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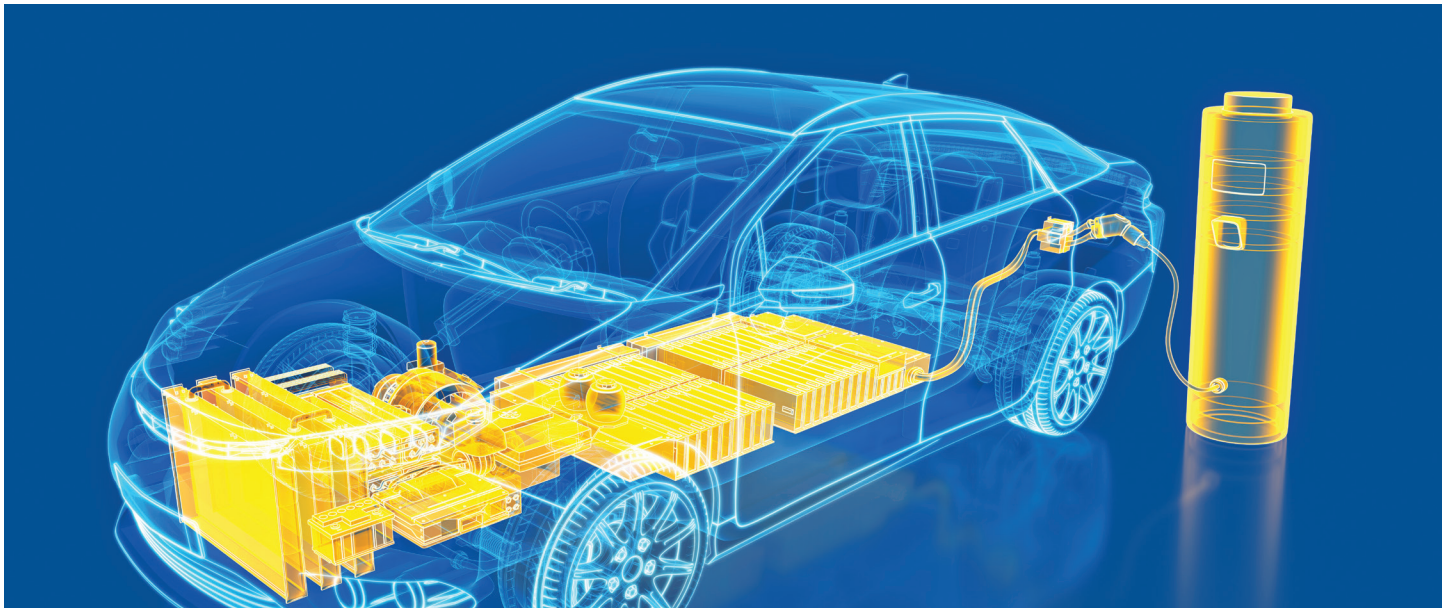
Silicones



Silicone Solutions for Electronics Product Offering

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Electronic Silicones Solutions for Potting Applications

Product	Mix Ratio	Characteristics	Color	Penetration (1/10mm)	Viscosity (mPa.s)	Pot-Life @ RT	Curing Conditions
BLUESIL™ ESA Gels							
ESA 6000 HT A/B	1:1	Very high heat resistance, tacky, low extractables, quick setting	Clear	50	1200	50 min.	90 min. @ 80°C
ESA 6009 A/B	1:1	High tack, quick curing, low viscosity	Clear	70	2000	15 min.	60 min. @ RT 30 min. @ 80°C
ESA 6009T A/B	1:01	Quick curing, low viscosity, easy processing	Red	130	2000	5-8 min.	<30 min @ RT
ESA 6024 A/B ESA 6020 A/B	1:1	Self-adhesive (tacky), high damping, low extractables	Clear	300	1300	90 min.	24 hr. @ RT or 90 min. @ 80°C
ESA 6110 A/B ESA 6110 QC A/B	1:1	Optically clear, shock absorption, self-adhesive (tacky)	Optical clear*	250	1200	50 min. 5 min.	3 hr. @ RT or 30 min. @ RT
ESA 6120 QC A/B	1:1	Very low viscosity, thermally resistant	Optical clear*	270	200	20 min.	30 min. @ 120°C
ESA 6016 A/B	1:1	Inherent tack, high damping, low extractibles	Optical clear*	190	460	>6 hr.	24 hr. @ RT or 60 min. @ 70°C

