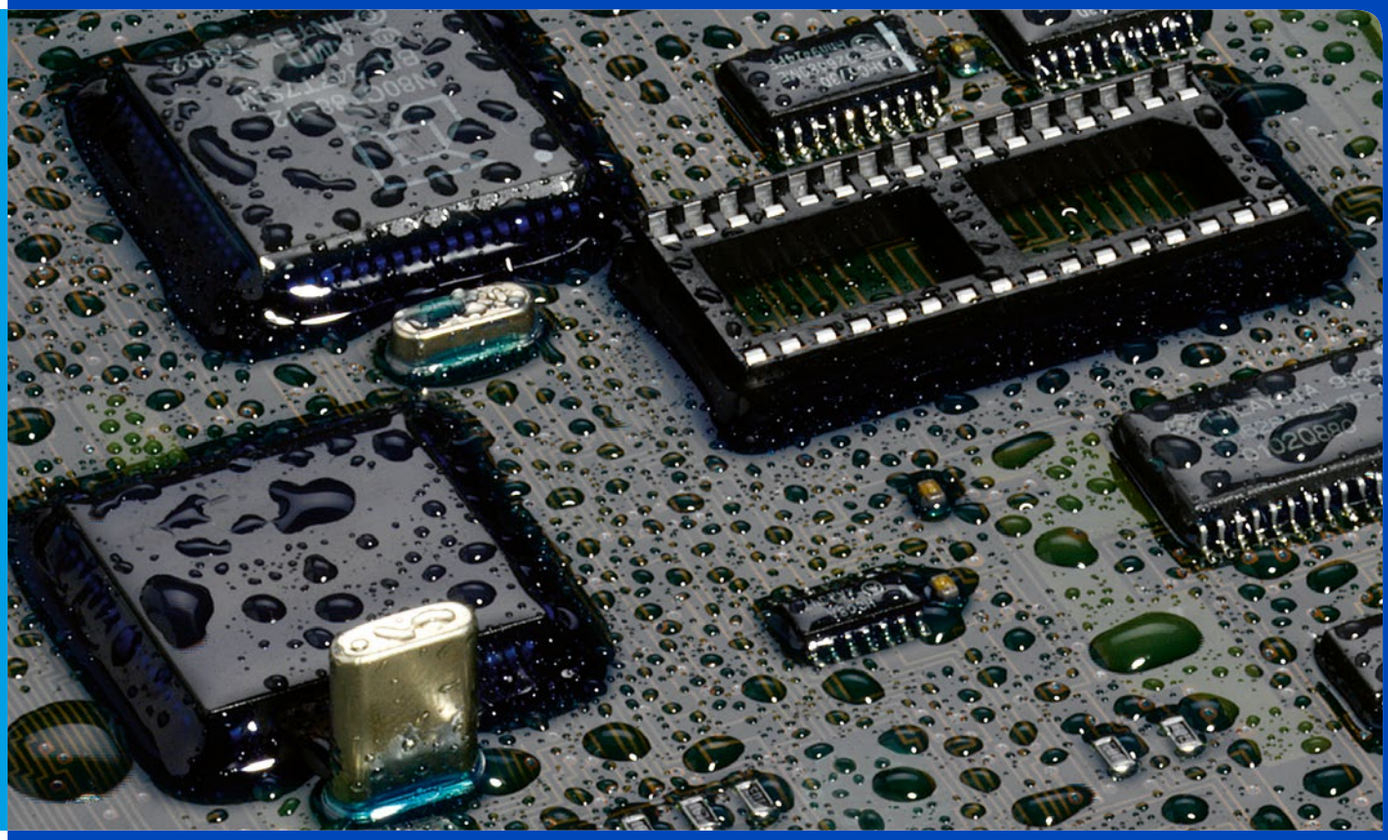


superior protection
humid environment

BECTRON®

Electronic protection provides a safe environment

A member of ALTANA

ELANTAS
Electrical Insulation

Focus on innovation

The more you demand, the more you get

BECTRON® performance is convincing in a wide range of applications. So the coating for your product can be configured to your special needs.

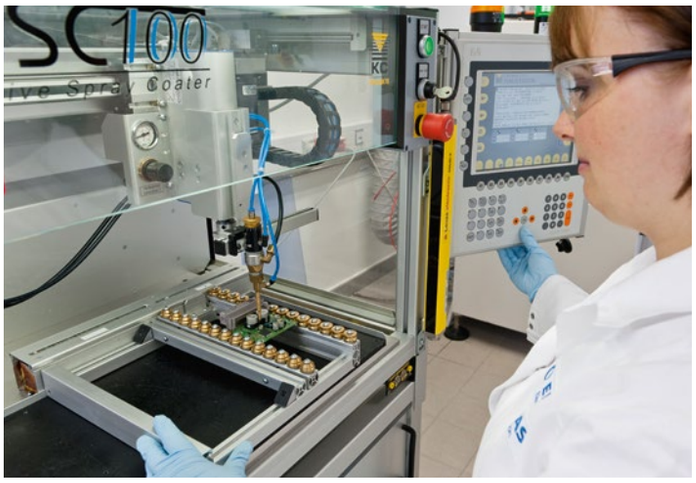
With both thin or thick-film coating plus the options of potting/encapsulation, specific BECTRON® performance can be tuned to very specific requirements.

Conformal coating and potting play a critical role in reliability under harsh conditions of electronic components such as printed circuit boards (PCB's), hybrids, sensors and electronic assemblies. It started with defence, aeronautic and marine applications and expanded to a variety of commercial, industrial, medical and consumer products. Today the automotive sector is the predominant application.

The product line BECTRON® includes

- **Thin film** with Alkyd, Acrylate, Silicone (1- component)
  RT-/oven curing, time < 10 minutes
- **Thick film,** VOC free with PUR, Epoxy, Silicone (1-component)
  UV curing, RT-/ temperature curing, humidity curing
- **Melting resin,** VOC free (1- component)
  Only cooling, no cleaning needed, very easy to use
- **Polyurethane** (1- & 2-component)
  RT-/ temperature curing (2-K systems) or temperature curing (1-K systems)
- **Silicone** (1- & 2-component)
  Gel type to soft-elastic molding materials, adhesives and sealings, UV-/RT-/temperature curing

BECTRON®
Conformal coatings for highest electronic performance

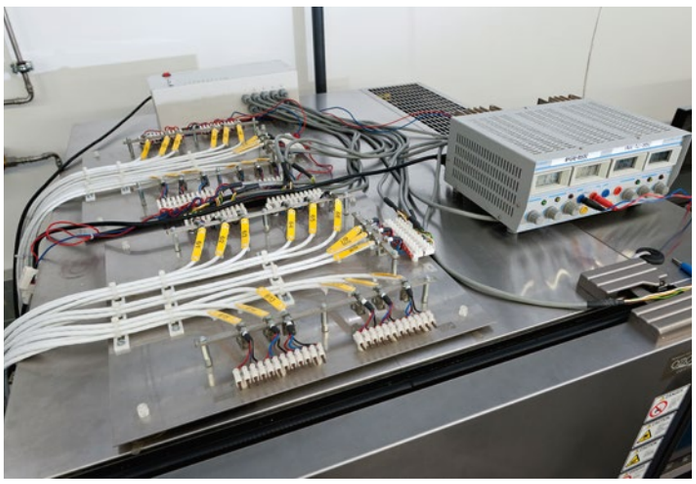


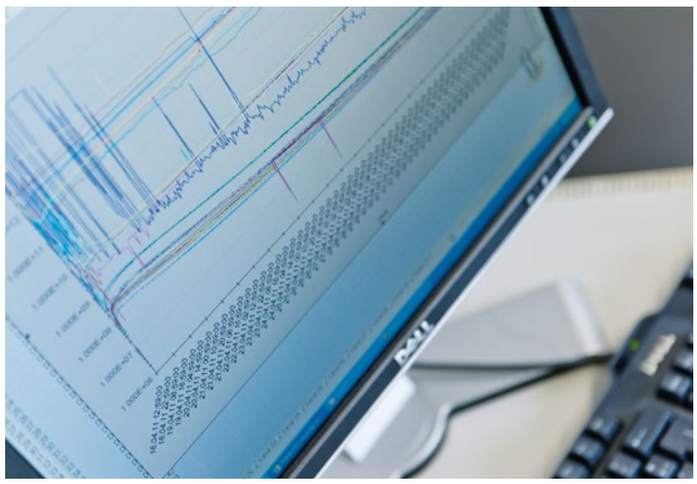
In the living world natural protection systems evolve slowly to preserve essential functions in harmful environments; resisting extremes of temperature and protecting against difficult conditions. The products of ELANTAS Electrical Insulation have similarly been developed over many years to make technology more reliable and safer. The BECTRON® family of conformal coatings, plus potting and coating resins, are specially designed to provide optimum protection and dielectric integrity for today's high performance modules.

