

**KEOL****SILICONE ADHESIVE****K-SEAL 4257 CC**

**KEOL K-SEAL 4257 CC** is a silicone designed for coating the surfaces of electronic components. It offers excellent moisture-proof, waterproof, leakage-proof, shock-proof, dust-proof, corrosion-proof, anti-ageing and corona-resistant properties.

In addition, the protective coating film also improves the wear and solvent resistance of circuits and components, and releases the pressure caused by periodic temperature changes. It can fully protect the circuit board when used in harsh environments such as those involving chemical corrosion, salt spray, humidity, dust, vibration, and high and low temperatures.

- SINGLE COMPONENT
- ROOM TEMPERATURE CURING
- IMPACT RESISTANCE
- TEMPERATURE RESISTANCE

DENSITY

**1.16**

COLOR

**Clear**

HARDNESS SHORE A

**50**

ELONGATION%

**80**

## PROPERTIES

## UNITY

## RESULTS

Color

Clear

Solid content

%

83

Bulk density

g/cm<sup>3</sup>

1.06

Viscosity

mPa.s

880

Surface curing (25°C, 60%RH)

minutes

7

Heating surface curing time (60-80°C, 60%RH)

minutes

3

Complete curing (25°C, 60%HR)

hours

24

Hardness shore A

-

50

Elongation at break

%

80

Applicable temperature range

°C

-60 / +200

Dissipation factor (100Hz)

-

0.004

Dielectric strength

kV/mm

31.7

Dielectric constant (100Hz)

-

2.47

Volume resistivity

ohm.cm

1.3 E +14

Surface resistivity

ohm

2.8 E +13

THE BONDING KEY !

## SILICONE ADHESIVE



### TYPICAL PRODUCT PROPERTIES

The following data is tested on PCB board after 7 days of curing at room temperature

Adhesion	Hundred Grid Method	5B
Acid resistant	GB/T1981.2-2009	168H passed
Alkali resistance		168H passed
Double 85	IPC-CC-830C	1500 passed
High and low temperature shock	IPC-CC-830C	1500 passed
Salt spray test	GB/T2423.17-2008	168H passed
Antifungal test	ASTMG21	672H passed
Flame retardant test	UL94-V0 coated substrate test	UL E511990



### SURFACE PREPARATION

All surfaces must be thoroughly cleaned and / or degreased with fluids, naphtha, mineral spirits, methyl ethylketone (MEK) or other suitable solvent. Solvents such as acetone or isopropyl alcohol (IPA) do not tend to remove oils well, so oils remaining on the surface can interfere with adhesion. Abrasion of the luminous surface is recommended whenever possible, as it promotes good cleaning and increases the surface for bonding. A final surface wipe down with acetone or IPA is also helpful. Some cleaning techniques may provide better results than others; users must determine the best techniques for their particular applications.



### APPLICATION OF THE PRODUCT

Due to the wide variety of substrate types and the differences in substrate surface conditions, general statements about adhesion and bond strength are not possible. To ensure maximum bond strength to a particular substrate, the cohesive failure of the product at lap shear or similar test is necessary to ensure the compatibility of the adhesive with the given substrate. Additionally, this test can be used to determine minimum cure time or to detect the presence of surface contaminants such as release agents, oils, greases and oxide films.

Adhesives are specially formulated to provide primer-free adhesion to many reactive metals, ceramics and glass, as well as selected laminates, resins and plastics. However, good adhesion cannot be expected on non-reactive metal substrates or non-reactive plastic surfaces such as Teflon, polyethylene or polypropylene. Special surface treatments such as chemical etching or plasma treatment can sometimes provide a reactive surface and promote adhesion of these types of substrates. Primers can be used to increase chemical activity on difficult substrates. Poor adhesion can be felt on plastic or rubber substrates that are heavily plasticized, because mobile plasticizers act as mold release agents. Small-scale laboratory evaluation of all substrates is recommended before production trials are done.



