

SILBIONE® RTV 4040 – Multi Catalyst System

Biocompatible Silicone Elastomers

April 2018

Description

SILBIONE® RTV 4040 is a two component clear, high strength silicone elastomer that cures at room temperature by polyaddition reaction at a 10:1 ratio. It is formulated to be used with multiple catalysts to cure overnight at room temperature or within hours at elevated temperature to give a variety of hardness. Its low viscosity makes the product easy to pour and quick to degas. **SILBIONE® RTV 4040** is designed to reproduce intricate details and maintain tight tolerances.

Examples of applications

- Conventional production and prototype molds
- Healthcare and Medical Device Components
- Orthopedic Devices
- Prosthetics
- Skin-like applications and Life-like parts

Biocompatibility

SILBIONE® RTV 4040 system is formulated to meet ISO 10993 Biological Evaluation of Medical Devices - Part 1: Evaluation and testing requirements for skin contact or healthcare applications of less than 30 days.

It is the sole responsibility of the purchaser to determine suitability for an application and comply with all applicable statutory, regulatory and industry

Typical properties

TYPICAL PROPERTIES - AS SUPPLIED	TYPICAL CATALYZED PROPERTIES
Part A - Base Component <ul style="list-style-type: none"> • Color Translucent • Consistency Pourable • Viscosity, cP. (mPa.s) 50,000 	Mixed at 24°C (75°F) and 50% R.H. <ul style="list-style-type: none"> • Mix Ratio, A:B(Parts by weight) 10:1 • Viscosity, cP. (mPa.s) 40,000
Part B – Catalyst Component <ul style="list-style-type: none"> • Color Translucent 	

TYPICAL PROPERTIES OF CURED RUBBER, Cured 24 hours at 24 °C (75 °F) and 50% RH

Property	Test Method	CATA 4020 HT	CATA 4020	CATA 4040
• Color			Translucent	
• Specific Gravity		0.75	1.08	
• Work Life , hours ⁽¹⁾		1.5	0.75	1.0
• Pot Life , hours ⁽²⁾		22	1.5	2.0
• Hardness , (Shore A)	ASTM D2240	775 (5.3)	25	38
• Tensile Strength , psi (N/mm ²)	ASTM D412	525	570 (3.9)	920 (6.3)
• Elongation , (%)	ASTM D412	130 (23)	390	340
• Tear Resistance , ppi, (N/mm)	ASTM D624, Die B		72 (13)	120 (21)
• Linear Shrinkage ⁽³⁾ (5) 24 hours, 7 days			< 0.1 <.01	
• Temperature Range °C (°F)			-54 to 204 (-65 to 400)	

NOTE: Cure may be accelerated by curing at 40-65°C (120-150°F) for 3-4 hours. HEAT CURING MAY INCREASE SHRINKAGE.

(1) Time required to double initial catalysed viscosity

(2) Time at which material gels

(3) 8x8x0.25 in (20.3x20.3x0.64 cm) molded sheet, cured at room temperature

Please note: The typical properties are not intended for use in preparing specifications. Please contact our local Sales Department for assistance in writing specifications.

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- Instruction of use**
1. Stir the base (Part A) well before use (except when machine dispensing).
 2. Shake the catalyst container (Part B) well before use.
 3. Weigh the desired amount of base into a clean mixing container. Tip the container and roll the base all the way around the side wall up to two inches from the top. This will prevent the catalyst from becoming absorbed into the container. It is recommended that the container be filled to not more than 1/3 the container depth to allow sufficient room for expansion during the deaeration procedure.
 4. Weigh the proper amount of catalyst into the container. Mix the base and catalyst together by stirring with a stiff, flat ended metal spatula until a uniform color is obtained. Scrape the container walls and bottom well to insure a thorough mix.
 5. Place the container into a vacuum chamber and evacuate the entrapped air from the mixture using a vacuum pump capable of achieving 29 inches of mercury vacuum. The mixture will rise, crest and then collapse in the container. Interruption (bumping) of the vacuum may be necessary to prevent overflowing the container. Keep the mixture under full vacuum for 2-3 minutes after the material has receded in the container.
 6. Bleed air slowly into the vacuum chamber. When the chamber is at atmospheric equilibrium, remove the cover plate and take out the container.
 7. Pour the deaired material slowly in a steady stream from one end of the mold box so that the material flows evenly over the pattern. This should minimize entrapment of air bubbles under the flowing material. A "print" coat may be poured first over the pattern which will also help reduce the possibility of entrapping air on the pattern and in the cured rubber. A mold release (petroleum jelly) may be applied on the pattern first to improve release.
 8. Allow the rubber to cure for 16-24 hours at 75±5°F (24°C) before removing the cured rubber mold from the pattern. For best results, allow the mold to air cure an additional 24 hours before using it in production. Full cure is achieved in 3-7 days.

PROCESSING INFORMATION

CATALYZED PROCESSING PROPERTIES ARE AFFECTED BY TEMPERATURE AND HUMIDITY VARIATION

1. For best results, mix and cure the material at 75°F (24°C) and 50% relative humidity.
2. Higher temperature and humidity will decrease the work life and pot life of the material. The faster cure will also affect the flow properties. Refrigeration of the base prior to use in hot environments has been shown to improve the handling properties of this material.
3. Lower temperatures and humidity will increase the work life and pot life of the material. The slower cure will increase the flow time. Cure temperatures below 68°F (20°C) are not recommended and have been found to cause a reduction in final cure hardness and properties.
4. It is important that the catalyst containers are tightly closed after use to prevent contamination.

Packaging **SILBIONE® RTV 4040** is available as 20kg Part A / 2kg Part B and 200kg Part A / 20kg Part B kits.

Storage and shelf life When stored in its original packaging at a temperature between -10°C and +30°C, **SILBIONE® RTV 4040** may be stored for up to 18 months from its date of manufacture. Beyond this date, Elkem Silicones no longer guarantees that the product meets the sales specifications.

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Safety

Please consult the Safety Data Sheet of **SILBIONE® RTV 4040**.

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