Several selective coating systems in our lab provide a range of options for conformal coating with BECTRON®. These provide accurate coating patterns without masking but with precise and uniform BECTRON® thickness. The result is reproducible performance with substantial labour and material savings. Our highly trained and experienced researchers and engineers continually create new products to better serve practical needs. They are always available to answer your questions and provide whatever guidance you need.

In our application lab we are fully validating below testing procedures:

· Automotive qualification of conformal coating GS 95011-5 (BMW Coating List) and other standards
· Full approval of IPC-CC-830-B
· Full approval of IEC 61086 A
· Full approval of DIN EN 60068-2-52
· Full approval of UL 746 E
· Full approval of UL 94



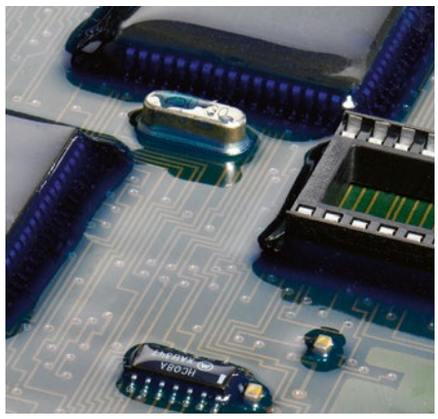


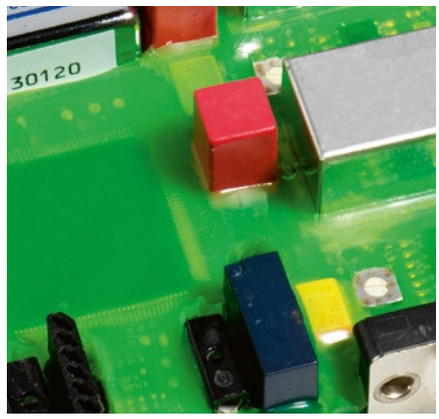
Thin Film Coating

The BECTRON® project starts with a briefing of your requirements, continues with innovation work in our lab, usually including trials and ongoing dialogue with our clients, finally results in routine production assured by our regular quality control. BECTRON® is more than a product – it is a permanent process.

Bectron® production at ELANTAS Europe is certified according to DIN EN ISO 9001, DIN EN ISO 14001, BS OHSAS 18001 (site Hamburg received statement of conformity), DIN EN ISO 50001 (site Hamburg), continuous development of our QM system to the standard of ISO TS 16949.

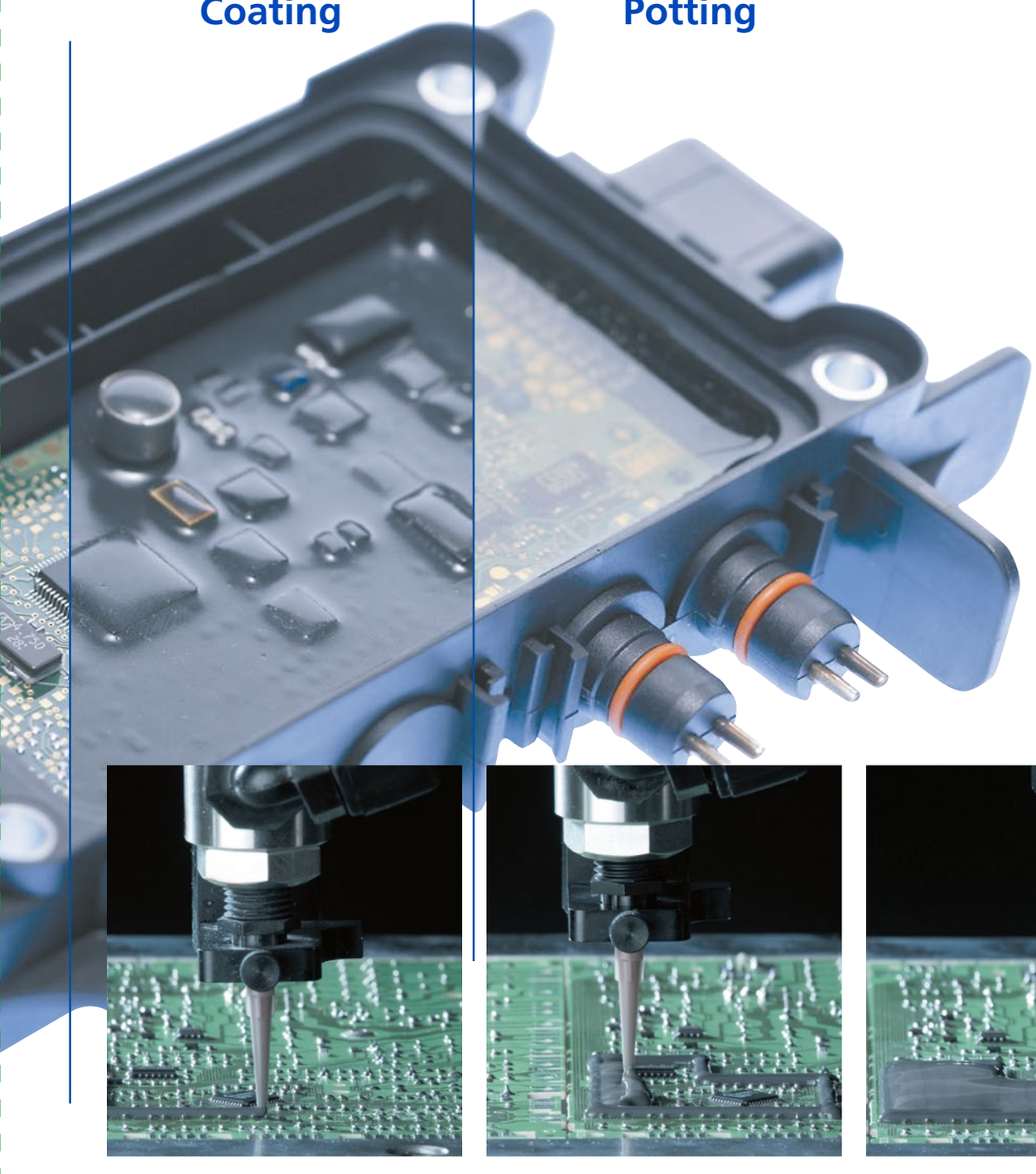
Thick Film Coatings for optimum edge covering and fast processing

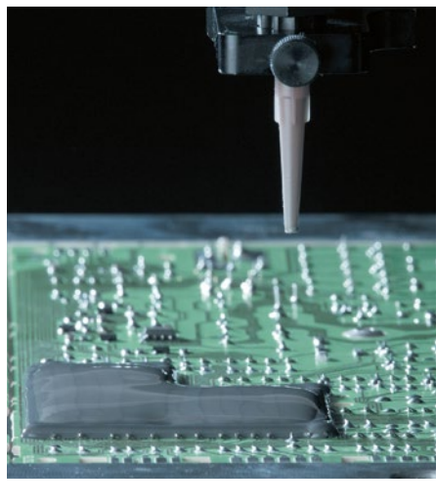




Thick Film Coating

Encapsulation/ Potting





Dam&Fill-coating is key for encapsulation and thick layer PCB protection. Whatever protection you need – it can be done with BECTRON®

