

## Main characteristics of silicones:



### High Stability

Resistance against: UV light, ozone, temperature extremes, oxidation, weathering, aging



### Excellent Thermal Properties

Wide range of operating temperatures from -55 °C up to 200 °C



### Excellent Dielectrical Properties

Superior dielectric properties very stable in the range of operating temperatures



### High Chemical Resistance

Resistance to chemical aggression



### High Elongation

Wide variety of hardness



### Flame Retardant

Difficult to burn: for most products UL 94 V0 or V1



### No Toxic Fumes

In case of fire fumes have a very low concentration of dangerous products



### Safe Handling

The majority of the products are non hazardous

## Bectron®

Silicone Materials for Electronic Applications

ELANTAS Europe with production sites in Germany and Italy is part of the division ELANTAS Electrical Insulation of the ALTANA group. As a leading manufacturer of insulating and protective materials for the electrical and electronics industry our portfolio includes wire enamels, impregnating resins and varnishes, casting and potting resins, electronic coatings, adhesives and flexible electrical insulation materials. In addition, we supply materials for other application areas such as special coatings, printed electronic products as well as tooling and composite materials.


### ELANTAS EUROPE GMBH

Grossmannstr. 105  
20539 Hamburg, Germany  
Tel. +49 40 789460

[www.elantas.com/europe](http://www.elantas.com/europe)  
[bectron.elantas.europe@altana.com](mailto:bectron.elantas.europe@altana.com)

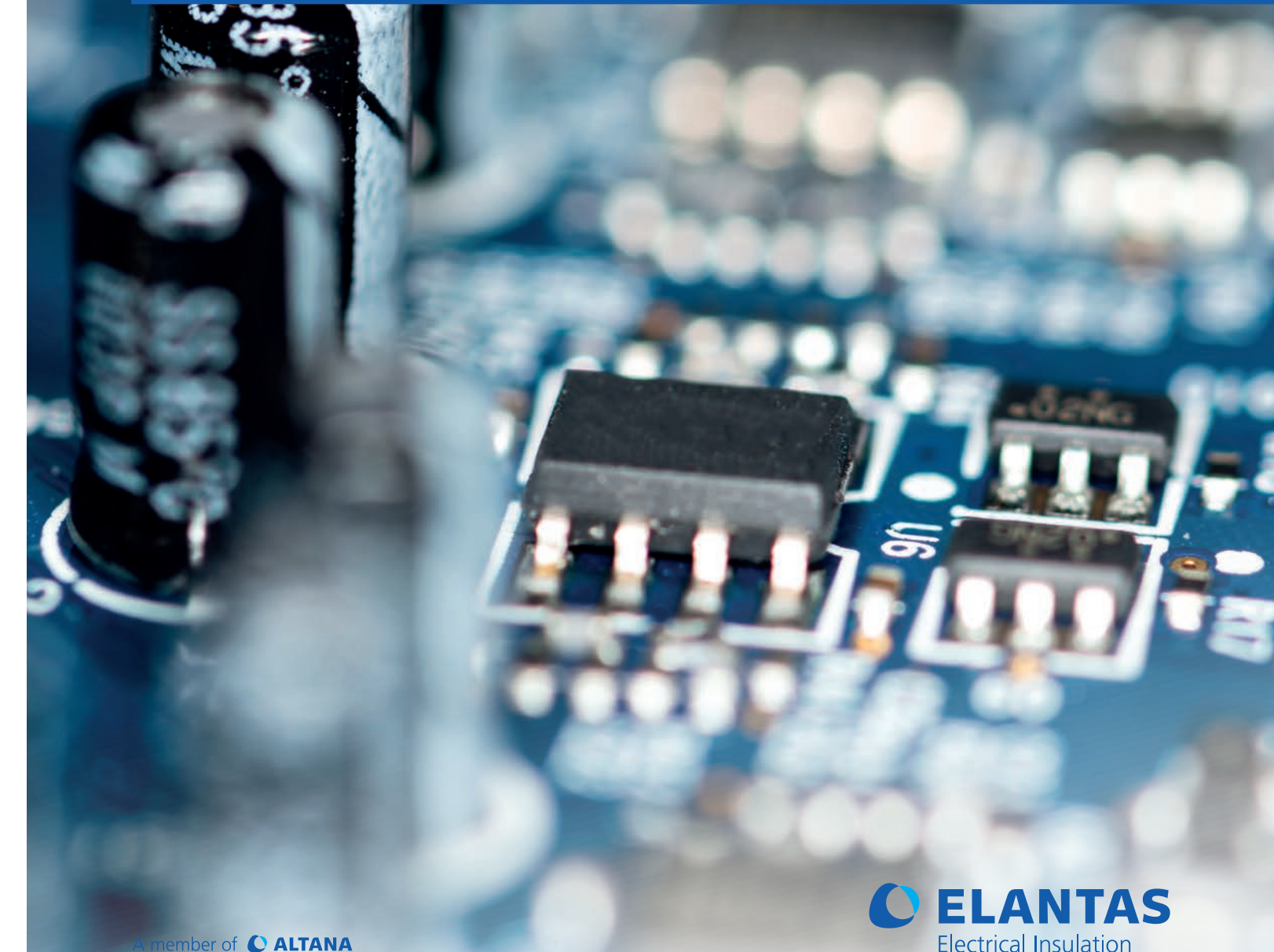
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### Silicone Materials for Electronic Applications

