

SEMICOSIL[®] 942 UV A/B

Room Temperature Curing Silicone Rubber (RTV-2)

SEMICOSIL[®] 942 UV A/B is a sprayable, addition-curing, 2-part silicone rubber of low viscosity that cures extremely fast after activation by UV light exposure to a soft conformal coating.

Properties

- coating and encapsulant for printed circuit boards
- dispensing and spraying applications
- two-part, 10 : 1 mixing ratio
- low viscosity, shear thinning
- extremely fast curing at room temperature (after UV-activation)
- shadow curing at room temperature
- offers process control option by UV-light (contains UV-tracer)
- low and constant moduli (-40°C to +180°C) [storage Modulus 10 kPa, 1Hz/25°C]
- protection of housed PCBs with cover (sticky gel)
- IEC 60664-3:2017 compliant, positive SIR testing (electromigration free)
- IPC-CC-830C compliant
- low ion content (Cl⁻, Na⁺, K⁺, Li⁺, each ≤ 2 ppm)

Technical data

General Characteristics

Property	Condition	Value	Method
Mix ratio	-	10 : 1 pbw	-

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

Properties Uncured

Property	Condition	Value	Method
Viscosity A [D=0,5 s ⁻¹]	25 °C	3300 mPa·s	DIN EN ISO 3219
Viscosity A [D=100 s ⁻¹]	25 °C	450 mPa·s	DIN EN ISO 3219
Viscosity B	25.0 °C	1000.0 mPa·s	DIN EN ISO 3219

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

Properties Uncured

Property	Condition	A	B	Method
Color	-	clear	clear-yellowish	-
Density	23.0 °C	0.98 g/cm ³	0.97 g/cm ³	DIN EN ISO 2811-2
Platinum catalyst in component ⁽¹⁾	-	-	B	-

¹Organometallic catalyst + Pt catalyst

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Catalyzed

Property	Condition	Value	Method
Viscosity, dynamic [D=0,5 s ⁻¹]	25 °C	3200 mPa·s	DIN EN ISO 3219
Viscosity, dynamic [D=100 s ⁻¹]	25 °C	420 mPa·s	DIN EN ISO 3219
Mix ratio ⁽¹⁾	-	10 : 1	-
Pot life ⁽²⁾	-	approx. 6 h	-
Gel time [irradiated, 120 mW/cm ² / 10 sec] ⁽³⁾	25 °C	3 min	DIN 16945
Gel time [not irradiated] ⁽⁴⁾	70 °C	20 min	DIN 16945
Gel time [not irradiated] ⁽⁵⁾	25 °C	≤ 48 h	DIN 16945

¹parts per weight

²at 23 °C

³in analogy to DIN 16945

⁴in analogy to DIN 16945

⁵in analogy to DIN 16945

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Properties Cured

Property	Condition	Value	Method
Color	-	clear-yellowish	-
Density	23.0 °C	0.98 g/cm ³	DIN EN ISO 2811-2
Penetration @23°C ⁽¹⁾	-	60.0 1/10mm	DIN ISO 2137
Volatiles [Sum D4-D8] ⁽²⁾	-	max. 350 ppm	-

¹Cure: 10 sec 120 mW/cm² followed by 30 min/ 150°C

²[GC after heptane extraction 22h]

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All the information provided is in accordance with the present state of our knowledge. Nonetheless, we disclaim any warranty or liability whatsoever and reserve the right, at any time, to effect technical alterations. The information provided, as well as the product's fitness for an intended application, should be checked by the buyer in preliminary trials. Contractual terms and conditions always take precedence. This disclaimer of warranty and liability also applies particularly in foreign countries with respect to third parties' rights.

Applications

- Automotive Electronics
- Electronics
- Power Electronics

Application details

To ensure homogeneity component A must be stirred thoroughly before processing.

Surface preparation All surfaces must be clean and free of contaminants that will inhibit the cure of SEMICOSIL® 942 UV A/B. Examples of inhibiting contaminants are sulfur containing materials, plasticizers, urethanes, amine containing materials and organometallic compounds – especially organotin compounds. If a substrate's ability to inhibit cure is unknown, a small scale test should be run to determine compatibility.

Handling

The A-component contains an UV-tracer that is dispersed in the silicone. The UV-tracer may be subject to a limited sedimentation. In order to guarantee homogenous product performance (curing time, UV-tracability) it is recommended to homogenize the A-side prior to application by stirring.