### USEFUL TEMPERATURE RANGES

For most uses, silicone adhesives should be operational over a temperature range of -60°C to 200°C for extended periods of time. However, at both low and high temperatures, material behavior and performance in particular applications can become more complex and require additional considerations. For low temperature performance, thermal cycling at conditions such as -60 °C may be possible, but performance should be verified for your parts or assemblies. Factors that can influence performance are component configuration and stress sensitivity, cooling rates and hold times, and temperature history. At high temperature, the durability of the Cured silicone elastomer depends on time and temperature. As expected, the higher the temperature, the shorter the service life of the material.

## SILICONE ADHESIVE



### PRODUCT TECHNICAL FEATURES

One-component moisture-curing adhesives are typically cured at room temperature and in an environment with a relative humidity of 30-80%, eliminating the need for curing ovens and associated energy and capital costs. Over 90% of full physical properties must be achieved within 24 to 72 hours, this time varying depending on the product. Manufacturing throughput may be faster because the adhesive and component can be handled in much shorter times, approximately 10 to 120 minutes, depending on the adhesive chosen and the amount applied. These adhesives are generally not used in very confined spaces or where deep curing is required, as they generally cure from the exposed surface towards the outside. indoors at a rate of 0.25 inch per seven days. Curing progresses from the exposed exterior surface and is dependent on the humidity of the air. The working time is usually a few minutes to an hour for these products until a surface skin begins to form. Gentle heat below 60 °C can be used to increase penetration by accelerating the cure. Adhesives retain their original physical and electrical properties over a wide range of operating conditions, improving reliability a surface skin begins to form. Gentle heat below 60 °C can be used to increase penetration by accelerating the cure. Adhesives retain their original physical and electrical properties over a wide range of operating conditions, improving reliability a surface skin begins to form. Gentle heat below 60 °C can be used to increase penetration by accelerating the cure. Adhesives retain their original physical and electrical properties over a wide range of operating conditions, improving reliability and the lifespan of electronic devices..



### PRODUCT STORAGE

For best results, adhesives should be stored at +5/+25°C. The storage period is 12 months. Special care should be taken to prevent moisture from coming into contact with these materials. The containers should be tightly closed with the head or air space reduced. Partially filled containers should be purged with dry air or other gases, such as nitrogen. The product should be stored in its original packaging with the lid securely attached to avoid contamination. Store in accordance with special instructions on the product label. The product must be used by its use before the date indicated on the product label.



### PRECAUTIONS FOR HANDLING THE PRODUCT

Adhesives are specially formulated to provide primer-free adhesion to many reactive metals, ceramics and glass, as well as selected laminates, resins and plastics. However, good adhesion cannot be expected on non-reactive metal substrates or non-reactive plastic surfaces such as Teflon, polyethylene or polypropylene. Special surface treatments such as chemical etching or plasma treatment can sometimes provide a reactive surface and promote adhesion of these types of substrates. Primers can be used to increase chemical activity on difficult substrates. Poor adhesion can be felt on plastic or rubber substrates that are heavily plasticized, because mobile plasticizers act as mold release agents. Small-scale laboratory evaluation of all substrates is recommended before production trials are done.

The silicone adhesive discussed in this data sheet is intended to survive only splashing or intermittent exposure. It is not suitable for continuous exposure to solvents or fuels. Tests should be performed to confirm the performance of the adhesives under these conditions.



### NOTE

The information, and particularly the recommendations regarding the application and the KEOL products, are given to you in good faith and are based on current knowledge and experience of the products having been properly stored, handled and applied under normal conditions.

KEOL cannot take responsibility for the results obtained by others since we have no control over their method.

It is up to the user to determine the suitability of the products for the specific application for any method. production costs mentioned in this document. Also, it is up to the user to adopt the necessary precautions as recommended for the protection of the establishment and the people against any kind of risks which could arise during the handling and the use of the products.

KEOL cannot assume all the guarantees mentioned or implied, including guarantees of market value. or compliance for a specific reason, arising from sales or use of KEOL products. KEOL cannot assume liability for incidental consequences or damages of any kind, including lost profits.

Users should always refer to the most recent edition of the technical data sheet for the product concerned. Copies of this document will be provided upon request.