of the coated parts.
- To achieve a proper curing of the material to guarantee the best performance of the coating, the part needs to reach a high temperature. This can be achieved with a curing process in oven at a minimum temperature of 300°C or at the first use of the coated parts
- During the curing process, some components of the material may burn, producing smoke and odor around 220-240°C; this occurs only during the first high-heat exposure.
- To minimize smoke and odor at first use, it is recommended to perform thermal stabilization at a minimum temperature of 250°C instead of 180°C.



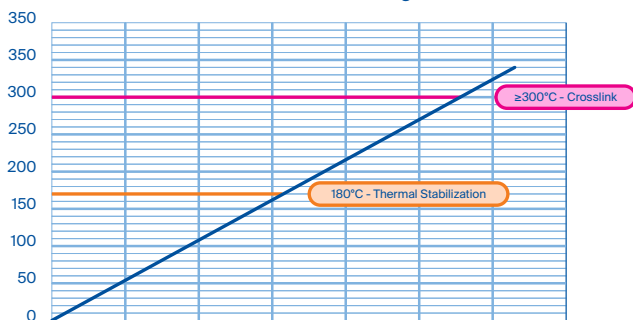
5. Storage, shelf-life, maintenance of liquid components

- When unopened and properly stored at temperatures between 15 and 25°C, these materials typically have a shelf life of up to 12 months from the date of manufacture. For specific product details, please consult the Technical Data Sheet (TDS).

Thermal stabilization curve for silicone based coatings



Thermal behaviour graph silicone based coatings





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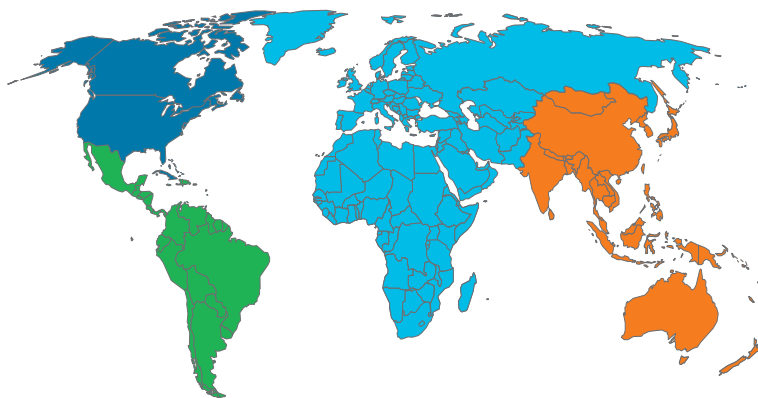
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