WACKER SILICONES

ELASTOSIL®

EXCELLENT SILICONE SEALANTS: PRIMERS.

CREATING TOMORROW'S SOLUTIONS

Contents

ELASTOSIL® RTV-1 SILICONE RUBBER OFFERS EXCELLENT ADHESION. AND COMBINES PERFECTLY WITH PRIMERS.

IS PRIMING YOUR PRIME CONSIDERATION?

ELASTOSIL® RTV-1 silicone rubber adheres to a wide range of substrates, including those which have not been primed. Sometimes, though, priming is advisable and even essential for perfect results: for example, where the application involves fluctuating temperatures, damp, tensile stress, compressive stress, shear, or the surface is porous.

This brochure presents three widely used primers and tells you all you need to know about using them.

The best grade for you to use will depend on the chemistry and the surface properties of the substrate and will require some preliminary testing by you.

Should you have any queries, feel free to call our technical service staff, who will gladly assist you.

For good advice, contact the WACKER technical service.

”ABC” OF PROCESSING PRIMERS

Make the right preparations

Substrates must be scrupulously cleaned to ensure that ELASTOSIL® RTV-1 silicone rubber adheres properly. All surfaces to be primed must therefore be dry, clean and free of dust, dirt, rust, oil etc. Porous surfaces should be brushed down, rubbed down or sand-blasted and smooth surfaces should be roughened mechanically.

Lubricants and release agents are frequently present on plastic surfaces. They should be removed by rubbing with steel wool. This will also increase the surface area.

Greases, oils, waxes and other substances that might impair adhesion to nonporous substrates may be removed with highly volatile organic solvents[1] that evaporate completely.

Use methyl ethyl ketone[1] (MEK) to clean metals and nonporous silicate materials such as glass, tile, porcelain, and ceramics. Ethanol[1] is best for cleaning plastics. Squirt the MEK or ethanol onto a clean, white, lint-free cotton cloth and wipe down the surface. Before the solvent evaporates, use a second clean cloth to rub the surface dry.

Certain plastics such as polyolefins (e.g. polyethylene, polypropylene and Teflon®) need to be specially treated before ELASTOSIL® RTV-1 silicone rubber will adhere to them. Please contact our service department about this.

ELASTOSIL® RTV-1 silicone rubber will not usually adhere properly either to plastics that contain plasticizers and other readily migrating or exuding organic additives or to bituminous or tarry surfaces, even if they have been carefully primed. The reason is that these substances impair adhesion of the primer to the surface and penetrate into the primer film where they can act as release agents. They may also discolor the silicone rubber.

[1] Please consult the corresponding safety data sheet about this.

Now apply the rubber

In the absence of other processing instructions, apply a thin, bubble-free coat of primer to the cleaned surface, e.g. by brush, spray or dipping.

The absorbency of the surface will determine the thickness of the primer coat. Highly porous surfaces should be treated repeatedly until the coat is intact and uniform.

The drying times (flash-off times) apply to room temperature and must be observed. Otherwise, the ELASTOSIL® RTV-1 silicone rubber may not adhere properly.

Drying times can vary because they depend on the ambient temperature and the nature of the solvent contained in the primer.

Apply the silicone sealant and adhesive as soon as possible after the drying time has elapsed, but in any event on the same day. The longer the delay, the greater will be the risk of contamination, which will weaken adhesion of the sealant to the primed surface.

Additional intermediate steps

As a rule, cured ELASTOSIL® RTV-1 silicone rubber adheres strongly to the recommended primer. Sometimes, though, it is necessary to bake the primer before applying the rubber.

Note that the primer will form an inflexible resin film. When used in conjunction with readily deformed substrates, such as silicone rubber, natural rubber and synthetic rubber or with flexible substrates, such as plastics, the primer film will be deformed. This will cause the film to become brittle and flake off and adhesion will suffer. Materials for bonding or jointing should therefore be rigid if they are to be primed with such resin solutions. Unlike the primer, the silicone sealant can of course be deformed to the full extent of the stated limits because it is permanently elastic.

Best used before

WACKER primers have a shelf life of at least 6 months provided that the unopened, original container has been stored at 25 °C. The shelf life of each batch is printed 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.