BECTRON® Coating and Potting
Standard testing @ ELANTAS Europe

Environmental conditions	Testconditions	Testmethod
Damp heat constant T: +85 °C humidity: 85 %	+85 °C ±2 °C at humidity = 85 % ±2 % duration time > 168 h	IPC-TM-650 2.6.3.3 (Flux) IPC-SM-840C; Class T
Damp heat, alternating temperature test cycles T: +25 to +55 °C humidity: 95 %	Environmental chamber +25 °C to +55 °C ±2 °C humidity 93 % $^{+2\%}_{-3\%}$ exposure time 9 h at +55 °C number of cycles (24 h) = 9 time of temperature changing 3 h	IEC 60068-2-30 GS 95003-4 VW 801 01 IPC-CC-830B
Alternating temperature test -40 °C to +120 °C	-40 °C to +120 °C at ±2 °C exposure time 30/45 min. no. of cycles = 100, (500 typ); (3000) time of temperature changing < 10 sec.	IEC 60068-2-14 GS 95003-4 VW 801 01 IPC-TM-650 2.6.7.1 IPC-CC-830B

Version 10/2017

Worldwide locations

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Wesel – Germany

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Hamburg – Germany
Manchester – United Kingdom

ELANTAS Europe S.r.L.
Ascoli Piceno, Collecchio,
Quattordio – Italy

ELANTAS PDG, Inc.
St. Louis, Olean – U.S.A.

ELANTAS Isolantes
Elétricos do Brasil, Ltda.
Cerquilho – Brazil

ELANTAS Beck India, Ltd.
Ankleshwar, Pune – India

ELANTAS Zhuhai Co., Ltd.
Zhuhai – P.R. China

ELANTAS Tongling Co., Ltd.
Tongling – P.R. China

ELANTAS Malaysia Sdn. Bhd.
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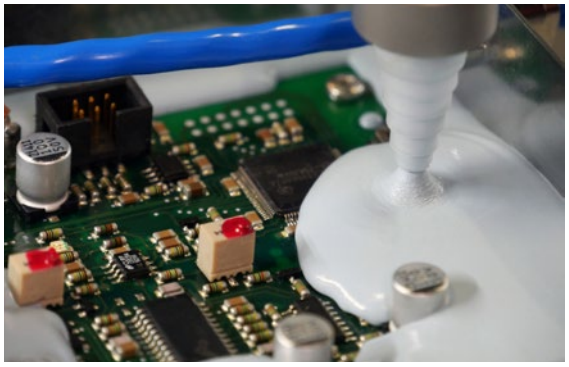
ELANTAS
Electrical Insulation

Encapsulation / Potting / Heat dissipation
For High Performance



Polyurethane and Polybutadiene 2 part systems: BECTRON® PU 45.., ELAN-tim CU and BECTRON® PB .. family is comprised of 2 component Polyurethanes covering several resins, including highly thermally conductive, self-levelling materials. A range of viscosity, hardness and thermal resistance characteristics are available with some qualified according to UL94 V-0.

Polybutadiene containing resins of the BECTRON® PB .. range give additional flexibility at low temperature together with high hydrolysis resistance, to withstand severe environmental conditions.

Silicone 2 part systems: BECTRON® SK75.. and SK76.. with Cross Linkers SH79.. provide silicone 2 component systems with either addition and condensation cure and the advantage of very high thermal resistance in a clear or filled material. They offer a choice of viscosities from transparent gels to filled elastic silicone rubber. Filled version with higher thermal conductivity and UL94 V0 are also available. ELAN-tim CS, highly thermally conductive, self-levelling materials with low CTE, complete our silicone range. These products offer ideal protection for delicate electronic components.

Epoxy 2 part system: BECTRON® EP 55.. family with Hardeners EH59.. form 2-part epoxy systems which cure to form elastic epoxy plastic. BECTRON® EP55.. are solvent-less resins with fillers, reacting with a modified aliphatic amine. The resin compound cures with low volume shrinkage and heat evolution to give a low-stress resin. The high elasticity ensures favourable temperature cycling behaviour between -40 °C and +125 °C.

Continued on back

BECTRON® Encapsulation / Potting Resin

BECTRON® Encapsulation / Potting resins display high elasticity and strength, excellent temperature cycling behaviour within a broad temperature range, as well as resistance to vibrations. Combined with good adhesion to almost all material, this makes BECTRON® a safe protection of electronic devices.

- Zero VOC / 100 % solids
- Resistant to temperature cycling down to -50 °C and up to +200 °C
- Low glass transition temperature
- Vibration damping, high elasticity.
- No / low exotherm during cure
- Minimal shrinkage

BECTRON® PU-Series 2 Component Polyurethanes, filled, and EP Epoxies

Product Code	Viscosity [mPas]	UL 94	Max Temp. [°C/20.000 h]	Hardness [Shore]	Pot Life [min]	Cure [h] @ +25 °C	Cure [min] @ +90 °C	Thermal Conductivity [W/mK]
PB 3252	2,000	No	+120 °C	65 A	25	48	30	0.20
PB 4540	2,900	V0	+125 °C	43 A	8	24	20	0.50
PU 4513	750	No	+115 °C	75 A	50	24	75	0.36
PU 4516	310	No	+125 °C	70 D	40	16	60	0.20
PU 4522	1,800	V0	+125 °C	85 A	20	8	30	0.50
PU 4526	1,900	V0	+130 °C	40 D	25	14	50	0.64
PU 4537	1,600	V0	+155 °C	64 D	30	24	120	0.74
ELAN-tim CS13	5,700	V0	+130 °C	35 D	50	24	60	1.30
ELAN-tim CS16	9,000	V0	+130 °C	35 D	60	24	60	1.65
EP 5504	2,700	V0	+155 °C	82 D	75	48	240	0.96

BECTRON® 2 Component Silicones

Product Code	Viscosity [mPas]	UL 94 [internal]	Max. Temp. [°C/20.000h]	Hardness [Shore]	Penetration [mm/10]	Pot life [min]	Cure Time [h@25 °C]	Thermal Conductivity [W/mK]
ELAN-tim CS 15	2,500	V0	200	45 A	–	30	12	1.50
ELAN-tim CS 26	10,000	V0	200	60 A	–	60	16	2.60
SK 75V1-35/ SH 79V2-35	990	V1	200	35 A	–	120	1h @ 120 °C	0.30
SK 75V2-45/ SH 79V2-45	3,200	V0	200	45 A	–	60	24	0.54
SK 75V2-65/ SH 79V2-65	3,500	V0	200	65 A	–	20	24	0.45
SG 75L2-30/ SG 79L5-30	10,500	V0	180	–	30	120	48	0.90
SG 75V1-15/ SG 79V1-15	3,000	V0	200	–	15	60	12	0.20
SG 75V1-60/ SG 79V1-60	350	V1	200	–	60	75	24	0.20
SG 75V1-70/ SG 79V1-70	425	–	200	–	70	30	24	0.20
SG 75V1-75/ SG 79V1-75	925	V1	180	–	75	45	24	0.20
SK 76V2-50/ SH 79V5-50	2,600	–	180	50 A	–	30	24	0.40
SK 76V2-75/ SH 79V5-75	7,500	V1	180	75 A	–	20	6	0.42

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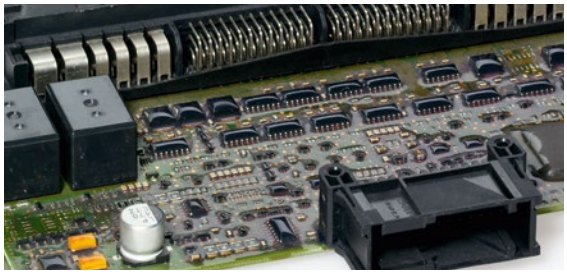
Thin Film Coatings
For high performance



BECTRON® Thin Film Coatings are suitable for many process methods including select coat, spray, dip and selective flooding. Examples of applications include PCBs for the automotive and marine navigation industries, PCBs for industrial electronics, hybrid circuits, SMD assemblies and other discrete electronic components.

