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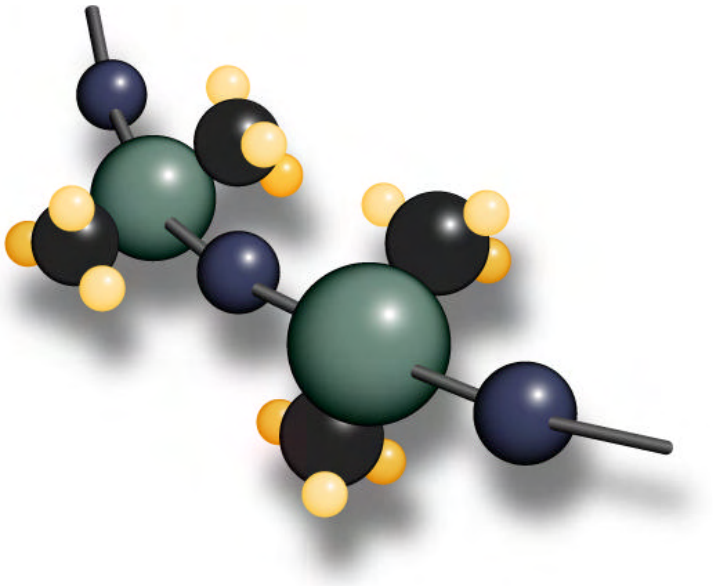

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NuSil SILICONE TECHNOLOGY

Creative Partners in a Material World

Controlled Volatility Materials Selection Guide

CONTROLLED VOLATILITY MATERIALS

NuSil Technology offers the most extensive line of aerospace-applicable silicone materials in the industry, from adhesives and sealants to coatings. ISO 9001-certified since 1994, NuSil operates state-of-the-art laboratories and processing facilities in North America and Europe and provides on-site, in-person application engineering support worldwide.

Controlled Volatility (CV) Silicone Materials

Silicone's ability to remain elastic at low temperatures and resistant to breakdown at high temperatures offer excellent utility in extraterrestrial environments where materials are repeatedly exposed to extreme temperatures. NuSil's **Controlled Volatility (CV)** and ***Ultra Low Outgassing***™ (SCV) silicone products are used by leading space programs to provide the much-needed resilient protection they require against contamination and material degradation.

Benefits of Silicone Materials for Space

- Broad Operating Temperature
- Compensation for CTE Mismatch
- Protection Against Atomic Oxygen
- Optically Clear Formulations
- Flight Legacy

Outgassing in Extraterrestrial Environments

Silicones are used on spacecrafts for a wide variety of applications such as: adhesives, sealants, gaskets, and protective coatings. The contamination of components from the use of silicone products on Low Earth Orbit (LEO) spacecrafts is a major concern in the aerospace industry. When silicone is bombarded with Atomic Oxygen (AO) in LEO, it results in the oxidation of methyl groups and the gradual conversion of silicone to silica. This reaction can have detrimental consequences that result in contamination of spacecraft surfaces when low molecular weight, highly volatile, silicone molecules can outgas from the silicone matrix and then recondense on spacecraft surfaces. The deposited silicone may be attacked by AO and converted to silica before re-evaporation is able to occur. The non-volatile silica deposits gradually accumulate over time into low stress crack free coatings. Silica deposits that accumulate on optical surfaces can darken from UV radiation exposure and thicken enough to eventually reduce optical transmittance, diffuse reflectance, and increase absorptance.[1]

The contaminating volatile silicone species are a product of the initial polymerization reaction used to produce a silicone polymer. In a basic Ring Opening Polymerization reaction, the product is a mixture of various molecular weights of cyclics, short chained linear molecules, and higher molecular weight polymers where the concentrations of each species is based on its thermodynamic equilibrium. The low molecular weight linear and cyclic silicones that are not cured into the silicone network easily outgas in low vacuum and high temperature environments. These species must be removed to prevent contamination for low outgassing applications. Nusil's commitment to making advances in formulating, processing and testing have created a new generation of silicone products. The ***Ultra Low Outgassing***™ line of products, in addition to our current **Controlled Volatility** materials, have excellent performance and low outgassing characteristics in vacuum environments.

Operating Temperature

T h e operating temperature range of a silicone in any application is dependent on many variables, including but not limited to: temperature, time of exposure, type of atmosphere, exposure of the material's surface to the atmosphere, and mechanical stress. In addition, a material's physical properties will vary at both the high and low end of the operating temperature range. Silicone typically remains flexible at extremely low temperatures and has been known to perform at -140 ˚C as well as resist breakdown at elevated temperatures up to 315 ˚C. The user is responsible to verify performance of a material in a specific application.

