



Materials Engineering Branch

TIP*



No. 044 One Component RTV Compounds

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Several one-component silicone RTV¹ compounds have been in common use on spacecraft hardware for various applications including potting or staking of electronics. Many of these materials produce a corrosive byproduct as a result of the curing reaction, (e.g.: acetic acid vapors) which is detectable by its vinegar odor. This acetic acid is produced and evolved as a consequence of the silicone's polymerization.

When used in contact with certain metals, such as copper or its alloys, the RTV can cause corrosion reactions that form salts of various colors. Although the extent of corrosion may be very limited on relatively large pieces of flight hardware, in the case of fine electrical leads it may be of sufficient magnitude to result in premature failure of the conductor. Such small gauge leads are normally buried in the RTV, and the corrosion reaction will proceed with time.

Methods of vacuum exposure to eliminate the acetic acid vapors are not very successful. To avoid this problem, the use acetic acid producing RTVs is strongly discouraged. Several that have been used are: RTV 102, 103, 108, 118 from General Electric; RTV 732 from Dow Corning. Other one-component silicone RTV compounds are available that produce methanol instead of the acetic acid. The methanol is generally not a problem, nor does it cause corrosion. The methanol-producing RTVs include: RTV 142 from G.E, 6-1104 from Dow Corning and CV-1142 from NuSil Technology.

Single component RTVs require moisture for curing. Hence, they will not cure properly when applied in thick sections (>1/4 inch), or when used in confined areas not exposed to air.

¹ RTV: room temperature vulcanizing.