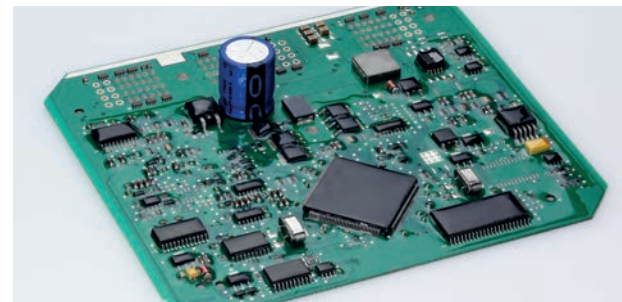
New technologies and the demand for improved productivity levels have a direct impact on today's markets and materials used. The requirements for materials to operate within higher temperature ranges or for softer materials with improved chemical and UV resistance are steadily increasing.

We know exactly what our customers need as we are always close to the market. Our aim is to provide the best solution for our customers. Based on our deep chemical and technological understanding we developed a range of silicone products which fully meet these requirements.

We have expanded our existing portfolio of Bectron® potting materials with the inclusion of a dedicated range of silicone compounds and gels as well as sealants and adhesives. A tailored design following precisely the demands of the customer is the major principle in the development of these products.

Our silicone portfolio includes 2-part addition cure potting compounds and gels, 2-part condensation cure systems as well as 1-part adhesives (alkoxy). Where an improved adhesion is required our R&D specialists offer full support to provide an optimum and individual solution with a primer or with plasma treatment.

Our product range offers materials to cover a wide spectrum of application areas in the electronic industry, e.g. PCB conformal coating, potting and encapsulation, fixing components, lid/housing sealing and heat dissipation aids.



Conformal Coatings



Potting & Encapsulation



Sealing & Adhesion



Heat Dissipation

#### Bectron® SA 70 Series – Alkoxy 1-Part Silicones Adhesives

Bectron® SA 70 Series is a 1-part condensation cure family (alkoxy), specially designed for corrosion sensitive devices. Products have very good adhesion to many substrates as well as good dielectric properties and temperature resistance (from -55 °C up to 200 °C). They are designed to provide flexible bonding in electronic assembly, sealing modules and housings, fixing assembly of components. At room temperature a 3 mm thickness seal will cure in approximately 24h.

| Condensation Cure   | Colour      | Viscosity [mPas] | Tack free time [min] | Tensile Strength [Mpa] | Hardness [Shore] | Elongation [%] |
|---------------------|-------------|------------------|----------------------|------------------------|------------------|----------------|
| Bectron® SA 70P1-15 | Translucent | Paste            | 15                   | 2.70                   | A 15             | 540            |
| Bectron® SA 70L1-30 | Translucent | 44,000           | 11                   | 1.05                   | A 30             | 240            |
| Bectron® SA 70P1-30 | Translucent | Paste            | 10                   | 2.43                   | A 30             | 545            |
| Bectron® SA 70P1-34 | White       | Paste            | 15                   | 2.00                   | A 34             | 580            |
| Bectron® SA 70V1-36 | Translucent | 3,200            | 10                   | 1.52                   | A 36             | 141            |
| Bectron® SA 70P9-37 | Black       | Paste            | 15                   | 2.40                   | A 37             | 450            |
| Bectron® SA 70P9-60 | Black       | Paste            | 3                    | 2.35                   | A 60             | 200            |

#### Bectron® for thermal transfer

For powerful components our thermally conductive compounds offer an ideal solution for connecting the housing with heatsink systems.

| Thermal Transfer      | Thermal Conductivity [W/mK] | Max Temp. [°C/20,000h] | Colour | Viscosity [mPas] | Cure Time [min at 100°C] | Tensile Strength [Mpa] | Hardness [Shore] | Elongation [%] |
|-----------------------|-----------------------------|------------------------|--------|------------------|--------------------------|------------------------|------------------|----------------|
| Bectron® STC 74P1-51* | 0.77                        | + 150°C                | White  | Paste            | –                        | –                      | –                | –              |
| Bectron® SA 75L7-70   | 1.38                        | + 200°C                | Grey   | 55.000           | 25                       | 3.10                   | A 70             | 70             |

\*non curing product

#### Bectron® SC Series – 1 Part Conformal Coatings

Bectron® SC Series is a 1 part Conformal Coating special designed for protecting electronics such as PCB's used in transportation, hybrids, SMD devices and other discrete components and consumer electronics. Good adhesion to many substrates, excellent dielectric properties, temperature resistance from -55 °C up to 200 °C as well as good edge covering are the big advantages. For inspection reason all Bectron® SC products contain UV tracer.

