



MOMENTIVE™

inventing possibilities



Silicones for Air Conditioning Units



Overview

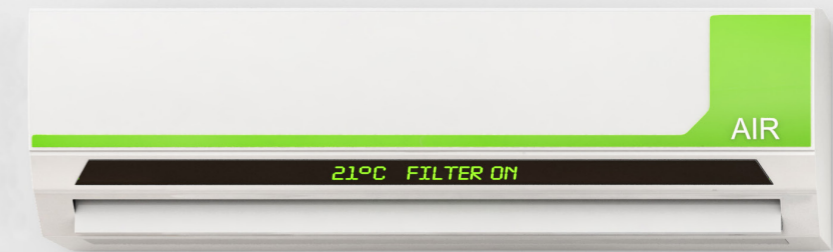
From potting and encapsulation products to adhesives, additives, hardcoats and packaging, Momentive has been leading the way in providing long-term, reliable protection for sensitive electronic components for decades. And as systems continue to get smaller and circuit densities become greater, our deep industry knowledge and extensive experience help ensure that we're ready to protect whatever comes next.

Our product offerings include:

- A comprehensive portfolio of one- and two-part adhesives and sealants for assembly applications on or near sensitive electronic components
- Potting and encapsulation products with various cure speeds, viscosities and performance capabilities to enhance thermal cycling performance, stress relief, material strength, flame retardancy, long term heat stability and optical clarity
- Thermally conductive adhesives, gap fillers, compounds and greases
- Semi-conductor packaging solutions from die attach adhesives and encapsulants to lid seal adhesives
- Low-ionic resins for finer-line-resolution photo resist solutions
- Ultra-clear liquid silicone rubber for LEDs in flat-panel displays

Silicones for Air Conditioning Units:

- **Conformal Coatings** for printed circuit boards (outer main unit PCB, inverter PCB)
- **Thermal Management Silicones** such as greases, gap filler, and potting compounds
- **PCB Assembly Materials** such as dielectric silicones for encapsulation and component bonding.



Corrosion Resistant Conformal Coatings

Momentive's ECC3011 and ECC3051S silicone conformal coating materials employ a unique formulation that can help prevent the occurrence of corrosion on vital PCB components and surfaces.

These new materials dispel the commonly held perception that silicones, due to their higher gas permeability, are at a disadvantage in corrosion prevention. In tests performed by Momentive in accordance with IEC standards, Momentive's new silicone formulations outperformed other conformal coating materials for corrosion prevention, including acrylics, polyurethane, polyolefin and competitor silicone formulations.

Key Features and Typical Benefits:

- Fast tack-free time
- Requires no equipment to cure
- Solvent-free formulation (100% solid content)
- Contains UV indicator for ease in inspection under black light
- Continuous operating temperature range of -40 ~ 150 °C
- Salt spray performance tested in accordance with IEC60068-2-52 Severity 5
- Mixed gas corrosion performance tested in accordance with IEC60068-2-60 Method 4
- Tested in accordance with IPC-CC-830B / MIL-I-46058C
- UL certified (E-File E135148): Flame Class V-0, Thermal Index 130°C (outdoor)

[momentive.com/conformalcoatings](https://www.momentive.com/conformalcoatings)

Corrosion Resistance

Formulation design approaches and improvements in adhesion allow Momentive's ECC3011 and ECC3051S conformal coatings to mitigate gas permeability concerns, and help deliver corrosion resistance performance that meets emerging expectations for conformal coating materials in air conditioning and other electronic applications.

Conformal Coating Materials

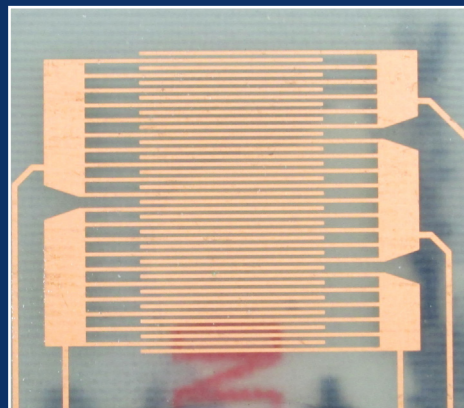
(selected grades only; please contact us for material selection support)