Product	Mix Ratio	Characteristics	Color	Shore A Hardness	Viscosity (mPa.s)	2C**: Pot-Life @ RT 1C*: Skin formation time	Curing Conditions	Thermal Conductivity (W/mK)
BLUESIL™ ESA RTV-2								
ESA 7246 A/B	10:1	Quick cure, clear pottant	Clear to light straw	40	3750	80 min.	6 hr. @ RT 40 min. @ 45°C	0.18
ESA 7256 A/B	10:1	Clear, fire resistance, flexible low temp. cure pottant	Optically clear*	40	4150	3 hr.	35 min. @ 100°C	0.16
ESA 7244 A/B	1:1	Self adhesive onto plastics & metals; silk screening, slighty thermally conductive	Blue	50	60 000	>16 hr.	30 min. @ 150°C	0.40
ESA 7242 A/B ESA 7242 QC A/B	1:1	UL94 V0, rapid room temp. cure, slighty thermally conductive	Black	50	3000	1 hr. 3.5 min.	30 min. @ 100°C 15 min. @ 100°C	0.42
ESA 7252 A/B ESA 7252 QC A/B	1:1	UL 94 V0, slighty thermally conductive	Black	50	6000	90 min. <5 min.	5 min. @ 150°C 10 min. @ RT	0.42
ESA 7258 A/B	1:1	Fire resistance, thermally conductive	Black	65	1250	5 hr.	35 min. @ 100°C	0.42
ESA 7712 A/B	1:1	Flowable thermally conductive pottant	Grey	30	15 000**	4 hr.	30 min. @ 150°C	1.50

*= >90% Transparency @500nm; QC = quick cure

** measured @10 1/s shear rate

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Adhesive Silicone Solutions
for Electronic Devices & Electrical Engineering

Product	Mix Ratio	Color	Shore A Hardness	Viscosity (mPa.s)	Skin Time (min) @ RT	Cure Time (2mm) @RT	Tensile (psi)	% Elongation	Cure Type	Characteristics
CAF™ for Sealing & Bonding										
CAF® 520	1C*	Translucent white	15	50g/min.	6	7 hr.	160	500	Alkoxy	One part elastomer cure @ room temp.
CAF® 530	1C*	Black, white	35	130g/min.	10	8 hr.	508	450	Alkoxy	Neutral alcoxy curing, thixo, primer-less silicone adhesive
CAF® 730	1C*	White	25	120g/min.	7	7 hr.	276	400	Oxime	Neutral oxime curing, silicone adhesive
BLUESIL™ ESA Gels										
CAF® 8 AXAD	2C**	Brick red	35	20 000	4	15 min.	1.6	180	Activated acetoxy	Two part quick cure silicone adhesive, high heat stability
CAF® 33 AXAD	2C**	Black	25	Non-flowing	4	15 min.	2.4	500	Activated acetoxy	Two part quick cure silicone adhesive
CAF® 99 AXAD	2C**	Black	50	Non-flowing	3	15 min.	4.3	235	Activated acetoxy	Two part quick cure silicone adhesive
CAF® 5751 AXAD	2C**	Off-white	55	200 000	4	15 min.	4.4	180	Activated acetoxy	Two part quick cure silicone adhesive

Notes: User has sole responsibility to determine product suitability for intended uses and applications.

*One component system **Two component system

For more information, call 1-866-474-6342 or visit our web site at elkem.com.