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Testing of Low Outgassing Silicones

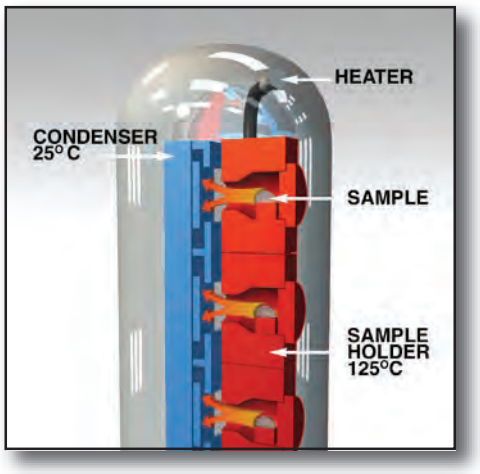
NASA and the European Space Agency (ESA) require materials to be tested per ASTM E-595[3] prior to use in space. These materials must meet the specifications outlined in NASA SP-R-0022A and ESA PSS-014-702, with a maximum Total Mass Loss (TML) of 1% and Collected Volatile Condensable Material (CVCM) of less than 0.1%.[4,5]

NuSil's Controlled Volatility (CV) materials meet or exceed the ≤ 1% TML and ≤ 0.1% CVCM requirements. In addition, our Ultra Low OutgassingTM (SCV) materials exceed the current ASTM E 595 by an order of magnitude, ≤ 0.1% TMLs and ≤ 0.01% CVCM.

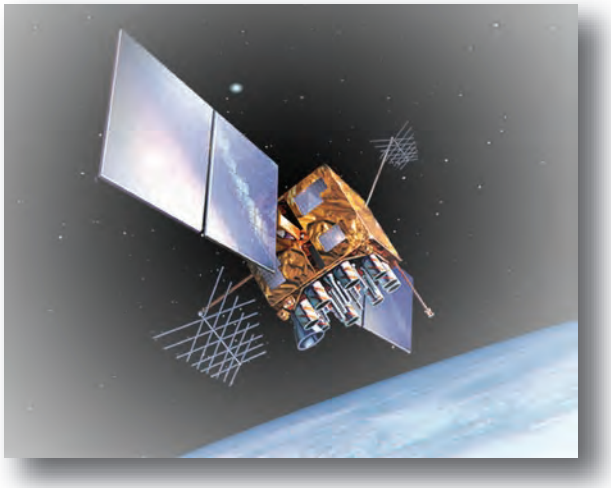
	SCV-2590	SCV-2590-2	SCV1-2590	SCV2-2590	SCV-2596	SCV1-2596	SCV1-2599
% TML	0.07%	0.07%	0.06%	0.07%	0.09%	0.06%	0.08%
% CVCM	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%

* These properties do not provide a basis for customer specifications. Please contact NuSil Technology prior to drafting any specifications for NuSil Technology Products.

NuSil Technology performs ASTM E 595 testing to certify all CV and SCV silicones on a lot-to-lot basis. First, the sample material is exposed to 23°C and 50% relative humidity for 24 hours, and then it is weighed and loaded into a test chamber. The sample is then heated to 125°C at less than 5 x 10^{-5} torr. Any volatile components of the sample that outgas under these conditions escape through an exit port and condense on a collector plate that is maintained at 25°C. After 24 hours the chamber is cooled and depressurized with dry inert gas. The collector plate and samples are then weighed to determine the percentage of weight change, determining % TML and % CVCM.



ASTM E 595 Test Chamber of CV-24 Test Stand



Additional Resources

All of NuSil's low outgassing materials are tested by NASA and the ESA. The testing data is available at http://outgassing.nasa.gov.

To view more information and review white papers on NuSil's low outgassing products visit out website **www.NuSil.com.**

[1] Banks, BA. Et al., *Consequences of Atomic Oxygen Interaction with Silicone and Silicone Contamination on Surfaces in Low Earth Orbit.* SPIE, 1999, **3784**, 62-71.
[2] De Groh, et al, *Low Earth Orbital Durability of Protected Silicones for Refractive Photovoltaic Concentrator Arrays*, J. Spacecraft & Rockets, 1995. 32, 1.
[3] ASTM E 595, "Standard Test Method for Total Mass Loss and Collected Condensable Materials from Outgassing in a Vacuum Environment."
[4] NASA SP-R-0022A
[5] ESA PSS-014-702