Air Drying Oxidation Cure Coatings
BECTRON® PL 4122 is a lead-free coating range based on urethane-alkyd varnish for conformal coating of printed circuit boards (PCBs) and hybrid circuits. BECTRON® PL 4122 products are free of aromatic solvents and meet the latest performance characteristics for electronics, including low pin corrosion and fast curing at oven and room temperature. Conveyor oven systems permit very short dry times, below 10 minutes, followed by RT or elevated temperature cure.

Rapid Process Acrylic Coatings
BECTRON® PL1102 and PL1104 are air dried coatings, exhibiting short dry times of 15 minutes at +25 °C to give a general protection for PCBs and related applications. These products are free of aromatic solvents and meet the latest performance characteristics for electronics.

UV / Heat Cure Coatings
Bectron® PL 5622-250 is a VOC-free conformal coating based on epoxy with excellent electrical performance and adhesion to most surfaces. It can be cured by UV irradiation and/or heat. Bectron® PL 5622-250 has very good temperature cycling behavior from -40 °C to +150 °C for requirements of the automotive industry. For harsh chemical environment and very good adhesion to metal, Bectron L 5621 D is the fast UV cure epoxy material of choice.

UV / Humidity Cure Coatings
BECTRON® PT 46 and PT 47 series are VOC-free polyurethane coatings, cured by UV irradiation and/or moisture. BECTRON® PT 4600 and PT 4700 N are qualified according to UL 94 V-O (File-No. E211569). UV cure is rapid, within seconds and moisture cure follows naturally for 2 – 3 days. The cured product has very good temperature cycling behavior from -40 °C to +120 °C and good adhesion to most substrates.

Humidity or Heat Cure Silicone Coatings
BECTRON® SC 75 and SC 76 series are VOC free silicone coating with high thermal performance and very fast cure. BECTRON® SDC 76 products are dip coatings with fast humidity and oven cure, with excellent electrical and temperature shock properties.

Continued on back

Thin Film Coatings

BECTRON® Thin Film Coatings provide optimum protection of electronic assemblies against moisture, chemicals, mechanical stress, dust, contaminants, corrosive gases and other impurities. Cured film properties include:

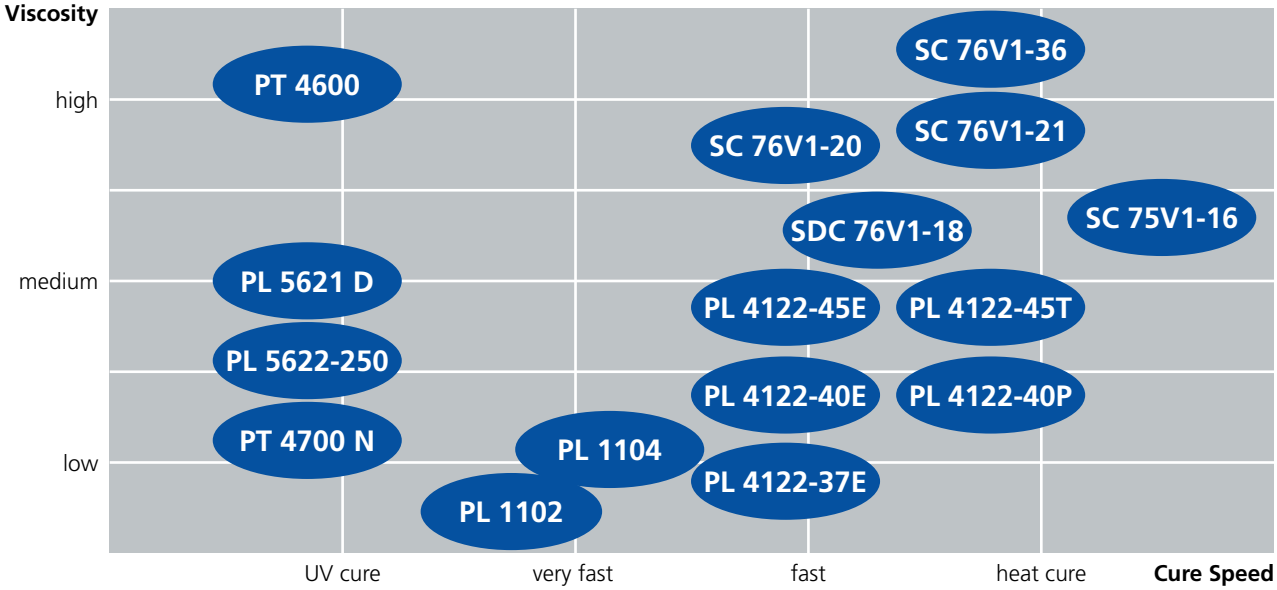
- High temperature index (up to +200 °C @ 20.000 h)
- Excellent thin film dielectrics
- Protection against several environmental influences
- Very good chemical resistance
- Excellent PCB adhesion withstanding temperature cycles of -40 °C to up to +180 °C

BECTRON® PL 1104, PL 4122 Series, PT, SC 75… & SC 76…

Product Code	Chemical Base	Colour	UL 94	Max Temp. [°C @ 20.000 h]	Cure Speed [h @ +25 °C]	Cure Speed [min @ +80 °C]
PL 1102	Acrylic	Transparent	V0*	+120 °C	8	–
PL 1104	Acrylic	Transparent	V0*	+120 °C	12	10
PL 4122-37 E	PUR	Transparent	V0	+134 °C	16	30
PL 4122-40 E	PUR	Transparent	V0	+134 °C	16	30
PL 4122-45 E	PUR	Transparent	V0	+134 °C	16	30
PL 4122-40 P	PUR	Transparent	V0	+134 °C	24	45
PL 4122-45 T	PUR, stab.	Transparent	V0	+134 °C	24	30
SC 75V1-16	Silicone	Transparent	V0*	+200 °C	–	45
SC 76V1-20 or -21	Silicone	Translucent	V1*	+200 °C	24 or 36	–
SDC 76V1-18 or -21	Silicone	Transparent	V0	+200 °C	72 or 7mi 60 °C	–
SC 76V1-36	Silicone	Transparent	HB	+200 °C	24 (3 mm)	–
PL 5622-250	Epoxy	Transparent	V0	+150 °C	UV	or 60 min
PL 5621 D	Epoxy	Transparent	V0*	+130 °C	UV	or 60 min
PT 4600	PUR	Transparent, blue	V0	+120 °C	UV or 2d	–
PT 4700 N	PUR	Transparent	V0	+120 °C	UV	–

* internal test in analogy to UL94 Vertical Burning

Thin Film Coatings BECTRON®



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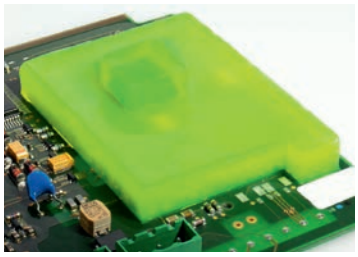
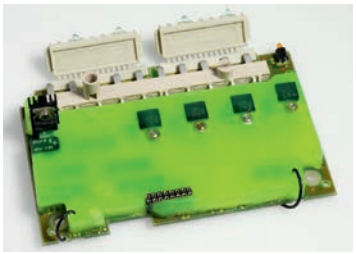
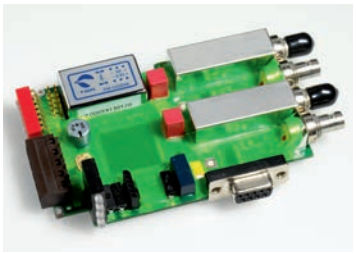
Melting Resins
For high performance







Optimal protection for extreme demands

BECTRON® MR 34.. series is a set of thick film coating melting resins developed for rapid and simple protection of electronics. The material is based on modified polyolefin and is solvent-free with zero VOC. Polyolefin resins offer better moisture resistance and adhesion than standard hot melt materials based on polyamide chemistry.

