

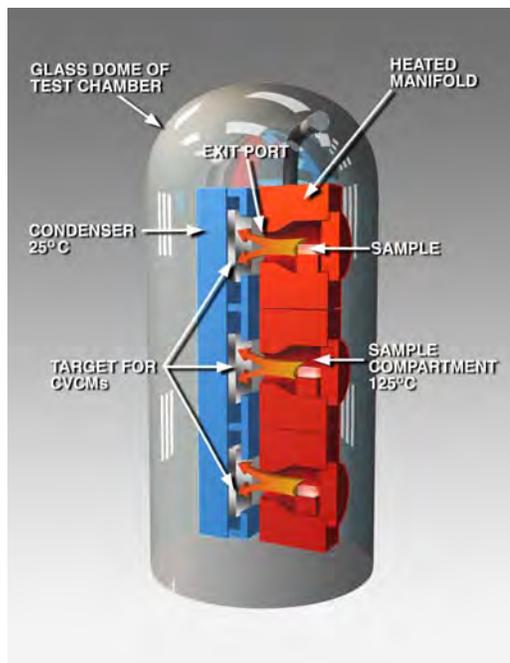
ASTM E595 Test Method

Definition of NuSil Technology's Low Outgassing Materials

NuSil Technology's low outgassing silicones are characterized by minimal volatility when exposed to the elevated temperatures and decreased pressures historically associated with extraterrestrial applications. The National Aeronautics & Space Association's (NASA) criteria for low outgassing materials limits the materials' TML% (Total Mass Loss) to 1.0% and CVCM% (Collected Volatile Condensable Materials) to 0.10%. TML is derived by the net weight change of the sample before and after the material is exposed to conditions within the test chamber. CVCMs are determined by the weight gain of the aluminum collector plate (a.k.a. "target") from substances that condense onto the target during testing. To adhere to NASA's requirements for a low outgassing material, NuSil Technology utilizes ASTM's Test Method E595 as a standard, lot-to-lot test for their controlled volatility (CV- and SCV-) silicones.

Applications and Benefits

NuSil's customers utilize a variety of silicones that are capable of operating in broad temperature ranges and experience a minimal loss of volatiles. While these materials are regularly considered for use in aerospace (extraterrestrial) applications, their benefits may extend to other applications such as electronics, high vacuum environments, and clean rooms.



About NuSil Technology

NuSil Technology is a global manufacturer of silicone materials for aerospace products requiring precise and predictable materials. ISO 9001-certified since 1994 and AS 9100-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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Test Method ASTM E595

NuSil Technology's low and ultra low outgassing silicones are tested in accordance with ASTM E 595 and conform to or surpass the requirements set forth within the ASTM. The test method calls for a pre-conditioning step, wherein the samples are exposed to 50% relative humidity at an ambient atmosphere for 24 hours. The sample is weighed and placed into an individual compartment within the test stand. It is then heated to 125°C at less than 5×10^{-5} torr for 24 hours. Any volatile components of the sample will be outgassed during this step. The volatiles escape through an exit port and, if condensable at 25°C, condense onto a collector plate maintained at that temperature. The collector plate and samples are weighed after the 24 hours to calculate the percentage of weight change yielding the TML% (Total Mass Loss) and CVCM% (Collected Volatile Condensable Materials) values. The final parameter of the test is Water Vapor Regained (WVR). The samples are then post-conditioned in 50% relative humidity and ambient atmosphere for 24 hours, minimum. After post-conditioning, the samples are weighed to calculate the final WVR.





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