CONTROLLED VOLATILITY MATERIALS

General Purpose	NuSil Product Number	Comments	Cure System	Work Time	Tack Free Time	Cure Time / Temp °C	Specific Gravity	Durometer Type A	Tensile psi (mPa)	Elongation %	Tear ppi (kN/m)	CTE ppm/°C	Dielectric Strength V/mil	Flow (Inches) Viscosity (cP/mPa·sec) Extrusion (gpm)	Mix Ratio	Color
Materials are tested in accordance with ASTM E 595 Total Mass Loss (TML) of≤ 0.10% and Collected Volatile Condensable Materials (CVCM) of ≤ 0.01%																
														Properties listed are typical - Do not use as a basis for preparing specifications. Please contact NuSil Technology for assistance and recommendations.		
ULTRA LOW OUTGASSING™	SCV-2585	Pourable Elastomer,*4) Primed Lap Shear 475 psi (3.3 MPa), Broad Operating Temp	Platinum	1 h	-	15 m / 150	-	35	700 (4.8)	300	40 (7.1)	-	-	A: 56,000 / B: 43,000	1:1	Trans
	SCV-2586	Fast Cure, Low Density, Primed Lap Shear 175psi, Broad Operating Temp	Platinum	4 h	-	30 m / 150	0.74	45	225 (1.6)	150	-	-	-	A: 375,000 / B: 275,000	1:1	Red
	SCV-2590	Pourable	Platinum	-	-	15 m / 150	1.02	45	950 (6.6)	125	-	-	-	A:8,000	10:1	Clear
	SCV-2590-2	Low Viscosity, Fast Cure	Platinum	4.5 h	-	30 m / 150	1.06	50	950 (6.6)	150	-	370	850	A:9,500	10:1	Black
	SCV1-2590	*4) Primed Lap Shear 175 psi (1.2 MPa)	Platinum	4 h	-	15 m / 150	1.02	50	925 (6.4)	90	-	400	-	A:3,800 / B:2,800	1:1	Clear
	SCV2-2590	Broad Operating Temperature, *4) Primed Lap Shear 250 psi (1.7 MPa)	Platinum	-	-	4 h / 65	1.04	45	475 (3.3)	85	-	490	-	A:3,500	10:1	Clear
	SCV-2596	Electrically Conductive, 2.5 ohm·cm, Carbon Fiber Filled, Broad Operating Temp	Platinum	2 h	-	30 m / 150	1.19	75	475 (3.3)	90	-	580	-	-	10:1	Black
	SCV1-2596	Electricaly Conductive, 0.005 ohm·cm, *21, 22) 1.2 W/m·K	Platinum	2.5 h	-	30 m / 150	3.42	85	450 (3.1)	-	-	215	-	Paste	20:1	Tan
	SCV1-2599	Thermally Conductive, *22) 1.60 W/m·K	Platinum	2 h	-	7 d / R.T.	1.53	75	200 (1.4)	30	-	225	540	Paste	15:1	White
	SCV2-2599	*22) 0.64 W/m·K	Platinum	3 h	-	30 m / 150	-	55	400 (2.75)	225	55 (9.7)	-	-	140 g/min	20:1	White
Controlled volatility or low out-gassing materials are tested in accordance with ASTM E 595 Total Mass Loss (TML) of ≤1.0% and Collected Volatile Condensable Materials (CVCM) of ≤0.10%																
COATINGS	CV-1144-0	60% Solids, Atomic Oxygen Protective Overcoat, Broad Operating Temp	Oxime	-	50 m	7 d / R.T., H	1.00	-	-	-	-	-	-	240	-	Clear
	CV1-1144-0	50% Solids, Broad Operating Temperature	Oxime	-	10 m	7 d / R.T., H	1.11	-	-	-	-	-	-	850	-	Clear
	CV3-1144-1	60% Solids, Broad Operating Temperature	Oxime	-	-	7 d / R.T., H	-	-	-	-	-	-	-	900	-	White
	CV-1146-2	72% Solids, Broad Operating Temperature	Oxime	-	1 h	7 d / R.T., H	1.26	-	-	-	-	-	845	2,400	-	Black
	CV2-1147	60% Solids, Non-blocking Overcoat, Broad Operating Temperature	Oxime	-	2 h	7 d / R.T., H	1.12	-	-	-	-	-	-	2,000	-	Trans