BECTRON® MR 34.. series forms a soft and flexible encapsulation, operating over the temperature range -40 °C to 145 °C.

The electrical insulation properties are excellent with very good adhesion to many substrates. Strong chemical resistance protects against acids, alkalis and polar solvents and also fungal growth, but not to aliphatic and aromatic and chlorinated hydrocarbons.

Application of thermoplastic resins is particularly easy with a melting resin applicator, heated dispensing or monofilament system. With the monofilament system it is possible to reach thickness of approx. 200–400 µm. The removal of melting resin for repair or re-work is also very simple. Above the respective melting temperature, the melting resin is ready to use. On cooling to +105 °C it hardens to a solid. BECTRON® MR resins are ideally suited for high volume production lines with very short process time. Due to their low polarity, BECTRON® MR 34.. products have excellent electrical insulation properties. This is particularly advantageous in high humidity environment and at higher frequencies (MHz to GHz range).

Melt viscosities in the range 520 mPas to 9.250 mPas are available to suit more requirements.

BECTRON® MR34.. series has very good electrical properties particularly suitable for a wide range of electronic elements. It provides protection against moisture, corrosion, vibration and migration. BECTRON® MR is used very successfully in many different applications, from securing of individual components to the protection of hybrids and whole assemblies.

Continued on back

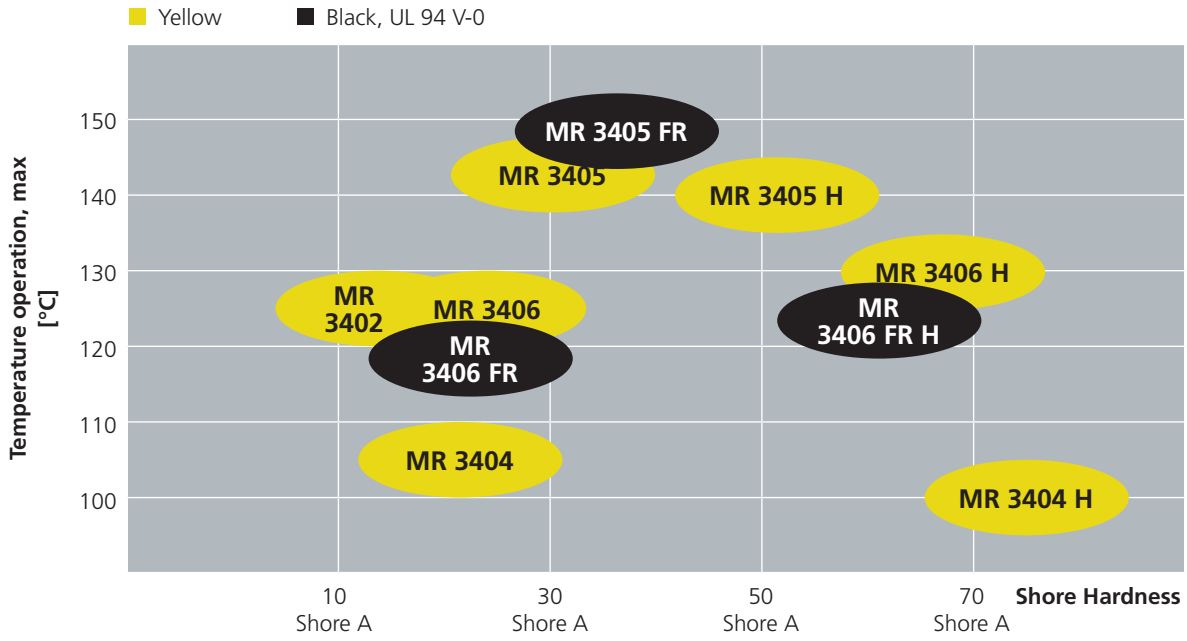
Melting Resins for high performance

BECTRON® MR 34 series is a one-component melting resin thick film coating, developed for electronic application. It is based on polyolefin resin chemistry, which is better suited to electronics than conventional polyamide based hot-melt thermoplastic:

- One component / "Ready to use"
- Zero VOC / 100 % solids
- Environmentally friendly / non-hazardous classification
- Ideal dielectric properties for electronic applications, i.e. at high frequencies
- Very low water absorption, excellent protection against humidity
- Very good adhesion on PCB´s
- Possible to reach thick film thicknesses of 200 µm to 400 µm as well as for potting applications
- Repairable/recycling possible

BECTRON® MR series (Polyolefine, Thick-Film, Melting Resin, Potting)

Product	Recommended Application conditions	Color	UL 94	Max. operation temperature [°C]	Hardness [Shore A]	Softening point [°C]
BECTRON® MR 3402	9250 mPa·s @ 190 °C	Yellow	–	125	15	130
BECTRON® MR 3404	1100 mPa·s @ 180 °C	Yellow	–	105	22	107
BECTRON® MR 3404 H	2000 mPa·s @ 170 °C	Yellow	–	100	75	105
BECTRON® MR 3405	2100 mPa·s @ 190 °C	Yellow	–	145	30	155
BECTRON® MR 3405 H	2000 mPa·s @ 190 °C	Yellow	–	140	53	153
BECTRON® MR 3405 FR	2000 mPa·s @ 200 °C	Black	V-0	145	35	156
BECTRON® MR 3406	520 mPa·s @ 180 °C	Yellow	–	125	15	138
BECTRON® MR 3406 FR	800 mPa·s @ 190 °C	Black	V-0	125	16	139
BECTRON® MR 3406 H	2000 mPa·s @ 180 °C	Yellow	–	125	65	136
BECTRON® MR 3406 FR H	2500 mPa·s @ 190 °C	Black	V-0	125	63	136



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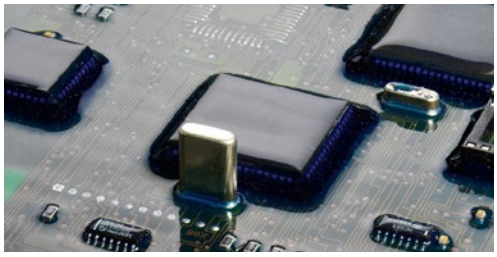
Thick Film Coating – Moisture / UV cure
For high performance



Optimal Protection for extreme Demands

BECTRON® PT 46.. UV & moisture cure is a solvent-free, zero VOC, one-component polyurethane based thick film coating, cured by UV irradiation and/or by moisture. It provides an ideal VOC-free conformal coating with very short process time. For easy process control, the colour changes from blue to green/yellow to indicate the degree of UV-curing. BECTRON® PT 4600 is qualified according to UL 94 V-O (File-No. E211569).

UV cure is rapid within seconds, and moisture cure follows naturally within 2 – 3 days and can be accelerated by heat and humidity.

The cured product shows very good temperature cycling behaviour from -40 °C to +120 °C and good adhesion on most substrates. It may also be used to form a support for large components, acting as an adhesive.

Different viscosity levels are available, suitable for rapid automated robotic coating with a choice of application systems such as spraying, dispensing or jetting with reliable edge-covering of sensitive components.

BECTRON® PT 48.. series one-component moisture-cured polyurethane based thick film coatings are used for protecting and mechanically supporting connections and components of PCBs and hybrids. The complete product range has low VOC contribution. The cured product is elastic over the range -50 °C to 120 °C with good adhesion to most substrates to resist vibration.

BECTRON® PT 48.. series is resistant to solvents and dilute acids and alkalis providing excellent protection against moisture migration and corrosion after severe wet storage conditions.

PT 48.. series offers the reliable dielectric properties expected from all BECTRON® products.

Three different viscosity levels, from 1,400 mPas to a viscous thixotropic grade, permit a wide range of applications and processes. BECTRON® PT 48.. cures at room temperature to a dry surface condition in 1 – 2 hours and further processing is possible a few hours later.

BECTRON® SC 76V1-36 is a solvent free, one component silicone coating curing with moisture at room temperature. The cured product shows very good temperature cycling behavior from -55 °C to 200 °C.

