



WACKER

SILICONES

ELASTOSIL[®]

SILICONE FOAM
THE LIGHT AND EASY WAY TO SUCCESS

CREATING TOMORROW'S SOLUTIONS

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SILICONE FOAM IS AT LEAST AS
VERSATILE AS YOUR NEEDS

SEALING, INSULATING, DAMPING – ELASTOSIL® SC IS FULL OF GOOD IDEAS

Silicone foam from WACKER is the ideal solution for all applications requiring a highly compressible, low-density material. ELASTOSIL® SC offers compelling versatility, whether as cooktop seals, vehicle seat cushions or cable-penetration firestops. Of course, it also offers the many exceptional properties that make our silicones such high performers.

Benefits of Silicone Foam

- Low density, excellently suited for use in lightweight construction
- Good acoustic and thermal insulation
- Flame resistance
- No release of toxic gas on thermal decomposition
- Open or closed-cell foam
- Low compression set
- Flexible seal with high UV, chemical and weather resistance
- Processing viscosities from free-flowing to thixotropic
- High heat resistance, service temperatures from -50 to +200 °C with no appreciable change in elastic properties

For Demanding Applications

Cured in Place Gaskets (CIPG)

- In automotive construction: flexible seals for covers and casings, air-filter sealing lips, etc.
- In household appliances: seals for ovens, cooktops, washing machines, etc.
- In the electrical industry: seals for casing lids, etc.

Laminated and Slabstock Foams

- In transportation: flame-resistant trim and seat cushions in trains and aircraft
- In machine construction: for thermal insulation

Firestops for Cable Penetrations

- In automotive construction and shipbuilding
- In the construction industry

Damping Elements

- For acoustic damping
- For mechanical damping

Sealing Profiles and Moldings

- For manufacturing foamed silicone parts

PRODUCTS TO MEET EVERY NEED



Special applications require specialty products. Silicone foam has a lot to offer.

ELASTOSIL® SC 833

A pourable silicone foam of medium density, which is predominantly closed-cell. Suitable as a fire protection material in technical applications and the construction industry.

ELASTOSIL® SC 835

A free-flowing silicone foam of high thermal stability and low compression set, which is predominantly closed-cell. Suitable for air-filter seals, etc.

ELASTOSIL® SC 860

A general-purpose, self-leveling foam for CIPGs, with low compression set (no post-curing) and a predominantly closed-cell structure.

ELASTOSIL® SC 870

A general-purpose, thixotropic foam for CIPGs, with low compression set (no post-curing) and a predominantly closed-cell structure.

ELASTOSIL® SC 890

A self-leveling, pourable, predominantly open-cell foam of very low density for encapsulation and for moldings, high dimensional accuracy thanks to limited lateral expansion.

Sealing Ceran cooktops with temperature-resistant silicone foams.

Product		ELASTOSIL® SC 833 A/B	ELASTOSIL® SC 835 A/B
Product Data, uncured			
Product Data, uncured	Test Method	Unit	Value
Color			A white B black
			A white B reddish brown
Density at 23 °C	ISO 2811	[g/cm ³]	A 1.12 B 1.16
			A 1.14 B 1.14
Viscosity at 23 °C	ISO 3219	[mPa s]	A 15,000 B 15,000
			A 15,000 B 20,000
Catalyzed A/B			
Mixing ratio (pbw)			1 : 1
			1 : 1
Mixing ratio (pbv)			–
			–
Pot life (23 °C, up to 100 Pa s)		[s]	280
			240
Tack-free time at 20 °C		[min]	12–18
			10–15
Curing time at 23 °C		[h]	24
			24
Product Data, cured (24-h storage at 23 °C and 50% atmospheric humidity)			
Color			Black
			Reddish brown
Density at 23 °C	ISO 2781	[g/cm ³]	0.460–0.500
			0.400–0.450
Shore hardness A (with film)	ISO 868		27
			20
Elongation at break	ISO 1798	[%]	80
			80
Tensile strength	ISO 1798	[kPa]	800
			450
LOI value	ASTM D 2863	[%]	>32
			–