	CV-1148	70% Solids, Broad Operating Temperature	Oxime	-	1 h	7 d / R.T., H	1.34	-	-	-	-	-	-	7,500	-	Black
	CV1-1148	40% Solids, Broad Operating Temperature	Oxime	-	40 m	7 d / R.T., H	1.07	-	-	-	-	-	-	5,000	-	Black
	CV2-1148	100% Solids, Broad Operating Temperature	Oxime	-	-	7 d / R.T., H	1.07	-	-	-	-	-	-	Non-slump	-	Black
	CV-1152	Protective Overcoat, 100% Solids, Broad Operating Temperature	Oxime	-	50 m	7 d / R.T., H	1.01	-	-	-	-	-	-	7,300	-	Clear
ONE PART	CV-1142	Spot Bonding, Available in Black & White, Broad Operating Temperature	Oxime	-	20 m	7 d / R.T., H	1.11	45	700 (4.85)	300	-	320	1,100	35 g/min	-	Trans
	CV1-1142	Self-leveling, Available in Black & White, Broad Operating Temperature	Oxime	-	-	7 d / R.T., H	1.06	30	400 (2.75)	200	-	-	-	13,000	-	Trans
	CV1-1142-4	Self-leveling, Built-in UV Tracer, Broad Operating Temperature	Oxime	-	-	7 d / R.T., H	1.05	35	350 (2.4)	200	-	-	500	60 g/min	-	Trans
	CV2-1142	Available in Black & White, Broad Operating Temperature	Oxime	-	15 m	7 d / R.T., H	-	50	-	-	-	-	-	Non-slump	-	Trans
	CV3-1142	Spot Bonding, Available in Black & White, Broad Operating Temperature	Oxime	-	-	7 d / R.T., H	1.11	45	675 (4.7)	300	-	-	-	Non-slump	-	Trans
	CV7-1142-1	Flow Rate 0.7" with 0.375" Plunge, Broad Operating Temperature	Oxime	-	20 m	7 d / R.T., H	1.13	40	700 (4.85)	300	60 (10.6)	320	1,180	20 g/min	-	White
	CV9-1142	High Durometer, Low Density, Broad Operating Temperature	Oxime	-	25 m	7 d / R.T., H	0.82	55	400 (2.8)	85	-	-	-	35 g/min	-	White
	CV-1143	Non-Slump	Oxime	-	15 m	7 d / R.T., H	1.10	45	800 (5.5)	400	-	-	-	Non-slump	-	Trans
ADHESIVES & SEALANTS TWO PART	CV-2187	Tough, Flowable, Fast Cure	Platinum	3 h	15 h	15 m / 150	1.10	35	925 (6.4)	400	75 (13.2)	-	-	90,000	10:1	Trans
	CV-2189-2	Thixotropic	Platinum	-	-	15 m / 200	1.15	17	750 (5.17)	700	55 (9.7)	-	-	225,000	-	Black
	CV-2287	Flowable, Fast Cure ,Broad Operating Temperature	Platinum	3.5 h	-	30 m / 150	1.11	30	725 (5.0)	400	55 (9.7)	535	900	85,000	10:1	Trans
	CV-2289	Lap Shear 400 psi, Broad Operating Temperature	Platinum	-	4 h	15 m / 150	-	30	750 (5.2)	350	-	-	-	-	1:1	Trans
	CV-2289-1	Pourable Elastomer,Broad Operating Temperature	Platinum	30 m	4 h	15 m / 150	-	30	700 (4.80)	350	-	445	955	A:60,000 / B:40,000	1:1	White
	CV-2289-2	Pourable Elastomer,Broad Operating Temperature	Platinum	30 m	5 h	15 m / 150	-	30	750 (5.2)	400	50 (8.8)	-	-	A:65,000 / B:40,000	1:1	Black
	CV1-2289-1	*4) Primed Lap Shear 450 psi (3.1 MPa), Broad Operating Temperature	Platinum	-	-	15 m / 150	1.10	30	750 (5.2)	350	-	-	-	A:65,000 / B:40,000	1:1	White
	CV2-2289-1	Low Viscosity, *4) Primed Lap Shear 300 psi (2.1 MPa), Broad Operating Temperature	Platinum	-	20 h	4 h / 65	-	30	450 (3.10)	250	-	-	-	A:14,000 / B:10,500	1:1	White
	CV3-2289-1	Low Viscosity, Added Micro-baloons for Bond Line Control, Broad Operating Temp.	Platinum	-	12 h	7 d / R.T.	-	35	175 (1.20)	125	-	-	-	A:15,000 / B:14,000	1:1	White