Continued on back

BECTRON® Thick Film Coatings – Moisture / UV cure

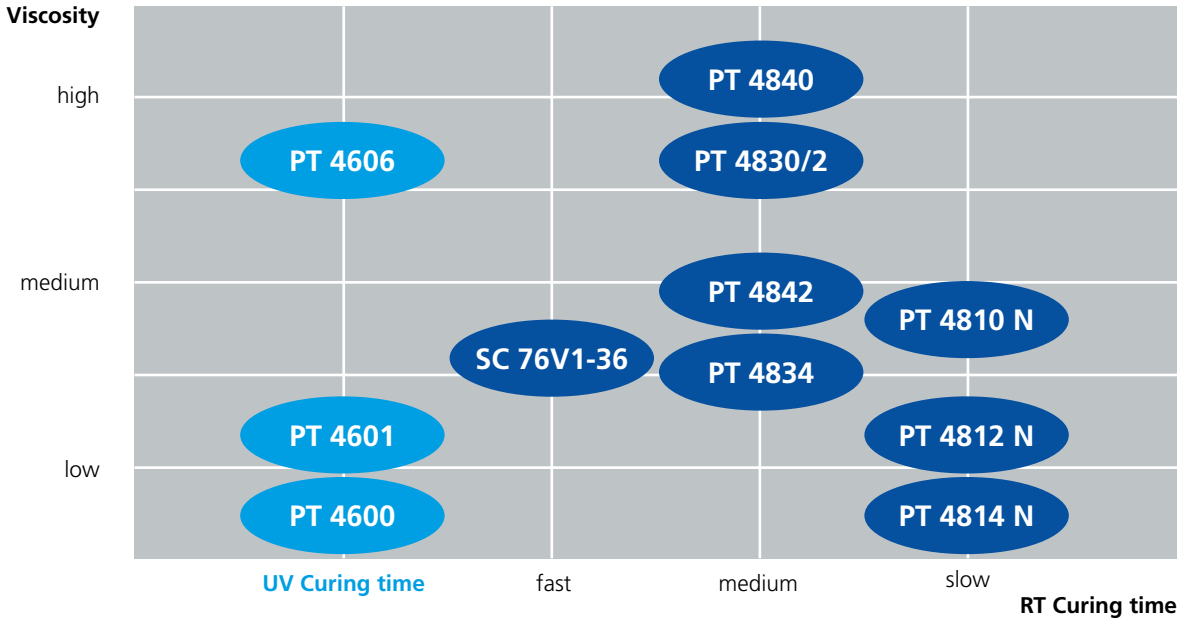
Thick Film Coatings provide optimal protection to electronic assemblies against moisture, chemicals, mechanical stress, dust, contaminants, corrosive gases and other impurities. BECTRON® PT 4yxx is a urethane-acrylate UV and/or moisture cured coating. Bectron® SC 76 V1-36 is a silicone coating. BECTRON® cured film properties include:

- Solvent Free, zero VOC
- Low temperatures to -50 °C
- Very good chemical resistance
- Excellent PCB adhesion withstanding several temperature cycles of -40 to +120 °C
- Protection against several environmental influences

BECTRON® PT urethane-acrylate UV & moisture cured coating

Product Code	Viscosity [mPas]	Chemical Base	Max Temp. [°C/20.000 h]	Hardness [Shore]	UV Cure	Touch dry [h @ +25 °C]
PT 4600	1,000	PUR	120 °C	65 A	Yes	0
PT 4601	1,700	PUR	120 °C	65 A	Yes	0
PT 4606	46,000	PUR	120 °C	75 A	Yes	0
PT 4810 N	3,500	PUR	100 °C	45 A	No	5
PT 4812 N	2,600	PUR	100 °C	40 A	No	5
PT 4814 N	1,400	PUR	100 °C	45 A	No	5
PT 4830	50,000	PUR	100 °C	45 A	No	4
PT 4832	50,000	PUR	100 °C	45 A	No	4
PT 4834	3,200	PUR	100 °C	45 A	No	4
PT 4840	125,000	PUR	120 °C	42 A	No	4
PT 4842	3,700	PUR	120 °C	45 A	No	4
SC 76V1-36	3,100	Silicone	200 °C	36 A	No	10 min

BECTRON® PT-Series (Thick-Film, 1 component, RT curing)



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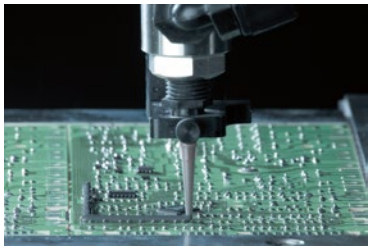
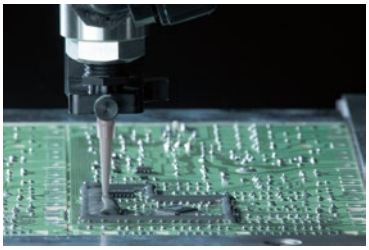
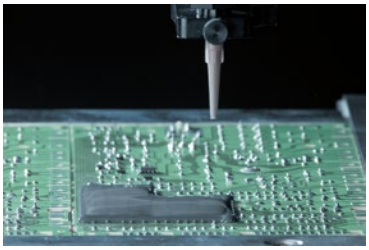
Thick Film Coating – Thermal Cure
For high performance

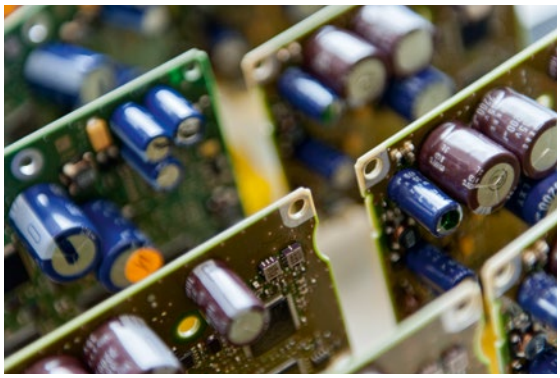
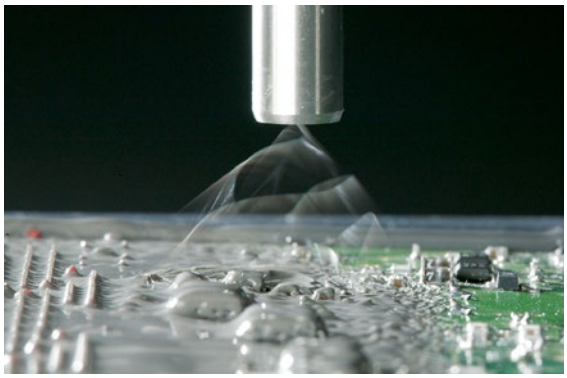




Optimum Protection for highest demands

The BECTRON® PK-series represents a group of one-component resin systems which cure to form thermoset plastics. The resins comprise a special technology in a pre-mixed resin and hardener system which cures rapidly at 90°C or by infrared radiation (IR). Various viscosities and different hardness levels are available.

BECTRON® PK.. one-component products are ready to use, avoiding issues with mixing ratio or pot life known from two-component systems, but without impacting the excellent properties as a protection of electronic components. With their very low safety hazard class, BECTRON® PK.. products are environmentally friendly materials.

Low viscous versions of BECTRON® PK-series are applied by select or swirl coating on printed circuit boards (PCB), forming thick protective films. High viscous, thixotropic grades are used for encapsulation of small components on PCBs. A combination of thixotropic and low viscosity grades allows Dam + Fill applications in a "wet in wet" process, resulting in a selective thick film protection of your device with only one cure step. A process employing IR offers the option to cut down cure cycles to a few minutes.