Product	System (1)	Cure Time	Viscosity (mPa·s)	Color	Processing	Feature
ECC3011	CC, 1K	10 min at RT	110	Colorless with UV Tracer	Spraying	Solvent Free, Fast cure
ECC3051S	CC, 1K	30 min at RT	550	Colorless with UV Tracer	Spraying	Solvent Free, Fast Cure

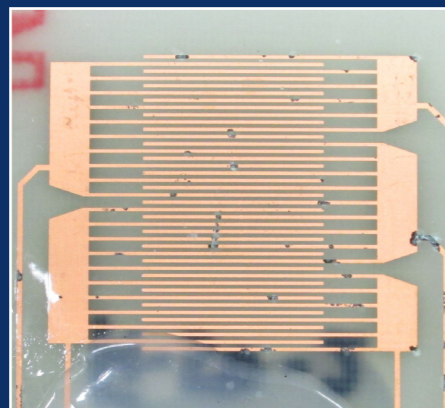
Typical properties are average data and are not to be used as or to develop specifications.

Salt Spray Test (IEC60068-2-52 Severity 5, 28 days)

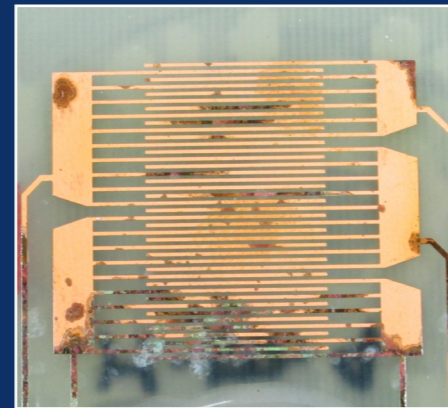
Momentive ECC3011



Competitor silicone

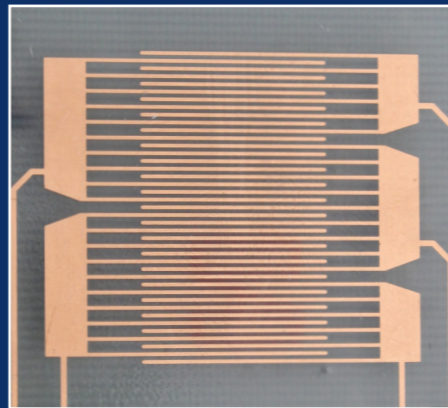


Polyurethane

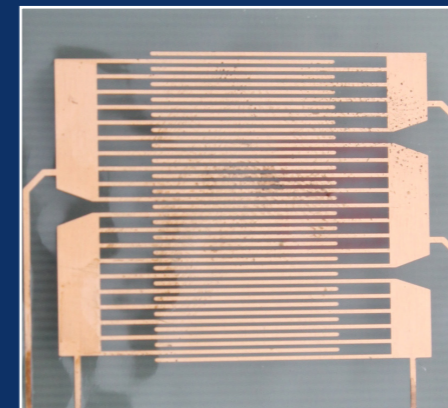


Mixed Noxious Gas Corrosion (4 gases) IEC60068-2-60 Method 4 (21 days)