| Conformal Coating   | Colour      | Viscosity [mPas] | Tack free time [min] | Cure time      | Hardness [Shore] | UL [internal] |
|---------------------|-------------|------------------|----------------------|----------------|------------------|---------------|
| Bectron® SC 75V1-16 | transparent | 600              | –                    | 30 min @ 90 °C | 16               | V0            |
| Bectron® SC 76V1-20 | transparent | 700              | 12                   | 24 h @ RT      | 20               | V0            |
| Bectron® SC 76V1-36 | translucent | 3.100            | 10                   | 24 h @ RT      | 36               | HB            |

#### Bectron® AP Series – Primers

Bectron® AP Series are specially formulated primers designed to enhance adhesion of silicone rubbers to different substrates including most metals, rubber, polyester, nylon and other plastics.

| Primer              | Colour       | viscosity [mPas] | Tack Free Time |
|---------------------|--------------|------------------|----------------|
| Bectron® AP 74V8-02 | clear/yellow | <20              | 20             |
| Bectron® AP 74V8-03 | clear/yellow | <20              | 30             |

#### Bectron® SG 75 Series – 2-Part Addition Cure Silicones Gels

Bectron® SG 75 Series is a 2-part addition cure family of very soft materials. They cure at room temperature but it is possible to accelerate the speed by heat. Thanks to their elastic properties and thermal resistance (from -45 °C up to 200 °C) they are successfully used for potting power electronics like IGBT's, sensible electronic devices and components against mechanical stress and vibration.

| Addition Cure Resin | 2-Part gel Hardener | Colour      | mixed viscosity [mPas] | pot life [min] | Penetration [mm*10] | thermal conductivity [W/mK] | UL [internal] | cure time [h@25°C] |
|---------------------|---------------------|-------------|------------------------|----------------|---------------------|-----------------------------|---------------|--------------------|
| Bectron® SG 75V1-15 | Bectron® SG 79V1-15 | Clear-Clear | 3.000                  | 60             | pen 15              | 0,20                        | V0            | 12                 |
| Bectron® SG 75V1-60 | Bectron® SG 79V1-60 | Clear-Clear | 350                    | 120            | pen 60              | 0,20                        | V1            | 24                 |
| Bectron® SG 75V1-75 | Bectron® SG 79V1-75 | Clear-Clear | 925                    | 45             | pen 75              | 0,20                        | V1            | 24                 |
| Bectron® SG 75L2-30 | Bectron® SG 79L5-30 | Beige-Blue  | 10.500                 | 120            | pen 30              | 0,90                        | V0            | 48                 |

#### Bectron® SK 75 Series – 2-Part Addition Cure Silicones

Bectron® SK 75 is a 2-part addition cure family. For easy application all products were designed with very low viscosity. Cure at room temperature takes 24h but it is possible to accelerate by heat. Thanks to their elastic properties and long term thermal resistance (-40 °C to 200 °C) products are successfully used for encapsulation of electronic sensitive devices for outdoor or harsh environment housings, power modules, etc. Products are flame retardant accordingly to UL 94.

| Addition Cure Resin  | 2-Part rubber Hardener | Colour      | mixed viscosity [mPas] | pot life [min] | Hardness [Shore] | thermal conductivity [W/mK] | UL 94 [internal] | cure time [h@25°C] |
|----------------------|------------------------|-------------|------------------------|----------------|------------------|-----------------------------|------------------|--------------------|
| Bectron® SK 75V1-35* | Bectron® SH 79V2-35    | White-Beige | 990                    | 180            | A 35             | 0,30                        | V1               | 24                 |
| Bectron® SK 75V2-35  | Bectron® SH 79V2-35    | Beige-Blue  | 1.100                  | >180           | A 35             | 0,30                        | V1               | 24                 |
| Bectron® SK 75V2-45  | Bectron® SH 79V2-45    | Beige-Beige | 3.200                  | 60             | A 40             | 0,54                        | V0               | 24                 |
| Bectron® SK 75V2-65  | Bectron® SH 79V2-65    | Beige-Beige | 3.500                  | 60             | A 65             | 0,45                        | V0               | 24                 |

\* self bonding after 1h@120°C

#### Bectron® SK 76 Series – 2-Part Condensation Cure Silicone

Bectron® SK 76 Series is a 2-part condensation cure family. They cure at room temperature. Thanks to their elastic properties and long-term thermal resistance (from -40 °C up to 180 °C), our products are successfully used for PCB and other components protection subject to thermal shock. They do not suffer for catalyst inhibition.

| Condensation Cure Resin | Cure 2-Part Hardener | Colour     | mixed viscosity [mPas] | pot life [min] | Hardness [Shore] | thermal conductivity [W/mK] | UL 94 [internal] | cure time [h@25°C] |
|-------------------------|----------------------|------------|------------------------|----------------|------------------|-----------------------------|------------------|--------------------|
| Bectron® SK 76V2-50     | Bectron® SH 79V5-50  | Beige-Blue | 2.600                  | 30             | A 50             | 0,40                        | n.a.             | 24                 |
| Bectron® SK 76V2-75     | Bectron® SH 79V5-75  | Beige-Blue | 7.500                  | 20             | A 75             | 0,42                        | V1               | 6                  |