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Thick Film Coating – Thermal Cure

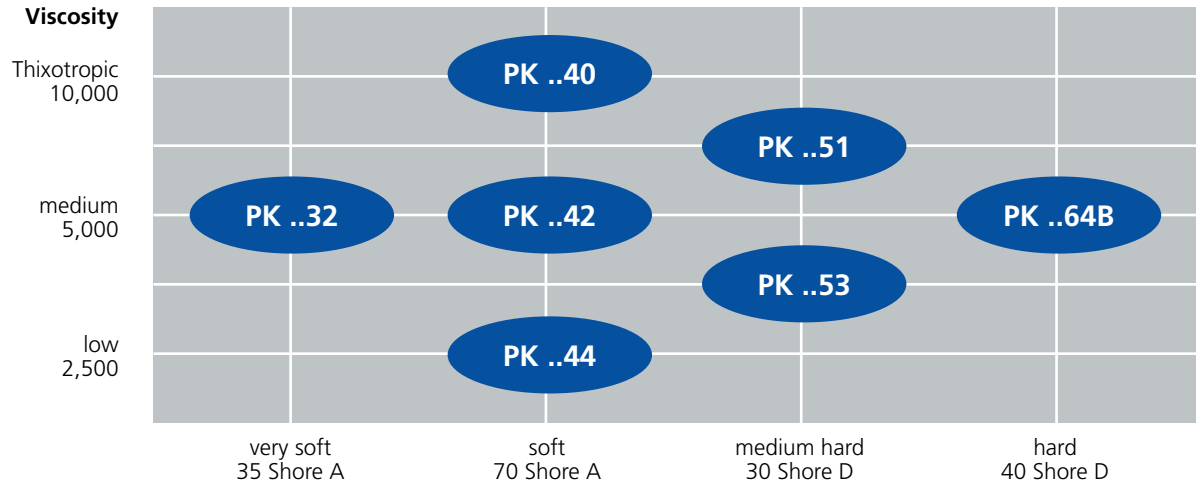
Cured BECTRON® PK Thick Film Coatings display high elasticity and strength, providing excellent temperature cycling behaviour within the range of -50 °C to +125 °C as well as resistance to vibration. During cure, very little heat is created (no exothermic peak), and minimum shrinkage occurs which minimizes mechanical effects on sensitive components. Furthermore, BECTRON® PK series has good adhesion to almost all materials used in electronics.

- One component / "Ready to use"
- Zero VOC / 100% solids
- Environmentally friendly / non-hazardous classification
- Resistant to temperature cycling from -50 °C to +125 °C
- Glass transition temperature down to Tg < -60 °C
- Resistant to standard automotive fluids

BECTRON® PK-Series (One component, heat-curing)

Product Code	Colour	Viscosity [mPas]	Max Temp. [°C/20.000 h]	Hardness [Shore]	Cure Speed [min] @ +90 °C	Thermal Conductivity [W/mK]
PK 4332	Black	5,250	+125 °C	35 A	60	0.2
PK 4340	Black	9,500	+125 °C	70 A	30	0.3
PK 4342	Black	5,000	+125 °C	70 A	30	0.3
PK 4344	Black	2,000	+125 °C	70 A	30	0.3
PK 4353	Blue	3,750	+125 °C	30 D	30	0.3
PK 4364B	Blue	5,000	+130 °C	40 D	30	0.3
PK 5532	Black	5,500	+125 °C	35 A	30	0.2
PK 5542	Black	5,000	+125 °C	70 A	30	0.4
PK 5553	Black	3,500	+130 °C	30 D	30	0.3

Thick Film Coatings BECTRON® PK ..xx-Matrix



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Transparent Potting Resins and Gels

Soft Elastic Transparent Silicone Gels

Application of a silicone gel is particularly easy with a standard 2K application equipment, dispensing or monofilament system. The removal of a silicone gel for repair or re-work is also very simple. It is ideally suited to high volume production lines with very short process time. Viscosities are in the range from 200 mPas to 10.000 mPas.

BECTRON® SG 75xx series are available as a "flexible and non-sticky" gel, as well as a "soft-elastic" or "soft elastic sticky" gel and as well as a "soft and sticky" or "soft and non-sticky" gel over the temperature range -50 °C to 180/200 °C. The electrical insulation properties are excellent, with good adhesion to many substrates.

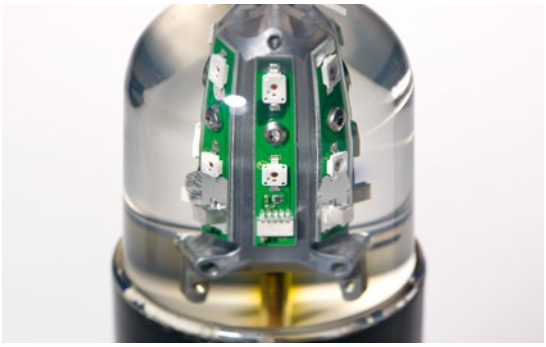
BECTRON® SG 75xx series has very good electrical properties particularly suitable for a wide range of electronic devices and components. It provides protection against moisture, corrosion, vibration and migration. Such gels are used in many different applications, from securing of individual components like cable joint boxes to the protection of IGBT´s.
All systems are well suited where high UV stability is required.

Transparent PUR and EP Resins - from Soft to Hard

Transparent BECTRON® PU and PB series in combination with hardener BECTRON® PH 4901 are 2 component systems which cure to form a resilient but flexible transparent polyurethane. They are solvent free systems with no bleeding characteristic even at high temperature exposure.

Transparent BECTRON® PT series are 1 component resins and coatings that cure at room temperature, using humidity from the environment to initiate the cure reaction. They form water-clear products used as protection of electronics against moisture, vibration and mechanical shock.

BECTRON® EP 5502 is a transparent 2-component Epoxy, designed for applications where transparency of the potting material is required in combination with high mechanical strength and chemical resistance.



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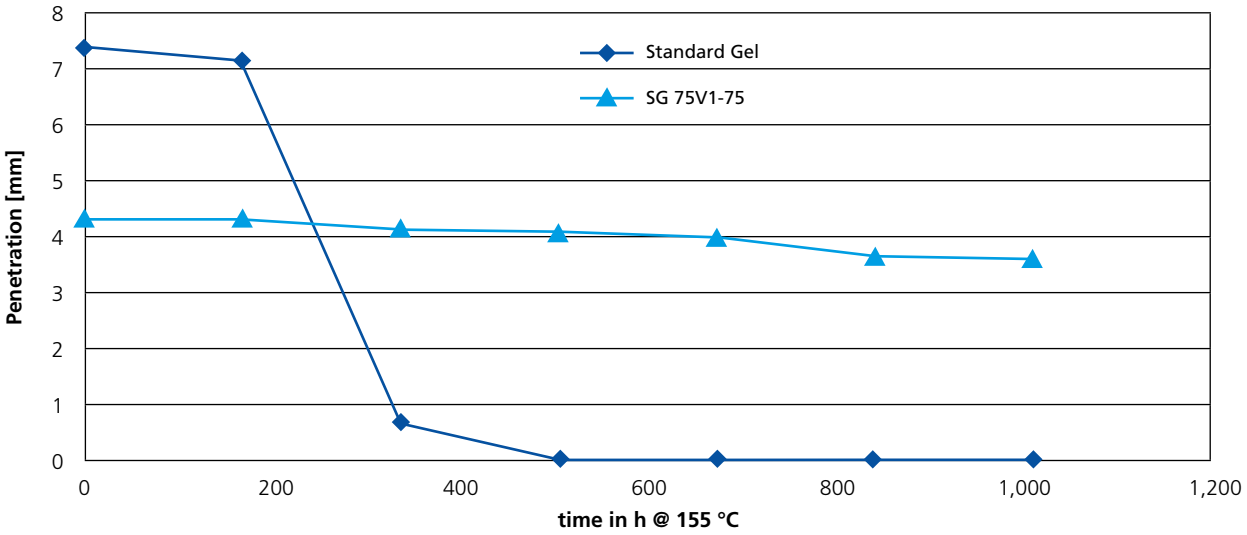
BECTRON® SG 75xx Silicone Gels for Potting

Product Code	Viscosity [mPas]	Colour	Max. operation temperature	Penetration [mm/10]	Pot Life	Cure time
SG 75V1-15/SG 79V1-15	3,000	transparent	+200 °C	15	120 min@25 °C	12h@25 °C
SG 75V1-60/SG 79V1-60	350	transparent	+200 °C	60	120 min@25 °C	24h@25 °C
SG 75V1-75/SG 79V1-75	925	transparent	+180 °C	75	45 min@25 °C	24h@25 °C