For your safety

Detailed safety information is contained in the relevant safety data sheets. These are enclosed with our products on delivery. However, you may also request them at any time from our sales subsidiaries.

QUICK DECISION GUIDE

Metals, plastics

Primer G 790

This primer forms a silicone-resin film and is unsuitable for highly alkaline surfaces.

Primer G 790 improves adhesion of ELASTOSIL® RTV-1 silicone rubber to some plastics and especially to metals that may have been surface-treated. Brief baking of the substrate (where feasible) at 120 to 150 °C after the primer film has formed will further enhance adhesion. Baking will improve adhesion to metals most of all. It will also increase the primer's resistance to silicone rubbers that have a high solvent content.

The application rate for Primer G 790 is 30 – 50 g/m^2.

Porous surfaces

Primer G 783

Primer G 783 is a one-component synthetic resin primer consisting of an acrylate-silicone copolymer solution in toluene.

It is suitable for porous, highly absorbent surfaces, which may also be alkaline. An additional benefit is that, even if primed surfaces are exposed to continuous wetting, the resin film will not emulsify.

Primer FD

Primer FD is a neutral one-component silicone resin primer. It is used mostly for jointing in building structures provided that the substrate is not too alkaline. Very absorbent surfaces should be coated repeatedly until the resin film is visible.

Primer FD is also often used as an adhesion promoter and for corrosion protection when metal parts are embedded in or bonded together with ELASTOSIL® RTV-1 silicone rubber. It may be baked and is suitable for movement joints between porous substrates and metals.

The application rates for Primer G 783 and Primer FD depend on the absorbency of the substrate, but range from 100 to 300 g/m^2.

Properties of the primers

Property			G 790	G 783	FD
Flash-off time at room temperature		min	60	60	60
Active agent content		[%]	19	38	45
Density		[g/cm^3]	0.76	0.95	0.92
Color			Colorless to yellowish	Colorless to yellowish	Colorless to yellowish
Solvent			Aliphatic hydrocarbon	Toluene	Acetone/Toluene
Flash point	DIN 51 755	[°C]	+9	+8	-18
Ignition temperature	DIN 51 794	[°C]	+420	+580	+540

The above data are only intended as a guide and should not be used in preparing specifications.

Which primer for which substrate		
Substrate	**Crosslinking system: Acetoxy**	**Crosslinking system: Alkoxy, 0xime**
Acrylate	G 790 [1]	Optional G 790 [1]
Aluminum	Optional G 790	Optional G 790
Concrete	Not recommended	G 783, FD
Lead	Not recommended	G 790
High-grade steel	G 790	G 790
Iron	Not recommended	G 790
Anodized aluminum	G 790	G 790
Enamel	Not necessary	Not necessary
Epoxy resin	G 790	G 790
Tile (glazed)	Not necessary	Not necessary
tile (unglzed)	G 790, FD	G 790, FD
Gypsum	G 783, FD	G 783, FD
Glass	Not necessary	Not necessary
Wood (glazed)	Not necessary	Not necessary
Wood (varnished)	Not necessary	Not necessary
Clinker brick (glazed)	Not necessary	Not necessary
Clinker brick (unglazed)	G 783, FD	G 783, FD
Copper	Not recommended	G 790
Polycarbonate	G 790 [1]	Optional G 790 [1]
Marble	Not recommended	Consult us
Brass	Not recommended	G 790
Polyamide	G 790	Optional G 790
Polyester	G 790	Optional G 790
Polyurethane	G 790	G 790
Aerated concrete	Not recommended	G783, FD
Porcelain	Not necessary	Not necessary
PVC (unplasticized)	G 790	Optional G 790
PVC (plasticized)	G 790	G 790
Resopal®	G 790	Optional G 790
Steel	G 790	G 790
Styrene und styrene copolymers	G 790	G 790
Brick	G 783, FD	G 783, FD
Zinc	Not recommended	G 790
Tin	Not recommended	G 790

The information in this table is based on the latest studies. No liability claims may be inferred from recommendations herein. As substrates vary so much, it is essential that you conduct preliminary tests.

[1] Polyacrylate and polycarbonate parts under stress, e.g. sandwich elements or skylights, may crack under the influence of the primer or the sealant. Preliminary tests without primer or with Primer G 790 are necessary.

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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