	CV4-2289-1	Non-flowable, Broad Operating Temperature	Platinum	30 m	10 h	30 m / 150	-	30	650 (4.5)	400	-	-	-	A: 1,300,000 / B: 1,000,000	1:1	White
	CV7-2289-1	Primerless Adhesion, Broad Operating Temperature	Platinum	-	-	15 m / 150	-	30	700 (4.8)	375	-	-	-	A: 57,500 / B:400,000	1:1	White
	CV-2500	Pourable, Optically Clear	Platinum	2 h	10 h	15 m / 150	1.02	50	1,000 (6.90)	125	-	-	-	A:8,000	10:1	Clear
	CV-2500-2	Low Viscosity, Fast Cure	Platinum	3 h	6 h	30 m / 150	1.05	50	950 (6.6)	150	-	370	850	8,500	10:1	Black
	CV3-2500	Low Viscosity, Potting & Encapsulant, Optically Clear	Platinum	3 h	6 h	30 m / 150	1.02	40	950 (6.6)	100	-	-	-	3,000	10:1	Clear
	CV4-2500	Low Durometer, Low Viscosity, Optically Clear	Platinum	2 h	15 h	60 m / 65	-	25	-	-	-	-	-	1,500	1:1	Clear
	CV10-2500	High Durometer, Optically Clear	Platinum	3 h	5 h	15 m / 150	1.02	50	1,000 (6.90)	130	-	-	-	7,500	1:1	Clear
	CV14-2500	Primerless Adhesion, Optically Clear	Platinum	-	-	60 m / 65	1.01	30	425 (2.9)	150	-	-	-	2,600	1:1	Clear
	CV15-2500	*4) Primed Lap Shear 225 psi (1.6 MPa), Optically Clear	Platinum	3 h	6 h	15 m / 150	1.02	50	850 (5.9)	90	-	400	-	A:3,750 / B:2,700	1:1	Clear
	CV16-2500	Broad Operating Temp, *4) Primed Lap Shear 200 psi (4.1 MPa), Optically Clear	Platinum	2 h	-	4 h / 65	1.04	40	650 (4.5)	100	-	490	-	A:3,600	10:1	Clear
	CV-2501	Longer Work Time, Optically Clear	Platinum	10 h	-	15 m / 150	1.02	50	900 (6.2)	150	-	-	-	7,500	10:1	Clear
	CV-2502	Low Flow	Platinum	-	-	7 d / R.T.	1.06	40	800 (5.5)	200	-	-	-	0.3 Inches	10:1	-
	CV4-2502	UV Tracer,Broad Operating Temperature	Platinum	-	-	7 d / R.T.	1.06	45	800 (5.5)	225	-	-	-	0.8 inches	10:1	-
	CV-2510	Broad Operating Temperature Temperature, Flowable	Alcoxy	4 h	-	7 d / R.T., H	1.19	45	600 (4.1)	200	-	-	-	45,000	100:0.5	White
	CV-2566	Pourable RTV Cure, *1) Primed Lap Shear 575 psi (4.0 MPa), Broad Operating Temp.	Alcoxy	4 h	-	7 d / R.T., H	1.49	55	925 (6.4)	150	40 (7.1)	330	825	55,000	100:0.5	Rust
	CV1-2566	*1) Primed Lap Shear 650 psi (4.5 MPa), Broad Operating Temperature	Alcoxy	3 h	-	7 d / R.T., H	1.45	50	900 (6.2)	160	-	-	-	45,000	100:0.5	Red
	CV2-2566	*2) Primed Lap Shear 625 psi (4.3 MPa), Broad Operating Temperature	Alcoxy	2 h	-	7 d / R.T., H	1.50	55	900 (6.2)	140	40 (7.1)	-	-	Thixotropic	100:0.5	Red
	CV-2567	Diluent for Tin Condensation CV Silicones, Broad Operating Temperature	Alcoxy	6.5 h	-	7 d / R.T., H	1.01	21	80 (0.6)	150	-	-	-	5,000	100:0.5	Clear
	CV-2568	Long Worktime, Low Density , *1) Primed Lap Shear 100 psi (0.69 MPa)	Alcoxy	-	-	7 d / R.T., H	0.64	50	175 (1.20)	60	-	180	645	125,000	100:0.5	Red
	CV10-2568	Fast Cure, Low Density, *4) Primed Lap Shear 175 psi (1.2 MPa), Broad Operating Temp.	Platinum	3 h	-	30 m / 150	0.76	40	235 (1.62)	170	-	245	860	A:125,000 / B:80,000	1:1	Red