Constant hardness of BECTRON® SG 75xx-yy



BECTRON® Transparent PUR and EP Potting Materials

Product Code	Chemical Base	Viscosity [mPas]	Colour	Max. operation temperature	Hardness [Shore]	Potlife @ 23 °C
PT 4842	1-K PU	3,700	Transparent clear	+120 °C	A45	15 min
PU 4501 PH 4901	2-K PU	800	Transparent clear	+90 °C	A35	35 min
PB 3201 PH 4915	2-K PBD	7,000	Transparent yellow	+100 °C	A70	30 min
EP 5502 EH 5908	2-K EP	3,750	Transparent yellowish	+120 °C	A88	30 min

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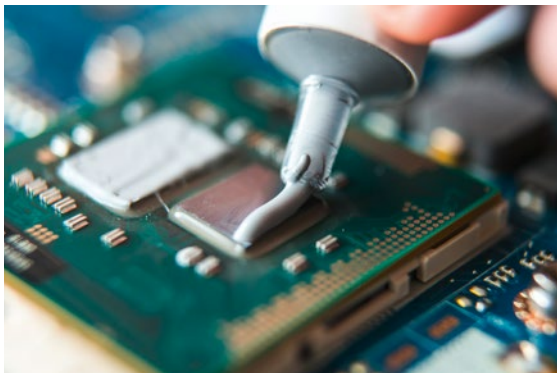
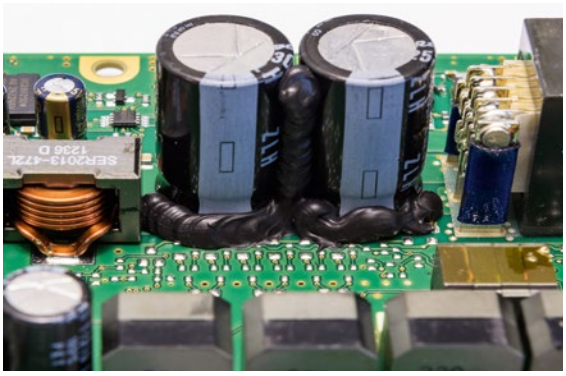
Adhesives & Sealants for Electronics

High performance silicones, acrylics, epoxides and polyurethanes





Silicone Adhesives

Silicones are used as adhesives thanks to their outstanding thermal stability and high elasticity. BECTRON® SA adhesives offer a good combination of excellent unprimed adhesion and strong dielectric properties. Most of them cure with humidity. They show excellent adhesion to most substrates used in the electronics industry such as FR4, PBT, aluminium, copper and many other common materials. Thanks to their low modulus, they are often used to seal gaps between materials with very different coefficient of thermal expansion, remaining flexible over a wide temperature range.

Epoxy Adhesives

Epoxies are employed where mechanical strength and high chemical resistance are required. ELAN-glue® EP products combine high bond strength with very good electrical insulation properties. They can be cured either with UV light or heat.

Acrylic Adhesives

Acrylic adhesives offer high transparency in combination with very good dielectric properties. ELAN-glue® AC 16.. products are cured by UV light only. Different variants are available, exhibiting good flexibility or high temperature resistance.

Urethane Adhesives

Urethane adhesives are known for their tough-elastic behavior in combination with good dielectric properties. One-component versions are available as humidity curing products (BECTRON® AR) or thermal curing product (ELAN-glue® PK). All of them have shown very good adhesive properties in various electronic applications.

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Humidity Cure Adhesives & Sealants – Highly Elastic and Flexible
BECTRON® SA 70.. and AR 48..

Product	Liquid Behavior	Appearance	Temperature Range	Tack free time*	Cure Scheme*	Hardness [Shore]	Elonga-tion	Tensile Strength
Bectron® SA 70L1-36	3,200 mPas	Translucent	-40/+200 °C	10 min	24 h, RT	36 A	140%	1.5 MPa
Bectron® SA 70L1-30	44,000 mPas	White/Yellow		11 min		30 A	240%	1.1 MPa
Bectron® SA 70P1-15	Paste	Translucent		15 min		15 A	540%	2.7 MPa
Bectron® SA 70P1-30	Paste	Translucent		10 min		30 A	545%	2.4 MPa
Bectron® SA 70P1-34	Paste	White		15 min		34 A	580%	2.0 MPa
Bectron® SA 70P9-50	Paste	Grey/Black		15 min		60 A	180%	2.7 MPa
Bectron® AR 4800 N	2400 mPas	Yellow	-40/+120 °C	60 – 120 min	24 – 48 h, RT + Heat (Optional)	58 A	n.m.	n.m.
Bectron® AR 4820 N	7000 mPas					80 A	n.m.	n.m.
Bectron® AR 4822 N	15000 mPas					80 A	n.m.	n.m.
Bectron® AR 4826 N	Thixotropic					67 A	300%	n.m.

Thermally Conductive Adhesives – Heat Transfer Materials
Bectron® SA, Bectron® CG, ELAN-tim®, Elan-glue®

Product	Liquid Behavior	Appearance	Temperature Range	Thermal Conductivity	Cure Scheme	Hardness [Shore]	Special Properties
Bectron® SA 75L7-70	55,000 mPas	Grey	-40/+200 °C	0.8 W/mK	25 min, 100 °C	70 A	Silicone, Low Temp. Cure, Good Elongation, High Strength and Adhesion, Electrically Conductive
ELAN-tim® FS 26	Paste	Green	-40/+200 °C	2.6 W/mK	24 h, RT	60 00	
ELAN-glue® EP 5340	100000 mPas	Beige	n.m.	~1 W/mK	3 h, 120 °C	n.m.	
Bectron® CG 5660	Thixotropic Paste	Grey	-40/150 °C	> 6 W/mK	0,5 h, 90 °C	70 D	

UV Cure Adhesives – Extremely Fast Cure by UV Light, High Mechanical Strength
Elan-glue® AC 16.. and Elan-glue® EP 56

Product	Liquid Behavior	Appearance	Temperature Range	Glass Transition	Cure Scheme	Hardness	Special Properties
ELAN-glue® 1611	400 mPas	Transparent	-40/140 °C	40 °C	UV	60 A	High Clarity, Excellent Depth of Cure, High Flexibility
ELAN-glue® 1631	2500 mPas	Transparent	-40/140 °C	n.m.	UV	70 D	Good Depth of Cure and Flexibility
ELAN-glue® 1650	14000 mPas	Transparent	-40/150 °C	150 °C	UV	85 D	High Temperature Resi-stance and Durability
ELAN-glue® EP 5610	750 mPas	Transparent	-40/150 °C	150 °C	UV + Heat	90 D	High Temperature Resistance, Excellent Adhesion
ELAN-glue® EP 5611	32500 mPas	Pale-White/ Grey	-40/150 °C	145 °C	UV + Heat	90 D	High Depth of Cure, Excellent Adhesion

Heat Cure Adhesives – Flexible Heat Cure, High Mechanical Strength
ELAN-glue® EP 5.. and ELAN-glue® PK 5....

Product	Liquid Behavior	Appearance	Temperature Range	Cure Scheme	Special Properties
ELAN-glue® EP 5350	15000 mPas	Beige	-40/150 °C	90 °C, 0,5 h	Hardener Temperature Initialized
ELAN-glue® EP 5620	800 mPas	Transparent	-40/150 °C	65 °C, 4 h + 90 °C 2 h	Low CTE, Tg 145 °C, Underfill, Micropotting
ELAN-glue® EP 5360	Thixotropic Paste	Beige	n.m.	90 °C, 0,5 h	Non-Conductive Adhesive/NCA
Bectron® CG 5660	Thixotropic Paste	Grey	-40/150 °C	90 °C, 0,5 h	Electrically Conductive Adhesive/ECA
ELAN-glue® PK 5550	30000 mPas	Grey/Black	-40/145 °C	90 °C, 0,5 h	Single Component Polyurethane

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