

Momentive offers silicone material solutions developed for the solar industry.

Momentive's Silicones and Quartz Division is a global leader in silicones and advanced materials, with a 70+ year heritage of being first to market with performance applications for major industries that support and improve everyday life. Momentive delivers science-based solutions by linking custom technology platforms to opportunities for customers. The strength of Momentive's silicones technology, technical service and application development comes from a long and prestigious history — and its heritage company GE Silicones. It's a story about commitment to successful business relationships, global reach and value added process innovations that can help customers reduce costs, improve quality and realize their business objectives.

Applications

- Sealants and Adhesives for Frame Sealing, Rail Bonding and Junction Box Attaching: Fast cure, high mechanical strength, primerless
- Junction Box Potting: Fast cure, room temperature adhesion, UL94 HB to UL94 V-0 flame resistance
- Solar Cell Encapsulation: Optically clear, engineered refractive index, allows more electricity per unit area, long-term uv stability
- Optical Coupling Materials: High transparency, precise dimensional stability, high temperature resistance
- Thermal Management: High thermal conductivity, easy process ability, primerless, low volatiles

Segment

- Crystalline silicon type PV modules
 - Flexible Thin-film type PV modules
- Rigid Thin-film type PV modules
 - Concentrated PV modules
 - Building Integrated Photovoltaic

Overview

Adhesive	Pottant	Optical Applications	Thermal Management
TSE382	SiTRUST TSE3661	TSE3032	TSE3331
TSE392	SiTRUST TSE3663	TSE3033	TSE3941-W
SiTRUST TSE3852	SiTRUST TSE3664K	RTV615	XE11-B5320
XE11-C3009-W	RTV6428		TIA0220
SnapSil® RTV230			TIG830SP



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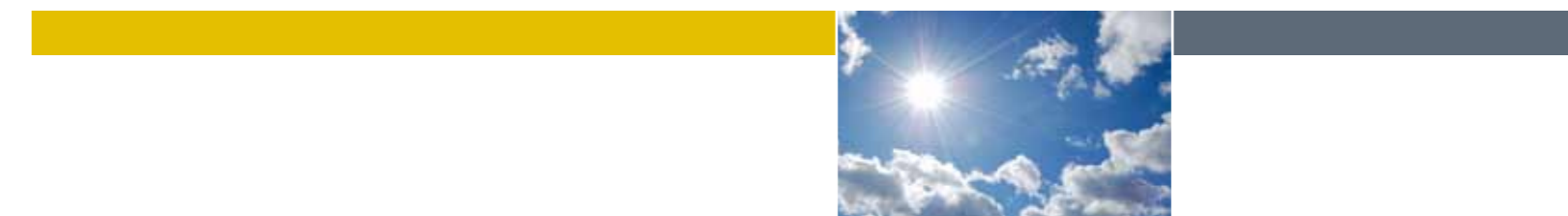
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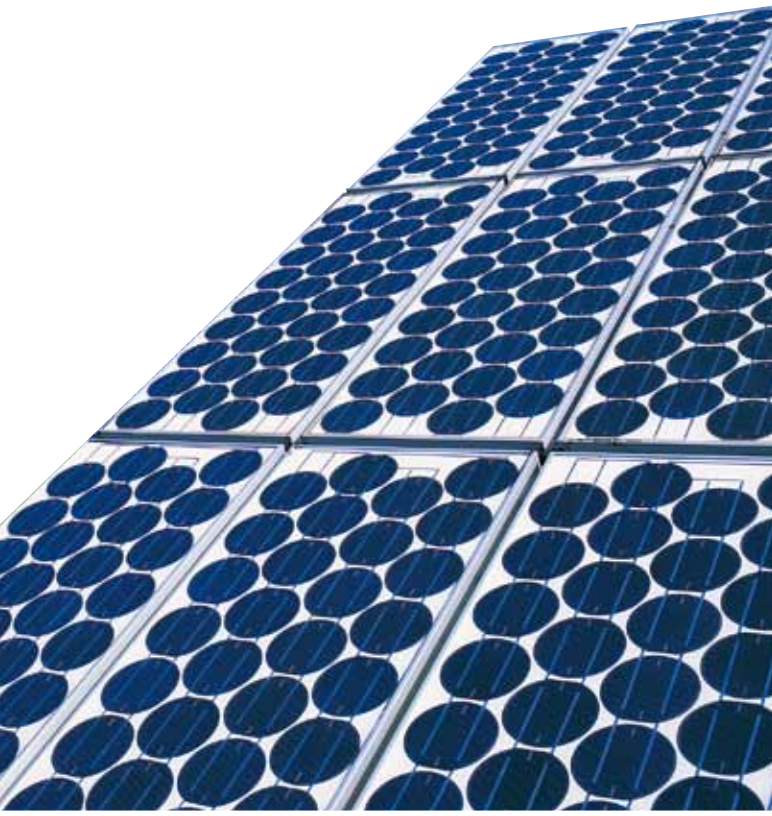