Mixing

Component B of SEMICOSIL® 942 UV A/B contains an organometallic and a platinum catalyst, component A the crosslinker. Even traces of the catalyst may cause gelling of the component containing the crosslinker. Therefore tools (spatula, stirrers, etc.) used for handling the catalyst component or the catalyzed compound must not come into contact with this component. The two components should be thoroughly mixed at a 10 : 1 ratio by weight or volume. To eliminate any air introduced during dispensing or trapped under components or devices a vacuum encapsulation is recommended.

Curing For the curing an UV lamp (Fe-lamp, D-bulb) with an emission between 250 and 350 nm can be used. It is recommended not to use lamp systems that emit light with a wavelength below 250 nm.

1 space line

Curing time of SEMICOSIL® 942 UV A/B is highly dependent on UV-activation, Significant differences in curing time are obtained for curing different layer thicknesses and for using different substrate materials. Typical values are given below.

UV-activation Curing time (140 mW/cm²) at 25°C (2mm) 1 s 5 min 5 s 2 min 20 s cured after 20 s UV

Without UV-activation SEMICOSIL® 942 UV A/B cures at room temperature within 48 h at 70 °C within 15 min.

Processing

General

SEMICOSIL® 942 UV A/B is intended to be used only for processing in dispensing equipment configurations with direct mixing of SEMICOSIL® 942 UV A and B in the mixing tube (.i.e. after the dispensing head). It is not intended to be applied in premixes that are stored in separate reservoirs or distribution systems. Pot-Life after mixing has to be considered.

Surface

All surfaces must be clean and free of contaminants that will inhibit the cure of the 10:1 mixture of SEMICOSIL® 942 UV A/B .

Examples of inhibiting contaminants are sulfur containing materials, plasticizers, urethanes, amine containing materials and organometallic compounds – especially organotin compounds. If a substrate's ability to inhibit cure is unknown, a small scale test should be run to determine compatibility.

Handling

SEMICOSIL 942® UV B is supplied in specific packagings allowing the material transfer to reservoirs of state-of-the art dispensing equipment without exposure to ambient light. For this purpose a reusable opening fixture is mounted on the can closure Informations can be provided by the regional sales managers.

To ensure homogeneity of the corresponding A component, usually the addition curing silicone SEMICOSIL® 942 UV A must be stirred thoroughly before processing. Typically also SEMICOSIL® 942 UV B is stirred in the reservoir of the dispensing machine. Dissolved air is removed by standard degassing of reservoir contents.

After exposure to ambient light or daylight SEMICOSIL® 942 UV B should be immediately processed and not stored any longer.

Mixing

SEMICOSIL® 942 UV B contains the organometallic UV active catalyst, the corresponding component A the crosslinker. Even traces of the catalyst may cause gelling of the component containing the crosslinker. Therefore tools (spatula, stirrers, etc.) used for handling the catalyst-containing component or the catalyzed compound must not come into contact with this component.

SEMICOSIL® 942 UV A should be thoroughly mixed with SEMICOSIL® 942 UV B at a 10 : 1 ratio by weight or volume. Typically static mixing with tube configurations 24/6 or higher (increased no. helical turnings or lower diameter) are sufficient.

To eliminate any air introduced during dispensing or trapped under components or devices a subsequent vacuum encapsulation may be recommended.

UV Cure

UV Irradiation on SEMICOSIL® 942 UV B activates the UV-active catalyst. In combination with SEMICOSIL® 942 UV A a very fast cure can be achieved. Cure speed can be tuned in typical ranges between minutes and seconds depending on UV Intensity and dose.

Direct Cure: Reaction proceeds after end of UV irradiation. Main cure is rapidly achieved for those areas irradiated with UV light.

Shadow Cure: areas not directly accessible are cured on longer time scale by second addition curing mechanism (see gel time no irradiated)

For the curing an UV lamp (Fe-lamp, D-bulb) with an emission between 250 and 350 nm can be used. It is recommended not to use lamp systems that emit light with wavelengths below 250 nm. An high power UV-LED may also be used (365 nm) for applications allowing minimum distance to the light source. As light penetration depth is reduced 365 nm in UV-LED in comparison with discharge lamp pretests are recommendable to check feasibility for specific application.

Curing time of SEMICOSIL® 942 UV A/B (10:1) is highly dependent on UV-activation. Significant differences in curing time are obtained for curing different layer thicknesses and for using different substrate materials.

Packaging and storage

Storage

General recommendations SEMICOSIL® 942 UV A/B should be stored in the original light-tight container. After exposure to daylight or UV-light the material should be immediately processed and not stored any longer. 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

According to the latest findings, addition-curing silicone rubber SEMICOSIL® 942 UV A/B contains neither toxic nor aggressive substances which would require special handling precautions. General industrial hygiene regulations should be observed. 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 SEMICOSIL® 942 UV A/B



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

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