Shin-Etsu

Shin-Etsu Silicone

KE 44, KE 441 and KE 445 RTV Silicones

General Purpose, Electrical Grade Adhesives/Sealants for Thin Section Potting, Coating and Sealing

PRODUCT DESCRIPTION

- ☐ One-component products
- ☐ Self-leveling
- ☐ 100% Solids
- ☐ Low corrosion
- ☐ Excellent adhesion to may substrates
- ☐ Low odor

Shin-Etsu KE 44, 441 and 445 RTV silicones are versatile one-component, ready-to-use, low corrosion adhesives/sealants. They cure to a tough, durable, resilient silicone rubber on exposure to atmospheric moisture at room temperature.

Shin-Etsu KE 44, 441 and 445 RTV adhesives/sealants are used in a variety of applications as glues and anchoring sealants for electrical and electronic parts. They adhere to most surfaces including glass, wood, ceramics, clean metals, silicone resins, vulcanized silicone rubber, natural and synthetic fibers, and many plastic surfaces. With their oxime neutral curing system, these adhesives/sealants present no offensive odor during curing and will not corrode metal. (Discoloration of copper-based metals may occur when herme-tically sealed.)

With the exception of viscosity KE 44, KE 441 and KE 445 RTVs are similar in all respects. KE 44 is a 60,000 cps, medium to high viscosity liquid ideal for flow coating. KE 441 at 10,000 cps and KE 445 at 5,000 cps are ideal for applications such as potting, dip coating, and impregnating that require lower viscosity liquids.

Fully cured KE 44, 441 and 445 RTV adhesives/sealants can withstand long-term temperature exposure of up to 450°F (232°C) and intermittent temperatures as high as 500°F (260°C). All three one-component RTV silicones are available in translucent and white. KE 441 is also available in red.

APPLICATIONS

- ☐ Securing delicate components in place
- ☐ Sealing electrical assemblies
- ☐ Potting electrical equipment
- ☐ Flow coating over electrical components
- ☐ Connector back-fill

DIRECTIONS FOR USE

Surface Preparations

Prior to potting all surfaces should be thoroughly cleaned with an environmentally suitable solvent to remove dirt, oil, and grease. The surface should be allowed to dry before applying a primer or the elastomer.

When solvents are used, proper safety precautions must be observed. All solvents should be considered toxic and should be used only in well ventilated areas. Exposure to high vapor concentration must be avoided. When flammable solvents are used, they should be stored, mixed, and applied in areas void of heat, sparks, open flames or other sources of ignition.

Priming

KE 44, KE 441 and KE 445 will bond to many clean surfaces without the aid of a primer. It is easy, however, to improve the bonding of these materials by using a primer. Please consult the Shin-Etsu Silicones primer data sheet for the proper primer selection for your substrate.

Application

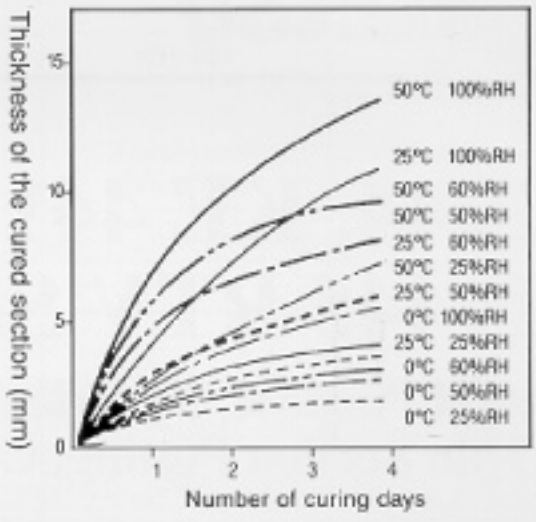
Shin-Etsu KE 44, KE 441and KE 445 RTV silicones' free-flowing, self-leveling consistency allows them to pour easily from their containers and they can be applied by dipping, brushing or spraying.

Curing

One component RTV rubbers cure once in contact with atmospheric moisture. Cure time therefore various according to rubber thickness, cure temperature, and relative humidity.