Silicone Material Solutions for the Solar Industry



Silicone Solutions for PV Industry

In addition to commercial products, Momentive has a broad range of material solutions to help solve your specific needs. Contact your local sales or marketing representative to learn more.



Properties	Frame Sealing, Rail Bonding and J-Box Attaching					J-Box Potting				Optical Applications			Thermal Management				
	TSE382	XE11-C3009-W	TSE392	SiTRUST TSE3852	SnapSil® RTV230	SiTRUST TSE3661	SiTRUST TSE3663	SiTRUST TSE3664K	RTV6428	RTV615	TSE3032	TSE3033	TSE3941-W	XE11-B5320	TIA0220	TSE3331	TIG830SP
Cure Type	1K, Oxime ⁽²⁾	1K, Oxime ⁽²⁾	1K, Alkoxy	1K, Alkoxy	2K, Alkoxy	2K, Alkoxy	2K, Alkoxy	2K, Alkoxy	2K, Addition ⁽¹⁾	2K, Addition ⁽¹⁾	2K, Addition ⁽¹⁾	2K, Addition ⁽¹⁾	1K, Alkoxy	1K, Alkoxy	1K, Alkoxy	2K, Addition ⁽¹⁾	-
UL Listing	UL94 HB	UL94 HB	UL94 HB	UL94 HB	UL94 HB	UL94 HB	UL 94 HB	UL94 V-0	UL94 V-0	-	-	-	UL94 V-0	UL94 HB	-	UL94 V-0	-
Characteristics	Ready to use, neutral type, non flowable, fast cure	Ready to use, neutral type, non flowable, fast cure	Ready to use, neutral type, non flowable, low odor, non corrosion, fast cure	Ready to use, neutral type, non flowable, low odor, non corrosion, anti yellowing	Fast deep section cure, low odor, non corrosion	Low viscosity, fast deep section cure, non corrosion	Low viscosity, fast deep section cure, non corrosion	Low viscosity, fast deep section cure, non corrosion	Low viscosity, non corrosion, fast cure by elevated temperature	Low viscosity, optical clear, non corrosion, fast cure by elevated temperature	Low viscosity, optical clear, non corrosion, fast cure by elevated temperature	Low viscosity, optical clear, non corrosion, fast cure by elevated temperature, self adhesive	Ready to use, non flowable, fast cure, low volatile, non corrosion	Ready to use, non flowable, fast cure, low volatile	Semi-flowable, fast cure, low volatile, non corrosion, high thermal conductivity	Flowable, fast cure, low volatile, non corrosion, high thermal conductivity	Applicable by screen printing, high thermal conductivity, extremely low weight loss at high temperature
Color	TSE382-W:White TSE382-B:Black TSE382-C:Clear	White	TSE382-W:White TSE382-B:Black TSE382-C:Clear	White	White	Blue-green	White	Grey	Dark Grey	Clear	Clear	Clear	White	White	Grey	Dark Grey	Grey
Mixing Ratio by Weight [A:B]	-	-	-	-	100:8.3	100:3	100:2	100:7.5	1:1	10:1	10:1	1:1	-	-	-	1:1	-
Mixing Ratio by Volume [A:B]	-	-	-	-	10:1	100:3.6	100:2.4	10:1	1:1	10:1	10:1	1:1	-	-	-	1:1	-
Adhesion to Substrate	Self adhesive	Self adhesive	Self adhesive	Self adhesive	Self adhesive	Self adhesive	Self adhesive	Self adhesive	Need primer	Need primer	Need primer	Self adhesive	Self adhesive	Self adhesive	Self adhesive	Self adhesive	-
Viscosity (25°C), [cPs]	-	-	-	-	A:700,000; B:95,000	A:4,000; C:10	A:5,000; B:6	A:4,000; B:15	-	-	A:4,200; B:700	A:1,100; B:800	-	-	-	A:4,100; B:3,500	300,000
