ELASTOSIL® E60 N GREY

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Moisture Curing Silicone Rubber (RTV-1)

ELASTOSIL® E60 N GREY is a flowable one-part silicone rubber for potting and coating applications. When exposed to air moisture it cures at room temperature to yield a permanently flexible silicone rubber with excellent heat resistance.

Fully vulcanized ELASTOSIL® E60 N GREY shows long-term stability against weathering, moisture and UV radiation. The silicone elastomer may continously be exposed to constantly changing climatic conditions, UV radiation and temperature as high as 230 °C (446 °F) without damage.

Properties

Uncured:

- Flowable, self-levelling
- Fast skin formation at room temperature
- By-product of curing: acetic acid

Cured:

- Medium hardness
- Designed for coating and potting applications
- Recommended service temperature range: -50 °C to +230 °C
- No inhibition of Pt curing silicones
- Suitable for applications with food contact

Please note: fully cured ELASTOSIL® E60 N GREY is suitable for uses under the Recommendation "XV. Silicones" of the BfR and 21 CFR § 175.300 "Resinous and polymeric coatings" and FDA 21 CFR §177.2600 "Rubber articles intended for repeated use", provided that any given limitations on extractable and volatile substances are observed. Residual solvents have to be completely removed from the food contact article.

Specific features

- Condensation-curing
- Electrically insulating
- Food grade
- Low viscosity
- One-component
- UV & weathering-resistant

Technical data

Properties Uncured

Property	Condition	Value	Method
Curing speed	23 °C | 50 % r.h	2.0 mm/d	-
Density	23 °C	1.12 g/cm^3	DIN EN ISO 2811-2
Skin formation time	23 °C | 50 % r.h	8 - 12 min	-
Viscosity, dynamic	23 °C | Brookfield, spindle 5 / 2,5 rpm	approx. 75000 mPa·s	DIN EN ISO 2555

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

Properties Cured

Curing Conditions: 14 days at 23 °C and 50 % rel. humidity, 2 mm sheet, no post-curing.

Property	Condition	Value	Method
Color	-	grey	-
Density (in water)	23 °C	1.08 g/cm^3	DIN EN ISO 1183-1 A
Hardness Shore A	-	32	DIN ISO 48-4
Tensile strength	-	3.0 N/mm^2	ISO 37 type 1
Elongation at break	-	250 %	ISO 37 type 1
Tear strength	-	5.0 N/mm	ASTM D 624 B

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Applications

- Baking Tray Coatings
- Machine Building

Application details

- Multipurpose grade for coating and potting, in particular for food related applications
- Typical fields of application: household appliances, mechanical engineering, bakeware equipment

Processing

Processing

ELASTOSIL® E60 N GREY is a ready-to-use, one-part silicone rubber which starts curing when exposed to air moisture. Typical curing characteristics are given in the table "Properties Uncured".

As RTV-1 silicones require humidity for curing, free access of air moisture to the silicone rubber is essential. Additionally, the vulcanization time of ELASTOSIL® E60 N GREY can be greatly reduced by increasing the level of air's relative humidity. Please note that, unlike the initial skin formation, the total curing rate of RTV-1 silicones is limited by moisture's diffusion speed in silicone rubber.

ELASTOSIL® E60 N GREY typically is vulcanized at room temperature. Heat curing is recommended only for applications where the silicone rubber is applied as a thin coating (thickness less than 0.5 mm), because otherwise blistering is likely to occur due to the quick release of acetic acid.

After completion of the vulcanization the silicone elastomer may continuously be exposed to constantly changing climatic conditions, UV radiation and high temperature without damage. Cured ELASTOSIL® E60 N GREY usually shows good primerless adhesion to many substrates, e.g. glass, ceramics, metals, plastics and powder coatings.

Detailed information about the processing of RTV-1 silicones is given in our brochure “ROOM TEMPERATURE VULCANIZING (RTV) SILICONES - MATERIAL AND PROCESSING GUIDELINES”. We recommend running preliminary tests to optimize conditions for the particular application.