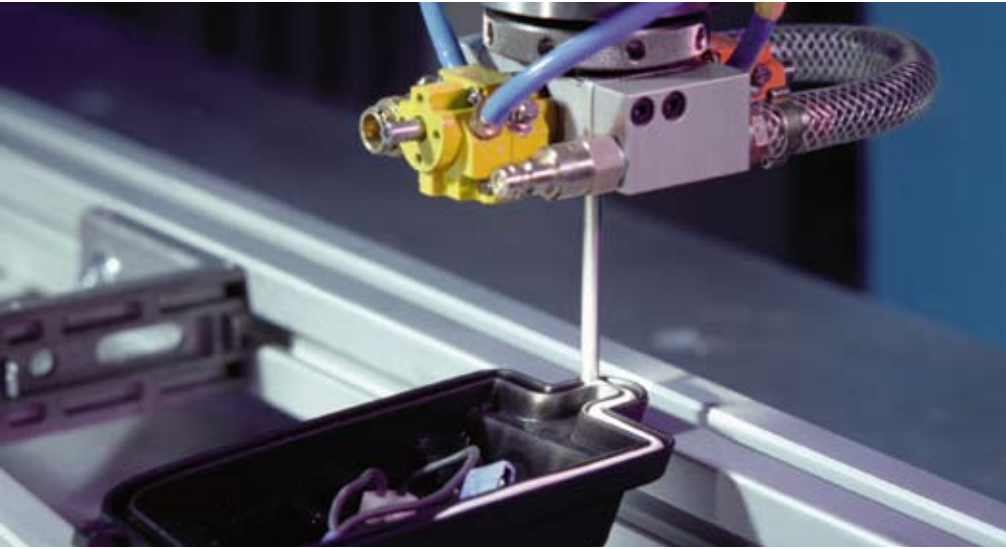
These figures are intended as a guide and should not be used in preparing specifications.

ELASTOSIL® SC 860 A/B	ELASTOSIL® SC 870 A/B	ELASTOSIL® SC 890 A/B
A gray B black	A black B colorless	A white B colorless
A 1.19 B 1.04	A 1.05 B 1.05	A 1.20 B 1.01
A 15,000 B 20,000	A 30,000 B 60,000	A 50,000 (D = 0.5 1/s) B 1,400 (D = 0.5 1/s)
1 : 1	1 : 1	10 : 1
1 : 1.15	–	8 : 1
120	150	10
10	10–15	20–30
–	–	–
Gray	Gray	White
0.350	0.350–0.400	0.200
8–10	8–12	12
80	100	100
250	350	250
–	–	>31

Air-filter seal made of free-flowing silicone foam from WACKER.



PROCESSING MADE EASY



Compression seal at large tolerances and low contact pressure.

Optimal Mixing and Metering

Silicone foam processing parameters are heavily dependant on the type of metering equipment available. They should be optimized in consultation with the equipment manufacturer and our technical service engineers. Dynamic metering systems produce excellent foam structures, while a static metering system may be used for high-throughput encapsulation and for moldings.

Silicone Foam Quality

The foam quality depends on various processing parameters (entrained air, type of mixer, mixer speed, nozzle length and diameter) and ambient conditions (temperature, heat dissipation).

Processing Details

Foam sealants, except ELASTOSIL® SC 890, have a pot life of about 3 minutes at 20 °C. Curing is largely completed after 10–15 minutes at room temperature. After this time, the surface is practically tack-free. Cross-linking and the tack-free time can be accelerated substantially by heat treatment at approx. 50 °C, so that downstream processing of parts with formed-in-place gaskets, for example, can follow on directly after the thermal treatment. Thermal post-curing also improves compression set. As silicone foams are extremely reactive, the processing conditions have a pronounced influence. Pot life is reduced by approx. 30% at an ambient temperature of 30 °C. To ensure that it can be processed easily by hand, ELASTOSIL® SC 890 encapsulation foam has a pot life that is 10 minutes longer. The surface is tack-free after 30 minutes.