*1) Primed with SP-120
*2) Prmied with SP-121
*4) Primed with CF1-135
*21) Tested per ASTM C1045
*22) Tested per ASTM E 1530

d = days
h = hours
m = minutes

R.T. = Room Temperature
H = Humidity

g/min = Grams Per Minute

Trans = Translucent
Clear = Clear to Transparent

CONTROLLED VOLATILITY MATERIALS

General Purpose	NuSil Product Number	Comments	Cure System	Work Time	Tack Free Time	Cure Time / Temp °C	Specific Gravity	Durometer Type A	Tensile psi (mPa)	Elongation %	Tear ppi (kN/m)	CTE ppm/°C	Dielectric Strength V/mil	Flow (Inches) Viscosity (cP/mPa·sec) Extrusion (g/min)	Mix Ratio	Color
	Materials are tested in accordance with ASTM E 595 Total Mass Loss (TML) of ≤ 1.0% and Collected Volatile Condensable Materials (CVCM) of ≤ 0.10%								Properties listed are typical - Do not use as a basis for preparing specifications. Please contact NuSil Technology for assistance and recommendations.							
ELECTRICALLY CONDUCTIVE / STATIC DISSAPATIVE	CV-1500	3.0 ohm·cm, Primed Lap Shear 325 psi (2.2 MPa), 0.32 W/m·K, Broad Operating Temperature	Oxime	-	10 m	7 d / R.T., H	1.25	80	650 (4.5)	20	-	435	-	Thixotropic	-	Black
	CV-2640	2.5 ohm·cm,*4) Primed Lap Shear 250 psi (1.7 MPa), Carbon Fiber Filled, Broad Operating Temp	Platinum	2 h	-	30 m / 150	1.19	75	475 (3.3)	90	-	580	-	-	10:1	Black
	CV1-2640	25 ohm·cm , Pumpable	Platinum	-	-	2 h / 65	1.07	40	525 (3.62)	225	-	-	-	A:300 g/min / B:150 g/min	10:1	Black
	CV2-2640	Carbon Black Filled, Broad Operating Temperature	Platinum	60 m	-	24 h / R.T.	1.06	30	515 (3.6)	365	30 (0.05)	-	-	A:1,250,000 / B:100,000	1:1	Black
	CV3-2640	2.2 x 10^6 ohm·cm, Broad Operating Temperature	Platinum	-	10 h	7 d / R.T.	1.01	25	70 (0.48)	120	-	-	-	A:10,000 / B:10,000	1:1	Black
	CV-2644	0.005 ohm·cm, *25)1.2 W/m·K	Platinum	3 h	-	30 m / 150	3.39	85	525 (3.6)	-	-	215	-	Paste	20:1	Tan
	CV2-2644	0.004 ohm·cm	Platinum	2.5 h	-	30 m / 150	3.04	85	500 (3.4)	100	-	-	-	Paste	20:1	Tan
	CV-2646	0.007 ohm·cm, *25)1.0 W/m·K, Broad Operating Temperature	Alcoxy	3.5 h	-	10 d / R.T., H	3.86	80	400 (2.8)	90	60 (10.5)	185	-	Paste	100:0.5	Tan
	CV1-2646	0.005 ohm·cm, Broad Operating Temperature	Alcoxy	2.5 h	-	7 d / R.T., H	2.20	90	-	-	-	-	-	0 inches	100:0.5	Tan
	CV2-2646	0.003 ohm·cm, *21, 22)1.5 W/m·K , Remains Conductive at High Temperature	Alcoxy	2 h	-	7 d / R.T., H	3.23	75	300 (2.06)	70	55 (9.7)	-	-	4 inches	100:0.5	Gray/Green
THERMALLY CONDUCTIVE	CV-2900	*25)0.6 W/m·K, Broad Operating Temperature	Oxime	-	35 m	72 h / R.T. , H	2.34	65	400 (2.8)	150	-	-	-	40 g/min	-	White
	CV-2942	*25).999 W/m·K, *4) Primed Lap Shear 375 psi (2.6 MPa)	Platinum	2.5 h	4 h	24 h / R.T.**	2.40	85	650 (4.5)	15	55 (9.7)	185	430	Paste	20:1	Gray
	CV-2943	*25)1.22 W/m·K, *3) Primed Lap Shear 475 psi (3.3 MPa), Broad Operating Temperature	Alcoxy	2 h	-	7 d / R.T., H	2.55	90	750 (5.17)	35	90 (15.9)	130	-	Paste	100:0.2	Gray
	CV-2946	*25)1.49 W/m·K , *4) Primed Lap Shear 165 psi (1.0 MPa), Conductive at Elevated Temps	Platinum	2 h	4.5 h	7 d / R.T.	1.53	75	200 (1.38)	30	50 (8.8)	-	540	Paste	15:1	White
	CV2-2946	*22)0.644 W/m·K, Thin Bond Line	Platinum	3 h	-	30 m / 150	-	55	400 (2.75)	225	55 (9.7)	-	-	140 g/min	20:1	White
