

Vertrel™ SDG and SFR

Specialty Fluids

Retrofit Guidelines: Replacement of HCFC-225 in Vapor Degreasers

Technical Information

Introduction

HCFC-225 is classified as an ozone depleting substance (ODS). As a result of its non-zero ozone depletion potential (ODP), the production and importation of HCFC-225 for use in solvent applications has been banned since January 1, 2015.

Vertrel™ SDG and SFR are zero ODP engineered mixtures designed to replace HCFC-225 in applications demanding maximum cleaning power, including defluxing; oil, grease, and wax removal, and precision cleaning applications.

Vertrel™ SDG and SFR offer an excellent balance between cleaning performance, environmental impact and safety in use:

- Excellent solvency power (Kb values >95)
- Superior cleaning performance
- Fast drying—increasing productivity
- Compatible with most metals, plastics, and elastomers
- Nonflammable
- Low toxicity
- Zero ozone depletion potential
- Low global warming potential
- Suitable for use with ultrasonics
- Existing equipment can be used with no or minor modification

Seven Easy Steps to Retrofit

The following provides a summary of the basic retrofit steps for Vertrel™ SDG and SFR; detailed discussion of each step is provided in this bulletin.

1. Drain HCFC-225 from the vapor degreaser system.
2. Replace filters.
3. Replace desiccant bags.
4. Wipe down tank and ensure removal of any residues.
5. Flush the liquid lines with a small amount of Vertrel™ SDG or SFR.
6. Charge tank with recommended quantity of Vertrel™ SDG or SFR.
7. Turn on heaters and pump, and adjust heater, condensing coils, and alarm set points to the recommended temperatures.

RETROFIT IS COMPLETE!

General Retrofit Information

System Modifications

In the vast majority of cases, Vertrel™ SDG and SFR will function as drop-ins for HCFC-225, and no modifications to existing equipment are required. Special cases where minor equipment modifications may be required are discussed below.

Material Compatibility

Vertrel™ SDG and SFR are characterized by high compatibility with a wide selection of metals, plastics, and elastomers. Compatible plastics include Teflon™ TFE, FEP, PFA, and polyethylene; acrylics, ABS, and polycarbonates are incompatible with Vertrel™ SDG or SFR. Suitable elastomers include Viton™ A, Viton™ B, and EPDM; natural rubber and silicone elastomers are not recommended. Individual plastic and elastomeric formulations can vary with the manufacturer; therefore, the best assurance of material compatibility can be attained via the testing of plastic and elastomeric materials under conditions expected during normal operation.

Contact of Vertrel™ SDG and SFR with highly basic materials (pH >10) is not recommended.

Flammability

Vertrel™ SDG and SFR exhibit no closed cup or open cup flash point and are classified as nonflammable liquids. The products are volatile; and, if allowed to evaporate and mix with air, flammable mixtures can be produced.

Detailed Retrofit Procedure

- 1. Drain HCFC-225 from the vapor degreaser tank.** The existing charge of HCFC-225 should be completely removed from the system and collected in a suitable vessel for recycle or disposal in accordance with local requirements. Ensure that HCFC-225 has been drained from all tanks, liquid lines, water separators, filter holders, and any other system components that are in contact with HCFC-225.
- 2. Replace filters.** Change the filter during the retrofit. Standard filters employing cotton, polypropylene, or PTFE media are acceptable.
- 3. Replace desiccant bags.** Desiccant drying is not as crucial with modern cleaning solvents. When you upgrade to Vertrel™ SDF or SFR, consult with your Chemours representative as to the necessity of its use for your application. Type 3A molecular sieves are recommended for use in the desiccant bags; suitable desiccant bag materials include cotton. Tyvek® bags are not recommended.
- 4. Wipe down tank and ensure removal of any residues.** The vapor degreaser tank should be thoroughly cleaned to ensure the removal of any residual HCFC-225 and any residues present in the tank.
- 5. Flush the liquid lines with a small amount of Vertrel™ SDG or SFR.** Charge the vapor degreaser tank with a small amount of Vertrel™ SDG or SFR and flush the liquid lines; do not allow the pump to run dry during the line flushing procedure. Detailed information related to the safety and handling of Vertrel™ SDG and SFR can be

found in the technical bulletin “Safe Handling of Vertrel™ Specialty Fluids”. Whenever possible, a drum pump or a gravity stand should be used to transfer Vertrel™ SDG or SFR solvent from the container to the point of use.

- 6. Charge tank with recommended quantity of Vertrel™ SDG or SFR.** Charge the vapor degreaser tank to the liquid level recommended by the manufacturer.
- 7. Turn on heaters and pumps, and adjust heater, condensing coils, and alarm set points to the recommended temperatures.** Turn on the heaters and pumps in accordance with the equipment manufacturer’s recommended procedure. Set the condensing coil temperatures in accordance with the equipment manufacturer’s recommendations. Adjust the boil sump and alarm temperatures in accordance with the equipment manufacturer’s recommendations; Chemours recommended settings are summarized below and in **Table 1**. Cleaning optimization may require slight adjustments to the recommended initial settings, depending upon the model of vapor degreaser employed.
 - Boil Sump T. Set to 5 °C (9 °F) above the boiling point of the solvent chosen.
 - High Solvent T Alarm. Set to 10 °C (18 °C) above the boiling point of the solvent chosen.
 - High Vapor T/Coolant Failure Alarm. Set to 5 °C (9 °F) below the boiling point of the solvent chosen.
 - Ultrasonic Tank High T Alarm. Set to no more than 90% of boiling point of the solvent chosen.

Table 1. Recommended Vapor Degreaser Settings for Vertrel™ SDG and SFR

Property	Vertrel™ SDG	Vertrel™ SFR
Solvent Boiling Point, °C (°F)	43 (109.4)	41 (105.8)
Boil Sump T, °C (°F)	48 (118.4)	46 (114.8)
High Solvent T Alarm, °C (°F)	53 (127.4)	51 (123.8)
Coolant Failure Alarm, °C (°F)	38 (100.4)	36 (96.8)
U.S. Tank High T Alarm, °C (°F)	39 (102.2)	37 (98.6)

For more information on Vertrel™, please visit vertrel.com or call (800) 235-7882.

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