

Basis	<b>Addition curing, high strength, silicone casting compound</b> <b>Silicone rubber</b> <b>Curing agent</b>
Colour	Translucent

## Applications

## Properties

- Flexible parts
  - Casting moulds for prototype design
  - Production tooling especially for rapid prototyping
  - Casting moulds for RIM materials
  - Casting moulds for vacuum casting materials
  - Suitable for high temperature casting applications
  - Two curing agent options – catalyst standard or catalyst oil bleed
- Room temperature addition curing
  - Outstanding release properties
  - Translucent appearance allows split lines to be cut accurately in block moulds
  - Very low shrinkage and good dimensional stability
  - High hardness but flexible and very tough
  - Easy to de-air
  - Product cure can be heat accelerated if required

## Processing data

Product		Mixture Silicone SR 4	Base Silicone Rubber	Curing Agent Catalyst
Colour		Translucent		
Mixing ratio	p.b.w.		100	10

Properties	Unit	Value Mixture Silicone SR 4	Value Base – Silicone Rubber	Value Curing Agent - Catalyst
Viscosity at 23°C	mPas	35,000	70,000	300
Specific gravity			1.1	0.96
Gel time at 23°C	min.	90		
Curing time at 23°C	hrs.	12		
Linear shrinkage	%	< 0.1		

## Physical data\*

Properties	Inspection Requirement	Unit	Value Catalyst Standard	Value Catalyst Oil Bleed
Elongation to break	ISO 37	%	400	375
Tensile strength	ISO 37	MPa	6.7	6.5
Tear strength <sup>#</sup>	ISO 34	N/mm	27	32
Shore Hardness	DIN 53505	Shore A	40	40

\*Cured for 24 hours at 23°C

<sup>#</sup> ISO 34 Cutter (equivalent JIS K 6252, DIN 53515/angle nick 1.0mm)

## Sales units (packages)

Units	Base	Silicone rubber	20 kg
	Curing agent	Catalyst (standard)	2 kg
		Catalyst (oil bleed)	2 kg

## In General

Silicone SR 4 is a two-component material consisting of Silicone SR 4 base, which when mixed with Silicone SR 4 catalyst standard or catalyst oil bleed, cures at room temperature by an addition reaction. A range of materials can be cast into the cured silicone moulds: polyurethane and other reactive resins are the materials typically used.

## Processing Instructions

### Substrate Preparation

The surface of the original should be clean and free of loose material. If necessary, and in particular with porous substrates, use a suitable release agent such as petroleum jelly or PTFE.

### Mixing

Weigh 100 parts of Silicone SR 4 Base and 10 parts of Silicone SR 4 catalyst standard or catalyst oil bleed curing agent in a clean container, then mix together until the curing agent is completely dispersed in the base. Hand or mechanical mixing can be used, but do not mix for an extended period of time or allow the temperature to exceed 35°C (95°F). Mix sufficiently small quantities to ensure thorough mixing of base and curing agent.

It is strongly recommended that entrapped air be removed in a vacuum chamber, allowing the mix to completely expand and then collapse. After a further 1-2 minutes under vacuum, the mix should be inspected and can be used if free of air bubbles. A volume increase of 3-5 times will occur on vacuum de-airing the mixture, so a suitably large container should be chosen.

Note: If no vacuum de-airing equipment is available, air entrapment can be minimized by mixing a small quantity of base and curing agent, then using a brush, painting the original with a 1-2mm layer. Leave at room temperature until the surface is bubble free and the layer has begun to cure. Mix a further quantity of base and curing agent and proceed as follows to produce a final mould.

### Pouring the Mixture and Curing

Pour the mixed base and curing agent as soon as possible onto the original, avoiding air entrapment. The catalysed material will cure to a flexible rubber within 12 hours at room temperature (22-24°C/ 71.6-75.2°F) and the mould can then be removed. If the working temperature is significantly lower, the cure time will be longer. Heat accelerating the cure is possible, but this will produce some apparent shrinkage of the mould due to differences in volume contraction on cooling between the silicone rubber and the original. The higher the curing temperature, the greater the likely differences in dimensions.

## Additional Information

### Inhibition of Cure

All addition-cured silicone elastomers are susceptible to cure inhibition when in contact with certain materials and chemicals. Inhibition has occurred if the elastomer is only partially cured after 12 hours, or has a sticky surface in contact with another material. Amines and sulphur containing materials are strong inhibitors, as are organo tin salts used in condensation cure silicone elastomers. It is strongly recommended that mixing containers, mould construction materials, originals and release agents be checked for any inhibition effect before use.

### Use at High Temperatures

Moulds produced from Silicone SR 4 have a long life at elevated temperatures. However, continuous use above 200°C (392°F) will result in loss of elasticity over a period of time. Use above 250°C (482°F) is not recommended.

### Resistance to Casting Materials

The chemical resistance of fully cured Silicone SR 4 is excellent, and similar to all addition-cure silicone elastomers. It should be noted however that ultimately, resins and other aggressive casting materials will attack silicone moulds, changing physical properties, surface release and possibly mould dimensions. Moulds should be checked periodically during long production runs.

**Note:** Silicone SR 4 is an industrial product and must not be used in food moulding, dental and human skin moulding applications. It is neither tested nor represented as suitable for medical or pharmaceutical uses.

## Storage

When stored at or below 30°C (86°F) in the original unopened containers Silicone SR 4 Base, Silicone SR 4 catalyst standard and catalyst oil bleed curing agents have a usable life of 12 months from the date of production. Partly used containers must always be closed and materials should be used as soon as possible.

## Safety Measures

Product safety information required for safe use is not included. Before handling, read product and safety data sheets and container labels for safe use, physical and health hazard information. The safety data sheet is available from your local ebalta sales representative. Please follow the precaution instructions of the Government Safety Organisation of the chemical industry when working with this material. Please follow all safety advice!

## Waste Disposal

According to arrangement with local authorities cured material can be disposed of as domestic or commercial waste. Non-cured products are waste which is subject to inspection and has to be disposed of accordingly. In case of further questions please do not hesitate to contact our Department of Product Safety.

The instructions and recommendations are given in good faith and are based on long experience and careful tests. Since the conditions of use are beyond our control, and due to versatility of applications and working methods, we can't give any guarantee. All information is non-binding and provides no guarantee for special characteristics or properties of the product. Despite information given from **ebalta** the customer has to make his own tests regarding applications and processing. If any special warranty is requested, written agreement on this subject is essential.

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