	CV-2948	*25)1.95 W/m·K, *3) Primed Lap Shear 150 psi (1.0 MPa),Broad Operating Temperature	Alcoxy	2.5 h	-	7 d / R.T., H	1.57	80	250 (1.20)	30	45 (7.9)	-	-	Paste	100:0.2	White
	CV-2960	*25)0.828 W/m·K, *4) Primed Lap Shear 205 psi (1.4 MPa), Low Viscosity	Platinum	1.5 h	3 h	7 d / R.T.	1.34	60	205 (1.4)	110	45 (7.1)	275	-	A:130,000	10:1	White
	CV1-2960	*22)1.11 W/m·K	Platinum	2 h	4 h	4 h / 65	1.45	75	250 (1.38)	60	55 (9.7)	-	-	A:900,000	10:1	White
	CV1-2964	*25) 0.95 W/m·K, *5) Primed Lap Shear 120 psi (0.8 Mpa)	Platinum	-	13 h	15 m / 150	2.34	65	180 (1.2)	50	-	-	-	52,000	1:1	White
	CV-2961	*25) 0.791 W/m·K Low Viscosity, *3) Primed Lap Shear 205 psi (1.4 MPa), Broad Operating Temperature	Platinum	2 h	-	30 m / 150	1.38	75	275 (1.9)	40	45 (7.9)	275	-	A:300,000	10:1	White
	CV-2963	*22)0.64 W/m·K, *4) Primed Lap Shear 275 psi (1.9 MPa)	Platinum	2 h	-	4 h / 65	1.27	60	425 (2.9)	250	50 (8.8)	-	-	Paste	20:1	White
DAMPENING FLUIDS, LUBRICANTS & GREASES	CV-7300	Refractive Index 1.40	-	-	-	-	0.97	-	-	-	-	-	-	1,000 to 100,000	-	Clear
	CV-9042	Thermally Conductive	-	-	-	-	1.61	-	-	-	-	-	-	Medium Grease	-	White
	CV-9052	Volume Resistivity 1x10^{15} ohm·cm	-	-	-	-	1.10	-	-	-	-	-	-	Medium Grease	-	Grey
	CV-9341	Thermally Conductive	-	-	-	-	2.30	-	-	-	-	-	-	Medium Grease	-	White
FILM ADHESIVES — FILMS	CV-2680-12	0.012 inches (12 microns) Thick, 2-Part Film, Lap Shear 250 psi (1.7 MPa)	Platinum	4 h	-	4 h / 65	-	-	-	-	-	465	-	-	-	Trans
	CV-2681-12	Volume Resistivity, 125 ohm cm. Lap Shear 70 psi (0.48 MPa)	Platinum	4 h	-	4 h / 65	-	-	-	-	-	-	-	-	-	Black
FILM ADHESIVES — PRESSURE SENSITIVE	CV-1161	50% Solids, 7.5 ppi Release Force	-	-	-	-	-	-	-	-	-	-	-	3,000	-	Clear
	CV2-1161	High Temp, 35% Solids, 2.5ppi Release Force	Peroxide	-	-	1 h / 60 + 1 h /175	-	-	-	-	-	-	-	770	100:1	White
	CV3-1161	Non-Voc Solvent, Tert Butyl Acetate	Peroxide	-	-	-	-	-	-	-	-	-	-	1,200	100:1	Trans
FILM ADHESIVES — TAPES	CV4-1161-5	0.005 inches (5 microns) Double Side Tape, Kapton® Center, 2.5 ppi	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans
GELS	CV-8151	Low Viscosity, Penetration 4.0 mm	Platinum	>30 h	-	30 m / 150	-	-	-	-	-	-	-	2,500	1:1	Clear
	CV1-8151	Penetration 0.4 mm	Platinum	> 30 h	-	30 m / 150	-	-	-	-	-	-	-	2,500	1:1	Clear
	CV-8251	Broad Operating Temperature, Penetration 3 mm	Platinum	24 h	-	40 m / 150	-	-	-	-	-	-	-	1,800	1:1	Clear
FOAMS	CV-2391	Low density, Soft, 14lb/ft^3 (0.224g/mL)	Platinum	-	-	1 h / R.T.	-	-	-	-	-	-	-	3,000	1:10	White
PRIMERS	SP1-204	1 and Part RTV System, 3.3% S.	Hydrolysis	-	-	1 h / R.T., H	0.79	-	-	-	-	-	-	-	-	Clear
	SP-120	General Purpose, 4.1% Solids	Hydrolysis	-	-	1 h / R.T., H	0.77	-	-	-	-	-	-	1.0	-	Clear
	SP-121	General Purpose, 3.5% Solids	Hydrolysis	-	-	1 h / R.T., H	0.77	-	-	-	-	-	-	1.0	-	Red
	CF2-135	Addition Cure Systems, 4.7% Solids	Hydrolysis	-	-	1 h / R.T., H	0.77	-	-	-	-	-	-	1.0	-	Clear
	CF1-141	Addition Cure Systems, IPA Based, 6% Solids	Hydrolysis	-	-	1 h / R.T., H	0.80	-	-	-	-	-	-	1.0	-	Red
	SP-270	Addition Cure Systems, Difficult Substrates, 15% Solids	Hydrolysis	-	-	1 h / R.T., H	0.77	-	-	-	-	-	-	1.0	-	Trans
	SP-271	Addition Cure Systems, Difficult Substrates, 20% Solids	Hydrolysis	-	-	1 h / R.T., H	0.80	-	-	-	-	-	-	1.0	-	Trans