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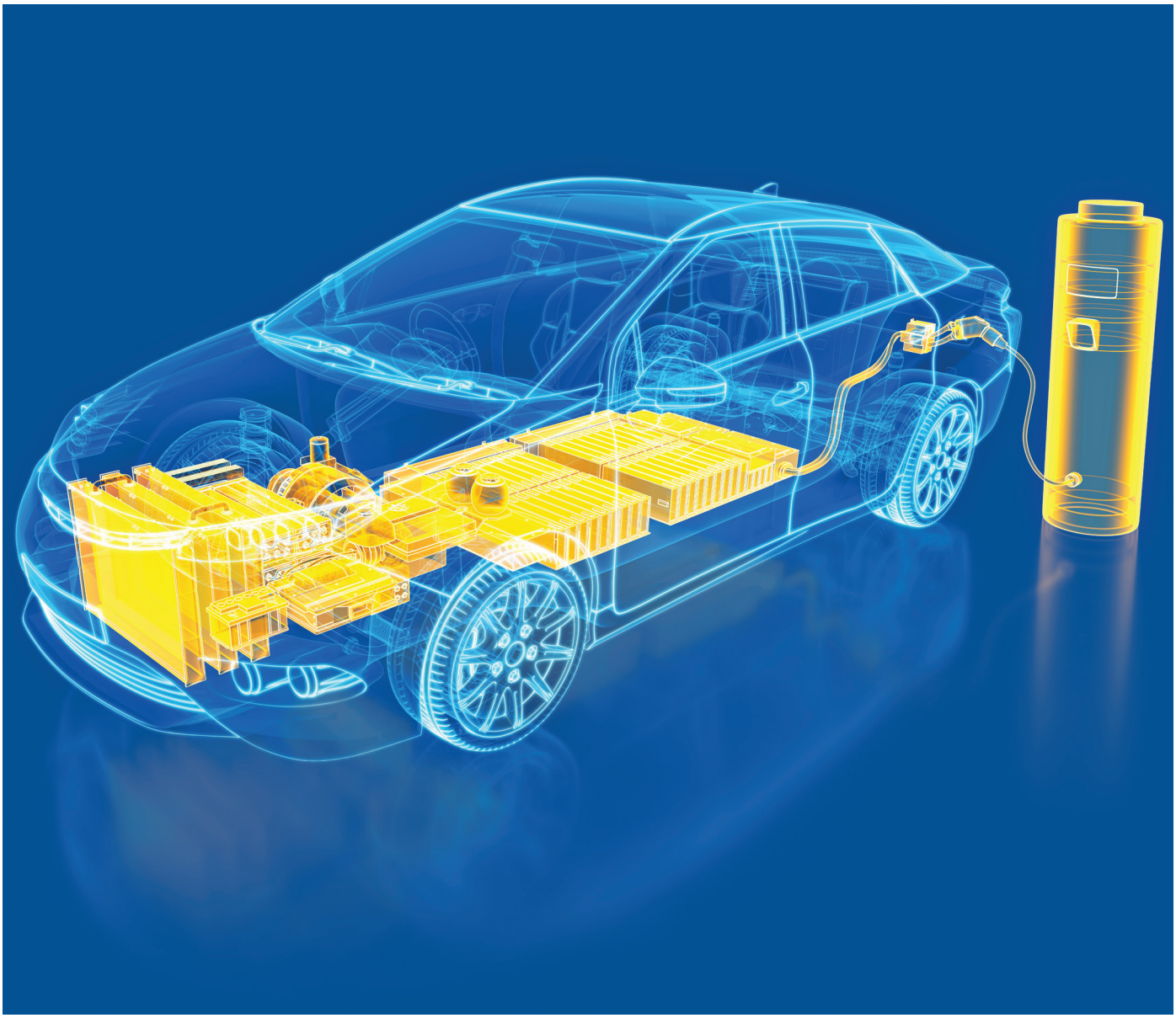

Battery Interstitial Fill for Thermal Management Protection

More EVs on the road today are protected with Elkem Silicones than any other solution

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Battery Interstitial Fill for Thermal Management Protection

Battery thermal management is critical for reliable performance, longevity and safety. Battery interstitial fill is the material surrounding a battery cell within the battery modules to complete the battery pack. There are a myriad of materials that can be used for battery thermal management protection for runaway or isolation designs.

Advantages of Silicone Foam

The key advantages of silicone foams include low density, flexible cure chemistries, thermal management, and protection against harsh chemical environments. These materials are formulated through a customized process that identifies the ideal cure time for specific applications and customer.

Elkem Silicones USA Corp. has a U.S. Patent granted which illustrates proven solutions for secondary battery pack with improved thermal management for H&EV applications.