KE 44, KE 441and KE 445 RTVs utilize an oxime crosslinker, a chemistry that cures with little odor and little effect on most surfaces (These products may discolor copper). When left at 25℃ and 50% RH, KE 44, KE 441and KE 445 RTVs will become tack free within 15 minutes. Optimum adhesion will develop over the next 24 to 72 hours. Cure starts from the surface and the thicker the rubber, the longer the cure time needed.

KE 44



Relationship between the curing speed and the temperature

Bond Strength

In addition to the effects of temperature and relative humidity, development of maximum bond strength will depend on joint configuration, degree of confinement, sealant thickness and substrate porosity. Normally, sufficient bond strength will develop in 12 to 24 hours to permit handling of parts. Minimum stress should be applied to the bonded joint until full adhesive strength is developed. Eventually the adhesive strength of the bond will exceed the cohesive strength of the silicone rubber adhesive/sealant itself. Always allow maximum cure time available for best results.

Clean Up and Removal

Before curing, use the same environmentally suitable solvent used to clean the substrate. After cure, selected chemical strippers which will remove the silicone rubber are available from other manufacturers. Specific product information may be obtained upon request.

Handling and Safety

These products are manufactured and sold for industrial use only.

Uncured product contact irritates eyes. In case of contact with eyes, immediately flush eyes with water for 15 minutes. If irritation persists, get medical attention. Wearers of contact lenses should not handle lenses until all sealant has been cleaned from the fingertips; sealant will transfer to lenses and cause severe eye irritation. To clean from the skin, wipe very thoroughly with a dry cloth or paper towel before washing with soap and water.

Material Safety Data Sheets are available upon request from Shin-Etsu Silicones of America, Inc. Similar information for solvents and other chemicals used with our products may be obtained from your suppliers.

Storage

When stored in the original unopened containers in a dry location at temperatures less than 80°F (27°C), KE 44, KE 441and KE 445 RTV silicones offers a shelf life of up to six months from date of shipment.

To prevent curing of the unused portion of an opened container, reseal tightly.

MILITARY SPECIFICATIONS

Shin-Etsu KE 44 silicone meets the requirements of MIL-A-46106A Type II.

SPECIFICATIONS

The information and data contained herein are believed to be accurate and reliable; however, it is the user's responsibility to determine suitability of use. Since Shin-Etsu Silicones cannot know all of the uses to which its products may be put or the conditions of use, it makes no warranties concerning the fitness or suitability of its products for a particular use or purpose.

You should thoroughly test any proposed use of our products and independently conclude satisfactory performance in your application. Likewise, if the manner in which our products are used requires governmental approval or clearance, you must obtain it.

Shin-Etsu Silicones warrants only that its products will meet its specifications. There is no warranty of merchantability of fitness for use, nor any other expressed or implied warranties. The user's exclusive remedy and Shin-Etsu Silicones' sole liability is limited to refund of the purchase price or replacement of any product shown to be otherwise than as warranted. Shin-Etsu Silicones will not be liable for incidental or consequential damages of any kind.

Suggestions of uses should not be taken as inducements to infringe any patents.

KE 44, KE 441 & KE 445 RTV Silicones

TYPICAL PROPERTIES

	KE 44	KE 441	KE 445
Uncured Properties			
Color	Translucent/ White	Translucent/ White/Red	Translucent/ White
Viscosity, (cps)	60,000	10,000	5,000
Specific Gravity, 25°C	1.05	1.05	1.05
Cured Properties[1]			
Hardness, Shore-A	25	20	20
Tensile Strength, (lb/in^2)	355	285	285
Elongation (%)	300	300	210
Tear Strength, (lb/in)	30	30	30
Adhesive Lap Shear, Al-Al (psi)	170	135	75
Electrical Properties			
Dielectric Strength, (v/mil)	500	500	500
Dielectric Constant, @ 1M Hz	3.0	2.8	2.8
Dissipation Factor, @ 1M Hz	.005	.005	.005
Volume Resistivity, ohm-cm	5×10^{14}	5×10^{14}	5×10^{14}

(1) Cure time 7 days/77°F (25°)/50% RH

AVAILABILITY

Shin-Etsu silicones are available from Shin-Etsu Silicones of America, Inc. or from its authorized silicone products distributors. For the name of your nearest distributor or for more information on these products contact:

Shin-Etsu

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