

Fomblin PFPE: Solvents

Product Data Sheet

Fomblin Perfluorosolv™ Solvents

A Viable CFC-Free Cleaning Substitute For Ozone Depleting Solvents

Fomblin Perfluorosolv PFS-1 is a low molecular weight perfluoropolyether solvent and diluent that can be used as a replacement for CFC-113 and other ozone depleting solvents being restricted by the Government.

Perfluorosolv PFS-1 is safe, inert and non-toxic. It has zero Ozone Depletion Potential and is not classified as a VOC by the Environmental Protection Agency. It contains no chlorofluorocarbons (CFCs), chlorine or bromine. It requires few safeguard precautions or use-restrictions and is completely compatible with all metals, rubbers and commercially available elastomers and plastics.

Perfluorosolv PFS-1 was formulated to be fully miscible with perfluoropolyether (PFPE) oils and greases and perfluorocarbon (PFC) fluids such as those often used in the semi-conductor and electronic manufacturing operations. PFS-1 is also fully miscible with chlorotrifluoroethylene (CTFE) oils above 45°C. It is the recommended solvent/diluent for Solvay Solexis's wide range of fluids and lubricants marketed under the Fomblin and Galden trademarks.

Whether used alone or in conjunction with other solvents, Perfluorosolv PFS-1 performs well in many electronic and semiconductor cleaning functions, such as: pump cleaning, degreasing, dewatering, vapor blanketing, reducing flash point, eliminating trace residue and other niche cleaning applications.

Possessing a relatively high boiling point and low evaporation rate, PFS-1 solvent is well suited for cleaning operations where:

- solvents are applied to hot components.
- solvents are heated prior to application.
- solvents are pressure sprayed onto components.
- solvents are used in forced air stream cleaning.
- extended immersion baths are required.

When tested directly against CFC-113 in bearing cleaning applications, PFS-1 solvent required slightly more time but was equally efficient in achieving the desired results. PFS-1 was actually preferred in those cleaning operations where CFC-113's high evaporation rate made its use too costly or impracticable. Comparative testing showed there was up to 70% less evaporative loss with PFS-1 solvent. In almost every cleaning procedure tested, PFS-1 solvent was found easier to use, safer to handle and required no special ventilation.

Properties	PFS-1	CFC-113*
ODP (Ozone Depletion Potential)	ZERO	0.8
Typical boiling point (°C)	90	47.6
Flash point, °C	NONE	NONE
Density at 25°C (g/cm ³)	1.69	1.56
Surface Tension @ 25°C (dyne/cm)	14	17.3
Viscosity @ 25°C (cSt)	0.75	0.68
Vapor pressure, 25°C (torr)	48	340
Heat of vaporization at boiling point (cal/g)	17	35
Solubility of water [ppm(wt)]	14	110

*Not a Solvay Solexis product, for comparison purposes only.

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Perfluorosolv PFS-1 Benefits:

- Has ZERO Ozone Depletion Potential
- Contains no CFCs, chlorine or bromine
- Reduced consumption through less evaporation losses
- Is inert, non-toxic, odorless and colorless
- Compatible with metals, rubbers, elastomers and plastics
- Is completely miscible and compatible with PFPE and CTFE oils and greases and with perfluorocarbon fluids
- Has no flashpoint. Used as an aid in improving the flashpoint of organic solvents.
- Can be used as a vapor blanket.

*miscible above 45°C.

Typical Applications

PFPE and CTFE fluids are used extensively in semiconductor and electronic manufacturing for vacuum pump lubrication and in chip etching processes. Here, product integrity literally depends upon maintaining ultra clean environments, so

thorough cleaning are mandatory. PFS-1 has proven to be highly efficient in the elimination of contaminate build-ups and organic cleaner residues. PFS-1 is also used in vacuum pump and compressor components during flushing & rebuilding operations.

Similarly, compounders and packagers of PFPE and CTFE based products, facing continuous workplace and machinery clean-ups, have successfully converted to PFS-1 solvent for easier, less restrictive cleaning operations. PFS-1 also performs many diluent functions for specialized product applications. PFS-1 is also used to improve the flashpoint of organic solvents and as a vapor blanket to lower both solvent losses and the fire hazard.

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