Silicones are highly resilient materials that have been used as adhesives and sealants in aircraft and aerospace applications for decades. Silicones offer thermal stability at high operating temperatures, as high as 300°C depending on the exposure time. Silicones can be incorporated with iron oxide fillers that can impart increased thermal stability at elevated temperatures. These same silicones can also be modified for low outgassing or fuel resistance to handle the rigorous demands of aerospace and aircraft technologies.

In applications such as bonding or encapsulating, NuSil’s silicones easily spread onto a variety of substrates such as metals and composites to ensure excellent surface contact. NuSil’s silicones have a variety of viscosities available to accommodate processing techniques as well as desired flow onto the substrate.

NuSil has been synthesizing silicone intermediate materials since 1979. Due to our processing and synthesis capabilities, we can manufacture a variety of silicones for thermally harsh environments with reduced contamination risk. NuSil’s Controlled Volatility materials (CV-) meet NASA’s ASTM E595 outgassing standards of Total Mass Loss (TML) ≤1% and Collected Volatile Condensable Materials (CVCM) ≤0.1%. Our new Ultra Low OutgassingTM silicones, (SCV-) are certified to ≤0.1% TML and ≤0.01% CVCM.

Iron oxide is used to maintain thermal stability while achieving distinct properties:
- Custom filler packages can be used to reach the desired properties needed for an individual application
- Remains electrically insulating using high purity iron oxide
- Unique filler packages can be optimized to maintain a low density
- Maintains thermal stability at elevated temperatures
- Distinct reddish-brown appearance makes it easy to see where material has been applied

NuSil provides many commercial testing services in accordance with ASTM and other international testing protocols. For papers on related topics please visit our website www.nusil.com/whitepapers.