

# Polymer Systems Technology Limited

UK & Ireland Distributor

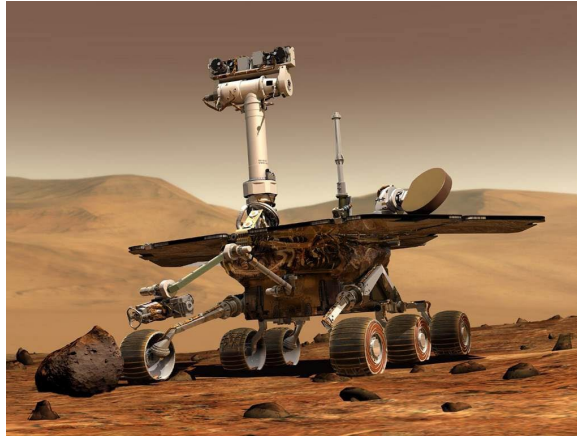


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# Ultra Low Outgassing™ Silicone Materials

Silicone adhesives and coatings have been used for over five decades because of their ability to retain elasticity and low modulus over a broad temperature range, thus reducing shear stress during thermal cycling. These properties provide excellent utility in space and terrestrial environments, where spacecrafts and sensitive electronics are repeatedly exposed to these extreme temperatures.



The National Aeronautic & Space Administration (NASA) and European Space Agency (ESA) recommend materials to be tested per ASTM E595<sup>1</sup> prior to use in space. These materials are required to meet the specifications outlined in NASA SP-R-0022A<sup>2</sup> and ESA PSS-014-702<sup>3</sup>, with a maximum Total Mass Loss (TML) of 1% and Collected Volatile Condensable Material (CVCM) of less than 0.1%.

NuSil's Ultra Low Outgassing™ (SCV) materials exceed the current requirements, providing ASTM E-595 results of  $\leq 0.1\%$  TML and  $\leq 0.01\%$  CVCM. The benefits of using NuSil's Ultra Low Outgassing are numerous and include:

- No additional processing needed by the end-user to remove volatile species.
- Allow a trade off to use other materials that contain higher levels of condensable species to keep overall levels within the outgassing requirements.
- The molecular weight distribution of remaining outgassing species of Ultra Low Outgassing silicones are lower, therefore less likely to remain condensed on surface<sup>4</sup>.



## About NuSil Technology

NuSil Technology is a cutting edge manufacturer of silicone materials for aerospace products requiring precise, predictable, cost-effective materials. ISO-9001 certified since 1994 and AS9100 certified since 2008, NuSil operates state-of-the-art laboratories and processing facilities in North America and provides on-site, in-person application engineering support worldwide.

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# Ultra Low Outgassing™ Silicone Materials

Ultra Low Outgassing™ silicones are also excellent for reducing the risk of contamination to increase the operation life in sensitive electronics and optical applications. These terrestrial applications include:

- Any optical application (e.g., optical telescope) that is very sensitive to contamination of any kind. Optical engineers want the lowest possible outgassing material to limit the risk of creating any contamination.
- Applications where repair or rework is almost impossible
  - Laser modules
  - Surface Acoustic Wave Guides (SAW)
  - Hermitically Sealed Packages
- In MEM type applications, outgassing products can have devastating affects on the long term reliability.

NuSil's Ultra Low Outgassing™ (SCV) materials provide a multitude of choices for specific applications, including the following products:

Product	Durometer	Viscosity	Color	Comments
SCV-2585	35	50,000 cP	Translucent	Durable
SCV-2590	50	8,000 cP	Clear	Low Temp Cure
SCV-2590-2	50	8,500 cP	Black	Pourable
SCV1-2590	50	2,500 cP	Clear	Low Viscosity
SCV2-2590	40	3,500 cP	Clear	Broad Operating Temp.
SCV-2596	75	Paste	Black	1.67 ohm cm, Static Dissipative
SCV1-2596	85	Paste	Tan	0.006 ohm cm, Electrically Conductive
SCV1-2599	75	Paste	White	1.25W/mK, RTV
SCV2-2599	55	Paste	White	0.64W/mK

## Additional Resources

To view more information and review white papers on NuSil's Ultra Low Outgassing™ products visit our website [www.nusil.com](http://www.nusil.com).

<sup>1</sup> 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.

<sup>2</sup> NASA SP-R-0022A

<sup>3</sup> ESA PSS-014-702

<sup>4</sup> A. Snyder, B. Banks, S. Miller, et. al., "Modeling of Transmittance Degradation Caused by Optical Surface Contamination by Atomic Oxygen Reaction with Absorbed Silicones", Proceedings of SPIE Vol. 4096 (2000).