Foaming Factor Easy to Adjust

The foaming factor is the ratio of reactant density to foam density. It depends on the entrained air and processing temperature. As a result, the metered quantity must be set according to application.

Optional Adhesion

Generally, RTV-2 silicone foams' adhesion on many substrates is insufficient. If a durable, firm bond is desired, it is necessary to pre-coat the surface of the material with a special adhesion promoter or primer. Once the solvent has evaporated, these silicone-containing solutions react with atmospheric moisture to form a silicone film. The silicone foam grows on this film during curing. The drying process usually takes one hour at room temperature and a minimum atmospheric humidity of 40%.

Inhibition can be Prevented

Various substances can affect the platinum catalyst's action. If such a substance comes in contact with the uncured mixture, curing may be impaired. The most important inhibitors are:

- Sulfur, certain sulfur compounds such as polysulfides and polysulfones and other sulfur-containing substances, such as natural and synthetic rubbers (e.g. EPDM)
- Amines, urethanes and amine-containing substances such as certain polyurethanes, amine-cured epoxy resins, etc.
- Organometallic compounds (especially if the metal is tin) and substances that contain them, e.g. cured rubbers or harder, condensation-curing RTV-2 silicone rubber compounds
- Various natural and synthetic oils, greases, waxes and resins, as well as substances containing such materials, for example many release agents and almost all types of plasticine

Hydrogen and Safety

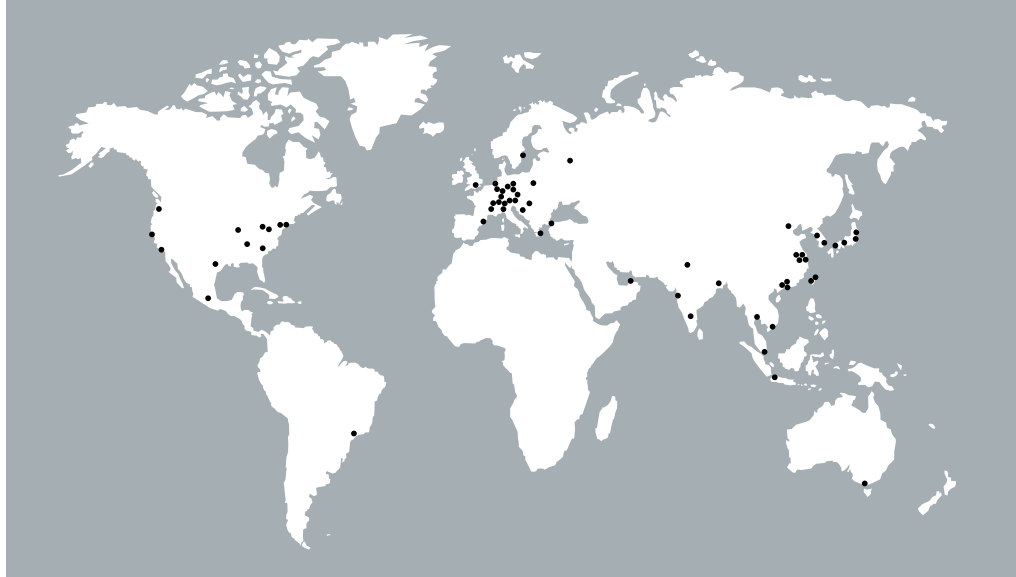
In foam systems, polyhydrogenmethylsiloxanes (so-called crosslinkers) react in two ways. Just like with addition-curing RTV-2 silicone rubber compounds, the platinum-catalyzed hydrosilylation of Si-H and the vinylmethylpolysiloxanes' vinyl group takes place (reaction 1 = crosslinking). The platinum complex also catalyzes the reaction of a hydroxide source (can be a Si-OH group) with the crosslinker's Si-H group, liberating hydrogen (reaction 2 = hydrogen generation). Hydrogen is the actual blowing agent that drives foaming as curing progresses.