Viscosity After Mixing (25°C), [cPs]	-	-	-	-	-	3,500	4,000	3,000	1,300	4,000	4,000	900	-	-	-	3,500	-
Working Environment	-55°C to +200°C	-	-53°C to +200°C	-	-50°C to +205°C	-50°C to +150°C	-54°C to +204°C	-54°C to +204°C	-60°C to +204°C	-60°C to +204°C	-	-	-55°C to +200°C	-55°C to 200°C	-40°C to +150°C	-55°C to +200°C	-40°C to +170°C
Special Gravity (25°C)	1.04	1.03	1.04	1.50	1.39	1.20	1.19	1.41	1.37	1.02	1.02	1.02	1.71	2.59	2.88	1.51	2.88
Hardness, [Type A]	28	27	30	32	36	30	35	60	62	44	35	35	76	80	88	60	-
Tensile Strength, [psi]	275	261	228	290	363	160	203	435	478	957	653	145	610	522	520	421	-
Elongation, [%]	380	360	400	470	280	120	130	70	60	120	210	210	80	40	40	70	-
Thermal Conductivity ⁽³⁾ , [W/mK]	0.18	-	-	-	-	0.27	0.29	0.42	0.31	-	0.17	0.17	0.70	1.30	2.20	0.63	4.10
Heat Resistance (BLT), [mm ² -K/W]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25 (50micron)	-	8 (45micron)
CTE, [ppm]	-	-	-	-	-	300	-	-	210	270	230	230	-	190	-	170	-
Dielectric Strength (75 mils), [kV/mm]	23	23	22	21	16	20	20	26	21	20	21	21	-	17	20	26	18
Dielectric Factor (60 Hz)	2.9	2.9	2.9	3.9	3.8	3.2	3.1	3.1	3.0	2.7	2.8	2.8	-	2.6	-	3.4	-
Dissipative Factor (60 Hz)	0.0040	0.0040	0.0050	0.0300	0.1300	0.0200	0.0250	0.0100	0.0061	0.0006	0.0010	0.0010	-	0.0050	-	0.0170	-
Volume Resistance ⁽⁴⁾ , [Ω-cm]	1.0E+15	1.0E+15	2.0E+15	5.0E+14	9.3E+13	1.0E+15	1.0E+15	5.0E+15	5.7E+14	1.8E+15	2.0E+15	2.0E+15	2.3E+15	2.0E+15	1.0E+15	2.0E+14	1.0E+12
Pot life (25°C)	-	-	-	-	5-10min	6min	30min	6min	4min	4hrs	4hrs	6hrs	-	-	-	8hrs	-
Tack Free Time (25°C)	10min	6min	5min	10min	7min	-	-	-	-	-	-	-	5min	5min	10min	-	-
Cure Time*																	
25°C	24hrs(2mm)	24hrs(2mm)	24hrs(2mm)	24hrs(2mm)	30min ⁽⁵⁾	24hrs(2mm)	24hrs(2mm)	24hrs(2mm)	30min	7 days	7 days	-	24hrs(2mm)	24hrs(2mm)	-	-	-
65°C	-	-	-	-	-	-	-	-	15min	4hrs	4hrs	-	-	-	-	-	-
100°C	-	-	-	-	-	-	-	-	10min	1hrs	1hrs	2hrs	-	-	-	-	-
125°C	-	-	-	-	-	-	-	-	5min	45min	45min	1hrs	-	-	-	1hrs	-
150°C	-	-	-	-	-	-	-	-	2min	15min	15min	30min	-	-	-	-	-
Penetration (23°C),[mm/10]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	310
Bleeding (@150°C,24hrs), [w%]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Evaporation (@150°C,24hrs), [w%]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3

Typical data are average. The actual results may vary.
 *SnapSil is a trademark of Momentive Performance Materials Inc.
 Note: Detail data are available in Product Data Sheet
 *Cure time may vary dependent on the specimen, temperature, environmental humidity and equipment.
 Condensation cure grade will reach its final properties after 3 to 7 days at standard condition of 25°C, 50% relative humidity.

(1) Catalyst inhibition is a concern for addition cure grades.
 (2) Non-corrosive to most sensitive metals but may cause corrosion to copper and copper alloys. May cause some discoloration to certain sensitive metals such as copper and brass.
 (3) Bulk sample measurement (Hot wire method).
 (4) ASTM E14561 method utilized.
 (5) Cure through time @ 25°C.