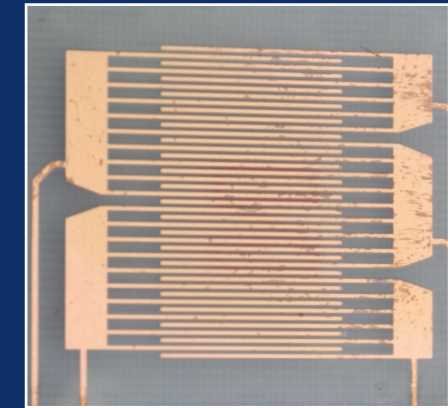
Momentive E333011



Competitor Silicone

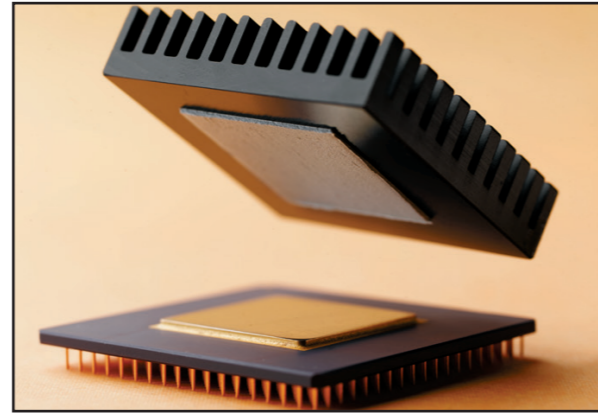


Polyurethane



Thermal Management Silicones

Long term, reliable protection of sensitive electronic components is essential to many applications today. Increasingly small systems and rising circuit densities have resulted in higher operating temperatures, and driven demand for high-performance solutions for heat dissipation.



Thermal Materials for Air Conditioners, HVAC Systems

Momentive's thermally conductive liquid dispensed silicone grease, gap fillers, adhesives and potting compounds are available in an array of performance and handling options for various thermal management needs in Air Conditioners and HVAC applications.

Typical Applications

- Thermal interface to heat sinks for PCB mounted components and assemblies
- Thermal paths to copper and aluminum heat exchanger components

[momentive.com/thermal](https://www.momentive.com/thermal)

PCB Assembly Materials

Momentive's dielectric silicones for encapsulation and component bonding are used to selectively protect electronic components from moisture and harmful contaminants and to provide structural integrity to electronic parts. These materials provide stress relief protection to circuits from thermal, vibration, and mechanical stress. Momentive offers a range of materials including one and two part products and specialized grades that provide thermal conductivity, flame retardancy, and low volatiles.

Typical Applications in Air Conditioners

- Medium viscosity materials for selective thick section encapsulation and electrical isolation of components such as choke coils
- Paste materials for structural integrity of tall components such as condensers.
- Deep section potting of PCBs

[momentive.com/potting](https://www.momentive.com/potting)

Thermally Conductive Silicone Materials

Product	System (1)	Type	Cure Time	Viscosity (Pa s)	Thermal Cond. (W/m.K)	Feature
TIG1500	TIG, 1K	Grease	n.a.	90	1.5	Dry out resistant
TIG210BX	TIG, 1K	Grease	n.a.	250	2.1	Low Bleed
TIA250RZ	AC, 1K	Adhesive	30 min at 120°C	40	2.2	Fast cure, strong adhesion
TIA350R	AC, 1K	Adhesive	30 min at 120°C	100	3.5	Fast cure, high T/C
TIA225GF	AC, 2K	Gap Filler	30 min at 70°C or Room Temp.	90	2.5	Non-slumping, soft, stress absorbing, fast cure
TIS420C	CC, 1K	Gap Filler	30 min at RT (tack free)	300	4.2	Non-slumping, room temp cure, 1 Part
TIA222G	AC, 2K	Potting	30 min at 70°C or Room Temp.	20	2.2	Soft, stress absorbing, fast cure

PCB Assembly Materials

Product	System (1)	Mix Ratio (w/w)	Cure Time	Color	Type	Viscosity (Pa s)	Feature
TN3405	CC, 1K	n.a.	7 min at RT (tack free)	Clear	Rubber	30	1 Part encapsulant, low volatile
TN3305	CC, 1K	n.a.	9 min at RT (tack free)	Clear	Rubber	47	1 Part encapsulant, low volatile
TN3005	CC, 1K	n.a.	7 min at RT (tack free)	Clear	Rubber	Paste	1 Part paste, low volatile
TN3088	CC, 1K	n.a.	10 min at RT (tack free)	White	Rubber	Paste	1 Part paste, low volatile, thermally conductive, V-0 FR
TSE3033	AC, 2K	1:1	30 min at 150°C	Transparent	Rubber	0.9	Transparent potting, primerless adhesion

Selected grades only; please contact us for material selection support. Typical properties are average data and are not to be used as or to develop specifications.

(1) AC = Addition Cure / CC = Condensation Cure / TIG = Thermal Interface Grease



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For more information and sampling inquiries, please visit momentive.com/CustomerService

Patent Status

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