Interstitial Fill	BLUESIL™ RTF 3230	BLUESIL™ RTF 3250	BLUESIL™ ESA 7712
Thermal Management	Thermal Insulation	Thermal Insulation	Thermal Conductivity
Type	Blown Foam	Syntactic Foam	Thermally Conductive Potting
Viscosity (cP)	16,000	1,500	25,000 (10 rad/s-1)
Density (g/cm3)	0.3	0.6	3.2
Durometer (Shore)	30 (Shore 00)	70 (Shore 00)	35 (Shore A)
Tensile (MPa)	0.04	0.3	0.8
Compression Force Deflection @ 50% (psi)	5	80	300
Thermal Conductivity (W/mK)	0.1	0.2	1.8
CTE (ppm/°C)	40	150	200
Dielectric Strength (kV/mm	0.15	20	18

February 2022

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Silicone solutions for Electric & Hybrid Vehicles

Accelerating the transportation revolution

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Elkem Silicones Robust Solutions for Electric and Hybrid Vehicles

Discover our high-performance range of advanced materials including gels, adhesives, foams, pastes, thermally conductive materials and rubber that meet the requirements of the joined applications.

Key benefits

Excellent aging stability (long term thermal & chemical stability)

Heat management From thermal insulation to conduction performance

Excellent electrical insulation

Weight reduction, specifically when using silicone foams

Flexible rheological properties for easy processing

Elkem Silicones can design customized products that match your application specifications, no matter how innovative they are. We are proud to help our customers deliver their potential **with a personal touch.** Let's build the future together!

Rev. 07/2018

For detailed commercial contacts please visit our website:
www.silicones.elkem.com

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Power Up your Vehicles with Elkem Silicones

Solutions for EV Wire and Cable

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Silicone Solutions for High Voltage Cable & Wire in Electric Vehicles

The growth and constant innovation in Hybrid & Electric vehicles is generating new needs and applications throughout the industry. Ensure all the parts in these vehicles from the engine battery and other high voltage components, meet customer expectations of functionality. Our Mix&Fix® Centers closely analyze your specific requirements to design a customized silicone solution that fits your application needs.

Key benefits:

- Resistance to high and low temperatures
- Flexible, easy to install in limited space
- Reliable insulation and mechanical performance
- Reduction in vehicle weight and CO2 emissions

	BLUESIL MF 8270/1G/4/E	BLUESIL MF 8165 E/SR	BLUESIL MF 8160 E	BLUESIL MF 8370 U HT	BLUESIL MF 8170 U HT/A
Catalyst	DCBP*	DCBP*	DCBP*	DCBP*	Pt**
Specific gravity	1.27	1.20	1.16	1.17	1.19
Hardness, ShA	68	64	58	68	68
Tensile strength, psi (MPa)	1400 (9.5)	1500 (10.5)	1600 (11.0)	1200 (8.5)	1500 (10.5)
Elongation at break, %	415	383	450	575	891
Tear strength, ppi (N/mm)	85 (15)	85 (15)	130 (23)	240 (42)	300 (53)
	ISO 34-1 M.B(NICK 1 mm)	ISO 34-1 M.B(NICK 1 mm)	ASTM D624 A	ASTM D 624 A	ASTM D 624 A
Dielectric strength, kV/mm	—	—	—	27	27
Volume resistance, Ω.cm	—	—	—	$2.6*10^{15}$	$3.7*10^{15}$
Application	—	HV Cable - EV, HEV, PHEV	—	HV Cable - EV, HEV, PHEV	HV Cable - EV, HEV, PHEV
Key features	LV 112 CLASS F	LV 112 CLASS F	LV 112 CLASS E	LV 112 CLASS E LV 216 CLASS E	LV 112 CLASS E LV 216 CLASS E
Colors(s)	Red, Brown, Black, Blue, Pink	Orange, Black, Red, Blue, Grey	—	Nature or RAL 2003 (Orange)	Nature or RAL 2003 (Orange)

* Properties measured with ASTM compression molded slab as per D3182. Cure Time - DCBP, 8 min 115°C (239°F);
** Pt, 5 min. 120°C (248°F). Both postcured 4 hours 400°C (392°F)

The products in this table represent examples of products that have been developed. Elkem Silicones develops customized solutions to fit your specific application needs.

The Elkem Silicones promise

- Reduced costs from improved process and cost-effective material
- Meet your customers' requirements with structure, design and international regulations

For detailed commercial contacts please visit our website:
www.silicones.elkem.com

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