Removal:
If removal of the silicone from machines, metering and application equipment is necessary, white spirit or similar nonpolar solvents are recommended. However, cleaning ideally should take place before the silicone rubber is fully vulcanized. Cured silicone needs to be rubbed off or removed mechanically, if necessary in combination with a swelling agent (solvent) or a chemical silicone remover.

Example of Use

Baking Tray Coatings
ELASTOSIL® E60 N GREY is designed to create long-lasting, non-stick coatings for an optimum release of bakery products. Baking trays coated with silicone rubber are particularly suitable for croissants, buns, white bread, brown bread and sourdough bread.

Surface Preparation:
Though ELASTOSIL® E60 N GREY shows primerless adhesion to many substrates, the trays to be coated should be cleaned prior use in order to remove any dirt, rust, oil or grease. If required, the surface of the trays can be roughened by sandblasting to improve the adhesion of the silicone rubber coating.

Priming:
For an optimum of adhesion it is recommended to additionally prime the trays with WACKER® Primer G 790 TOLUENE FREE. Both primers are best applied by spraying; dipping or brushing is also suitable.

Please note: as a too thick primer layer can reduce adhesion, WACKER® Primer G 790 TOLUENE FREE should be applied as a very thin coating only (< 2 µm thickness). In order to minimize the layer thickness, it is recommend to dilute the primers directly before use with a nonpolar and technically dry solvent (cyclohexane, white spirit or a similar aliphatic solvent) in a 1:1 or 1:2 ratio (primer:solvent). Please mind the food compliance of the solvent used for diluting ! For further details regarding priming with WACKER® Primer G 790 TOLUENE FREE, please revert to the respective technical data sheet.

When the primer solution has been applied, the primed parts must be air dried for at least 15 minutes to allow all solvents to evaporate. Finally, the primer layer is baked at 150 to 170 °C for 20 minutes.

Preparation of the coating suspension:
Though ELASTOSIL® E60 N GREY is flowable and self-levelling, the product needs to be diluted before use in order to get optimum coating results. Suitable diluents are non-polar, aliphatic solvents such as technically dry cyclohexane, white spirit or a similar aliphatic grade (please mind the food compliance of the solvent used !). A mixing ratio of 1:1 to 2:1 (solvent:silicone rubber) is recommended.

Important: once prepared, the coating mixture has to be stirred continously in order to prevent the separation of fillers. Furthermore the container should be humidity-tight and must be kept properly closed, because the coating suspension is sensitive to moisture.

Coating:
The coating mixture can be applied by any coating method, such as spraying, dipping and brushing. However, airless spraying equipment is particularly recommended, as this avoids premature curing of the silicone rubber suspension during spraying.

Since the film thickness is essential for the durability of the anti-stick coating, the silicone rubber suspension should be applied in a quantity of some 150 g per m^2 (including overspray). Multilayered application is possible, e.g. for baking pans with a a complex design. In total, the rubber coating should have a thickness of 150 µm (minimum) to 350 µm (maximum) after curing.

Curing:
The curing process already starts during application, in the moment when the coating suspension gets in contact with air moisture. For physical drying it is recommended to store the coated trays for at least 60 minutes at room temperature in order to allow the solvents to evaporate. Subsequently the coating is baked at 250 °C for 1 hour (alternatively: 4 hours at 200 °C).

Coating removal (deglazing, restoration):
Coated baking trays and pans can be restored either by pyrolysis at a temperature above 600 °C, followed by cleaning via sandblasting, or by chemical methods (immersion into a highly basic etching bath, followed by thoroughly rewashing the trays with water). Alternatively, the silicone rubber coating can be removed by CO_2 blasting or sandblasting.

Packaging and storage

Storage

Store in a dry and cool place.

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

While curing ELASTOSIL® E60 N GREY releases a total of approx. 3.5 % by weight of acetic acid. These vapours should not be inhaled for long periods or in high concentration. Work areas should therefore be well ventilated.

Contact of the uncured silicone rubber with eyes and mucous membranes must be avoided as this can cause irritation. If, despite all protective measures, uncured silicone rubber comes into contact with the skin or eyes, irrigate the affected area immediately with copious amounts of water for several minutes. If the irritation continues, immediately seek medical advice.

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 ELASTOSIL® E60 N GREY

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

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