The amount of hydrogen produced varies from product to product. It is around 10 litres per kg foam for ELASTOSIL® SC 833 and 20 litres per kg foam for ELASTOSIL® SC 890. Hydrogen generation lasts about 24 hours. Hydrogen diffuses out through the pores and is completely replaced by air 48 hours after curing. When processing large amounts, adequate ventilation should be ensured.

Information on Request

If you require more information on our products, just contact us. We can provide you with the specific product data sheets and safety data sheets of all WACKER silicone foams.

WACKER AT A GLANCE



WACKER

is a technology leader in the chemical and semiconductor industries and a worldwide innovation partner to customers in many key global sectors. With 15,000 employees, WACKER generated sales of €3.78 billion in 2007. Germany accounted for 19 % of sales, Europe (excluding Germany) for 27 %, North and South America for 17 % and Asia-Pacific, including the rest of the world, for 37 %. Headquartered in Munich, Germany, WACKER has 27 production sites worldwide and a global network of over 100 sales offices.

SILTRONIC

is one of the world's leading producers of hyperpure silicon wafers, supplying many major chip manufacturers. Siltronic develops and produces wafers up to 300 mm in diameter at facilities in Europe, the USA, Asia and Japan. Silicon wafers form the basis of state-of-the-art micro and nanoelectronics used, for example, in computers, telecommunications, motor vehicles, medical technology, consumer electronics and control systems.

WACKER SILICONES

is a leading supplier of complete silicone-based solutions that comprise products, services and conceptual approaches. As a provider of solutions, the business division helps customers press ahead with innovations, exploit global markets fully, and optimize business processes to reduce overall costs and boost productivity. Silicones are the basis for products offering highly diverse properties for virtually unlimited fields of application, ranging from the automotive, construction, chemical, electrical engineering and electronics industries, through pulp and paper, cosmetics, consumer care and textiles, to mechanical engineering and metal processing.

WACKER POLYMERS

is the global leader for high-quality binders and polymer additives. This business division's activities encompass construction chemicals and functional polymers for lacquers, surface coatings and other industrial applications, as well as basic chemicals, i. e. acetyls. Products such as dispersible polymer powders, dispersions, solid resins, powder binders and surface coating resins from WACKER POLYMERS are used in the construction,

automotive, paper and adhesives industries, as well as by manufacturers of printing inks and industrial coatings.

WACKER POLYSILICON

has been producing hyperpure silicon for the semiconductor and photovoltaics industries for over 50 years. As one of the largest global manufacturers of polycrystalline silicon, WACKER POLYSILICON supplies leading wafer and solar-cell manufacturers.

WACKER FINE CHEMICALS

As an expert in organic synthesis, silanes and biotechnology, WACKER FINE CHEMICALS supplies innovative biotech products and catalog chemicals for life-science and consumer-care customers worldwide. Its product portfolio includes cyclodextrins and cysteine, organic intermediates and acetyl acetone. A key specialty is the contract manufacturing of pharmaceutical proteins via microbial systems.

WACKER

The data presented in this brochure are in accordance with the present state of our knowledge, but do not absolve the user from carefully checking all supplies immediately upon receipt. We reserve the right to alter product constants within the scope of technical progress or new developments. The information given in this brochure should be checked by preliminary trials because of conditions during processing over which we have no control, especially where other companies' raw materials are also being used. The information provided by us does not absolve the user from the obligation of investigating the possibility of infringement of third parties' rights and, if necessary, clarifying the position. Recommendations for use do not constitute a warranty, either express or implied, of the fitness or suitability of the product for a particular purpose.

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