SILRES® HP 2000

Silicone Resins

SILRES® HP 2000 is a reactive aminofunctional methyl phenyl silicone resin supplied as app. 90 wt.%-solution in xylene. The product is typically used as curing agent/crosslinker for cycloaliphatic epoxy resins in 2-pack high-solids coatings. It significantly improves the weathering resistance of the coating when compared with organic amine curing agents. Such 2-pack epoxypolysiloxane coatings are an isocyanate-free alternative to 2K-polyurethanes as weathering-resistant topcoats.

Properties

SILRES® HP 2000 is used as aminofunctional curing agent for cycloaliphatic epoxy resins in high solids coatings. Epoxypolysiloxane coatings formulated with SILRES® HP 2000 are exceptionally weathering resistant.
SILRES® HP 2000 is suitable for the formulation of isocyanate-free topcoats with these properties:

- high initial gloss and excellent gloss retention
- extraordinary long-term weathering resistance
- isocyanate-free ambient temperature crosslinking
- Low VOC coatings, suitable for very high solids coatings
- easy-to-clean/anti-grafitti effect
- corrosion resistance
- Low yellowing
- free of benzylalcohol/alkylphenols

Technical data

General Characteristics

Property	Condition	Value	Method
Viscosity, kinematic	25 °C	100 - 400 mm^2/s	-
Appearance	-	clear, yellowish liquid	-
Amine number	-	approx. 2.6 - 2.9 mmol/g	-
Density	20 °C | 1013 hPa	approx. 1.12 g/cm^3	DIN 51757
Flash point	-	38 °C	DIN 53213
H-Amine equivalent	-	230 - 255 g/mol	-
Ignition temperature	-	425 °C	DIN 51794
Pot life[(1)]	-	approx. 4 h	-
Solid content	150 °C | 20 min	89 - 91 %	-
VOC (Xylene content, calculated)	-	100 - 120 g/l	-

[1](mixed with cycloaliphatic epoxy resin at 20°C, stoichiometry 1:1)

These figures are only intended as a guide and should not be used in preparing specifications.

Store in a dry and cool place.

Protect against moisture.

Applications

- Anti-Corrosive Coatings
- Industrial Coatings
- Marine & Protective Coatings

Application details

SILRES® HP 2000 is a reactive aminofunctional silicone resin and cures epoxy resin. It contains primary and secondary amino groups. The amine hydrogen equivalent weight (AHEW) can be calculated by the formlua below using the experimentally determined amine value (available on Certificate of Analysis of the individual batch).
Amine hydrogen equivalent weight (AHEW) [g/mol] = 666,67 / Amine value
Example: Amine value = 2,7 => AHEW = 246,9 g/mol
The epoxy equivalent weight (EEW) of the epoxy resin used allows the correct stoichometric calculation of the amounts to be used. Stoichiometric ratio 1:1 should be the starting point. Over- and undercured coatings are possible and can lead to performance changes of the cured binder.
As an example, the formulation of a weathering-resistant epoxypolysiloxane topcoat might be as follows:
Paint base (Component 1) comprises

- Cycloaliphatic epoxy resin as binder component
- weathering resistant pigments/fillers
- optionally additives and solvents

Curing agent (Component 2) comprises

- SILRES® HP 2000
- optionally additives and solvents

Example formulations are available on request.

The two components have to be thouroghly mixed prior to paint application. Pot life is app. 4 h, dry-to-touch time is 4 - 5 h at app. 50 µm dry film thickness (23°C/50% relative humidity).
Ready-to-use coatings can be formulated at very low VOC-values (100 - 250 g/l).
The complete abandonment of isocyanates is also a great advantage regarding environmental, health and safety issues.
Due to its excellent weathering resistance, the epoxy amino polysiloxane coating can offer UV-resistance and weather-resistance as a polyurethane top coat combined with the adhesion and barrier properties of an epoxy amine coat within a single coat. They can be an economical alternative by replacing a three coat system (zinc-rich primer, epoxy, polyurethane) by a two coat system (zinc-rich primer, epoxypolysiloxane)
The excellent resistance to solvents adds anti grafitti-properties to epoxypolysiloxanes because of the easy removal of grafittis by solvent washing.
Typical applications:

- industrial coatings
- structural steel (infrastructure)
- marine & protective coatings
- pipelines and containers
- automotive coatings (trucks)
- anti-graffiti coatings
- easy-to-clean coatings

SILRES® HP 2000 crosslinks/self-condenses in the presence of moisture. Contact with moisture must be avoided till the final application of the product.

Packaging and storage

Packaging

- 25 kg steel can
- 210 kg steel drum

Storage

Contact with tin (e.g. with improper metal containers) or moisture will decrease shelf live.
The 'Best use before end' date of each batch is shown on the product label.
Storage beyond the date specified on the label does not necessarily mean that the product is no longer usable. In this case however, the properties required for the intended use must be checked for quality assurance reasons.

Safety notes

Comprehensive instructions are given in the corresponding Material Safety Data Sheets. They are available on request from WACKER subsidiaries or may be printed via WACKER web site http://www.wacker.com.

QR Code SILRES® HP 2000

For technical, quality or product safety questions, please contact:

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