

SILRES® MP 50 E:

General-Purpose Silicone Resin Emulsion for Water-Based Heat-Resistant Coatings

Due to environmental considerations, water-based systems are becoming more essential in the production of heat-resistant coatings. Compared to traditional solvent-based resins, water-based silicone resins significantly reduce VOC emissions in coating formulations.

By utilizing silicone resin emulsion SILRES® MP 50 E, a complete range of water-based high-temperature coatings can be formulated and produced while retaining all the benefits of a silicone based coating:

- High heat resistance
- Excellent adhesion
- Chemical resistance
- Corrosion resistance

SILRES® MP 50 E has good compatibility with other organic resins, which in turn, provides formulators with flexibility and enables ease of compounding during the manufacturing process.

What Distinguishes SILRES® MP 50 E from Other Silicone Resins?

SILRES® MP 50 E and coatings formulated with this silicone resin emulsion dry at room temperature to form a tack-free film. This is a significant advantage compared to other silicone resins in that SILRES® MP 50 E allows for ease of processing and handling of the coated workpiece prior to the final curing step.

For moderate heat resistance coatings (~200–300 °C), SILRES® MP 50 E can be

SILRES® MP 50 E: Typical General Characteristics

Appearance	White milky emulsion
Solvent content (xylene)	< 8.0%
Solid content	50 ± 2%
Viscosity, dynamic at 25 °C	~ 100–200 mPas
Density at 25 °C	1.08 g/cm ³
Emulsifier	Nonionic
Flash point	45 °C
Ignition temperature (liquids)	450 °C

used independently on its own, or when used as a binder in combination with a broad range of water-based organic polymers such as acrylates, alkyds and polyesters. Final curing is obtained by baking at 200–280 °C for 15 minutes to one hour. Due to the baking process, metals and glass make excellent substrates.

For high temperature exposure, SILRES® MP 50 E is applied as a single coat with a maximum dry film thickness of 25 µm. High temperature resistance (~500–600 °C) can be achieved by using suitable pigments and fillers. In addition to its high temperature performance, SILRES® MP 50 E also has excellent storage life.

A Wide Variety of Application Possibilities

SILRES® MP 50 E is used in all types of coatings for oven and stove paints and for household appliances that are regularly subjected to high temperatures, such as pots, pans and toasters. Mufflers and exhaust systems on motorcycles, recre-

ational vehicles and automotive are some of the other more popular applications in which SILRES® MP 50 E provides high temperature protection and performance.

More Advantages with SILRES® MP 50 E

SILRES® MP 50 E is suitable for use under recommendation XV and silicones of the BfR.





**At a Glance:
The Advantages of SILRES® MP 50 E**

- Excellent airdrying properties
- Tack-free after one hour at RT
- Water-based phenyl-methyl resin emulsion
- Provides water-based paints with high thermal stability
- Good compatibility with organics
- BfR XV confirmed
- Broad end use application range

Example: Silicone Heat-Resistant Water-Based Coating (Curing Time 30 min. at 230 °C)

SILRES® MP 50 E	53.2 g
Water	13.7 g
Wetting and dispersing agents	3.4 g
Antifoam agents	0.2 g
Talc	5.5 g
Black iron oxide	13.3 g
Phosphate pigment	4.4 g
Corrosion inhibitor	0.9 g
Thickeners	0.7 g
WACKER® L 051 SILICONE FLUID	0.2 g



Coating Properties (after Baking for 15 min. at 250 °C; Dry Film Thickness ~ 25 µm)

König Pendulum hardness DIN ISO 1522	~ 70
Pencil hardness DIN ISO 13523-4	2B
Cross-cut test without tape DIN ISO 2409/ASTM 3002	Gt 0/B5
Cross-cut test with tape DIN ISO 2409/ASTM 3002	Gt 0/B5

Coating Properties (after Baking for 60 min. at 500 °C, Dry Film Thickness ~20 µm)

König pendulum hardness DIN ISO 1522	~ 70
Pencil hardness DIN ISO 13523-4	2H
Cross-cut test without tape DIN ISO 2409/ASTM 3002	Gt 1-2/B3-4
Cross-cut test with tape DIN ISO 2409/ASTM 3002	Gt 2/B2
MEK	> 200 DR



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