

330-VACSEAL-S

Vacseal® High Vacuum Leak Cement - UHV Compatible Additional technical information

Background:

Vacseal is a silicone-based thin film sealant, first developed for vacuum picture tubes and environmentally sealed switches and relays. Its uses range from front panel assemblies on cathode ray tubes to window mountings on gas lasers.

Vacseal is highly effective at creating vacuum tight low pressure bonds, even between materials of widely differing thermal expansion properties. The temperature limits for an effective seal range from liquid helium to 450°C, subject to the material used.

As an example, a quartz window, diameter <50mm, could be subjected to temperatures between -50°C and 250°C if sealed to a stainless steel port. Quartz and borosilicate glass, whose expansions are more comparable, can range from -200°C to 400°C, up to diameters of 10mm. The closer the properties, the more tolerant the seal.

However, all figures provided here are only estimates. It is recommended that appropriate levels of testing are conducted prior to use, to ensure suitability.

Vacseal is also useful for sealing ground joints, creating a bakeable and demountable system with extremely low vapour pressure. This can be achieved by preheating both parts (flashing off any solvents), applying Vacseal, then pushing both parts together in a twisting motion and allowing to cool.

Application:

The quality of the seal is affected by the condition of the joint, working best on flat surfaces. Vacseal cannot be used in bulk on large gaps. When the contact areas have been properly fitted and cleaned, apply Vacseal to both surfaces to be joined with a small pipette or glass rod, heat for 30 minutes at 150°C to drive off the volatile solvents, assemble and cure.

Curing:

Raise the temperature to 250°C for one hour. At this point, a "green cure" has taken place. If heating is continued to 300°C or above, a "hard cure" will form. It is a less compliant bond than the "green cure". If the sealed surfaces have been well-fitted, it will withstand bakeout temperatures. The "green cure" is recommended for high expansion materials or where severe bakeouts are not required. The cement may be cured at room temperature but requires a period of several days.

Removal:

Uncured Vacseal can be removed by wiping with any standard hydrocarbon solvent. Removal of cured sealant requires methyl ethyl ketone (MEK) or another solvent of similar strength.

Shelf life:

The recommended shelf life of Vacseal is two years, subject to storage conditions.



Handling:

Caution Flammable - Vacseal contains silicone resins in oxygenated solvents. Keep away from sources of ignition. Use only in a well ventilated area. May irritate eyes. Avoid contact with skin. Avoid breathing of vapors. Store away from heat in a tightly closed container.