*1) Primed with SP-120
*3) Primed with SP-130
*4) Primed with CF1-135
*5) Primed with SP-270
*21) Tested per ASTM C1045
*22) Tested per ASTM C177

d = days
h = hours
m = minutes
R.T. = Room Temperature
H = Humidity
** Post-cure 15 m / 150

Trans = Translucent
Clear = Clear to Transparent

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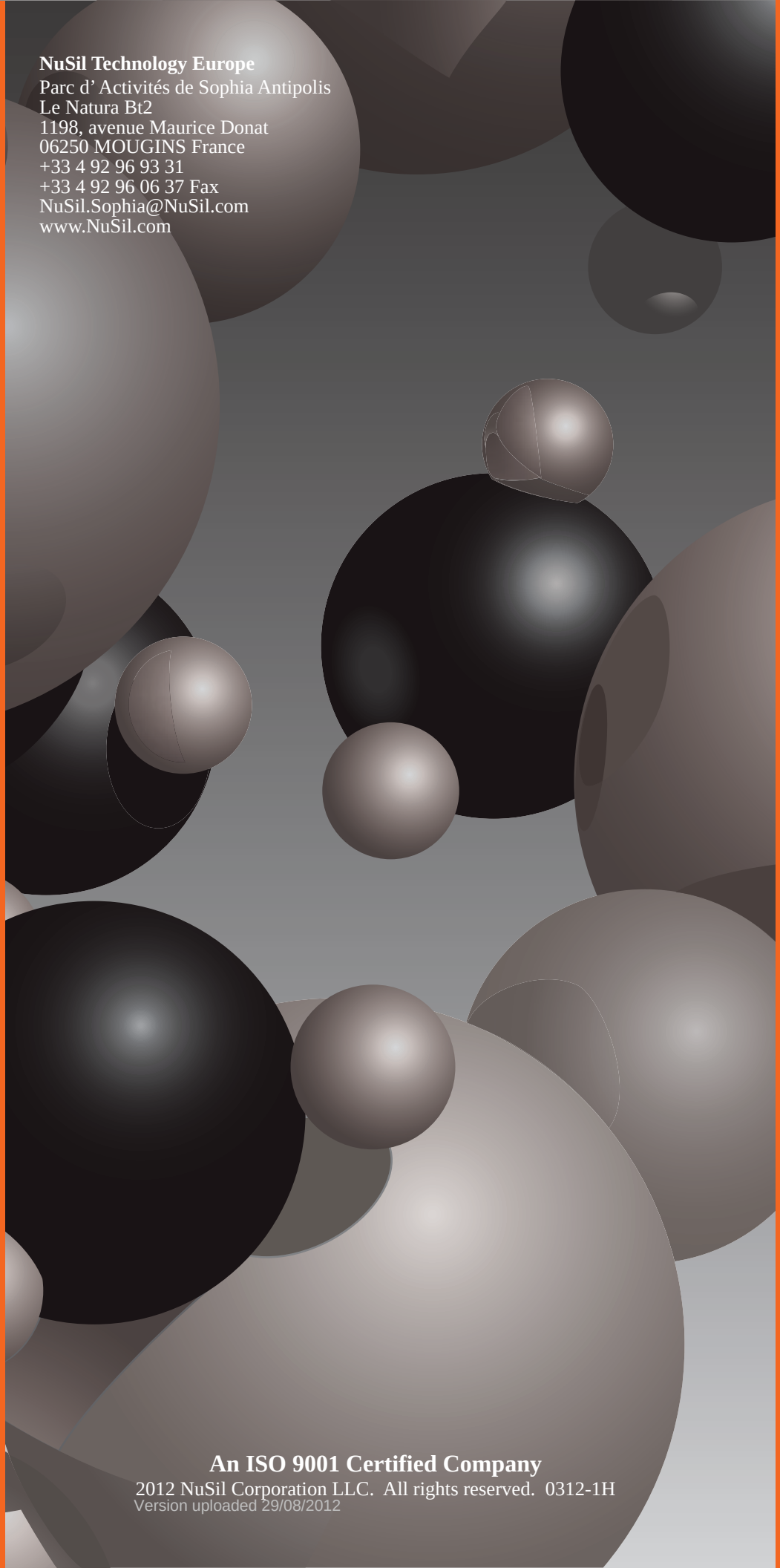

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