Sterilants

OXYFUME® 2002

PRODUCT DESCRIPTION

Oxyfume 2002 sterilant gas is a non-flammable, non-corrosive, toxic gas and liquid supplied under pressure. It is an EPA approved mix of HCFC-124 and HCFC-22 [hydrochlorofluorocarbons] with ethylene oxide [EO].

Oxyfume is supplied as liquefied compressed gas, exhibiting a vapor pressure of 48 psig at 70°F. Oxyfume 2002 is colorless and has a normal boiling point of –6.8°F.

PERFORMANCE:

- Tests of Oxyfume 2002 sterilizers show that they provide more margin of patient safety than any other type of low temperature gas sterilizer.[1,2]
- Oxyfume 2002 is used in larger chambers than are available for other low temperature sterilizers. Sterile processing departments can obtain higher throughput. Plus...Large devices and trays are more easily processed.
- Oxyfume 2002 is compatible with more types of medical device and packaging materials than are gases that sterilize using oxidizing chemicals. Penetration into the device is better; material damage is less.

SAFETY:

- Oxyfume 2002, like other sterilizing chemicals, is toxic. Users should study Material Safety Data Sheet OXYF-0008 and become aware of product hazards and safety information, prior to use.
- Oxyfume 2002 is transported as a non-flammable gas. The gas does not burn when used in the sterilizing chamber or in contact with air.

ENVIRONMENTAL:

- Oxyfume 2002 has an extremely low ozone depletion potential (ODP) compared to the 12-88 sterilant that it replaced.
- Due to the low ODP, the HCFC-124 and HCFC-22 contained in Oxyfume 2002 are government approved for manufacture until the year 2030.
- A replacement mix has been developed for Oxyfume 2002 and will be ready before the scheduled replacement date. The mix contains HFC's, that have zero ODP and are not scheduled to be replaced. The mix, proven out in existing sterilizers, provides the same high sterilization performance as Oxyfume 2002 with only minor changes in control settings.
- The ethylene oxide in Oxyfume 2002 has never been, and is not now, scheduled to be replaced.

Oxyfume 2002 is used in large chambers. Large devices and trays are more easily processed.

ADDITIONAL REFERENCES:

1. Alfa, MJ, and others, "Comparison of Ion Plasma, Vaporized Hydrogen Peroxide, and 100% Ethylene Oxide to the 12/88 Ethylene Oxide Gas Sterilizer," *Infection Control and Hospital Epidemiology*. 1996; vol. 17: pp.92-100.

2. Alfa, Michelle J., and others, "Bacterial Killing Ability of 10% Ethylene Oxide Plus 90% Hydrochlorofluorocarbon Sterilizing Gas," *Infection Control and Hospital Epidemiology*, 1997; vol. 18: pp. 641-645.

3. Oxyfume 2002 Material Safety Data Sheet, OXYF-0008.

COMPOSITION

Active Ingredient: Ethylene Oxide	10 ± 0.5% by weight
Inert Ingredient: HCFC-124	63 ± 3.0% by weight
HCFC-22	27 ± 3.5% by weight

EPA Pesticide Registration Number: 67470-9

DOT/IMO Shipping Name: Liquefied Gas, N.O.S. (Chlorotetrafluoroethane, chlorodifluoromethane and Ethylene Oxide), 2.2, UN3163

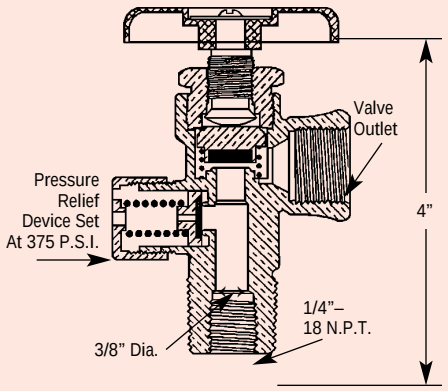
OXYFUME 2002 STERILANT PROPERTIES

Oxyfume 2002 (EO/HCFC-22/HCFC-124)	
Chemical Formula	$C_2H_4O/CHCIF_2/CHCIF\text{-}CF_3$
EO % by Weight	10.0
EO % by Volume	22.7
Typical Chamber Concentration (mg/l)	600
Typical Chamber Exposure Pressure (psig)	10 – 12
Average Molecular Wt.	99.92
Flammability, D.O.T.	Nonflammable
Vapor Pressure (psig) @ 50°F ..... @ 70°F ..... @ 90°F	.30 .48 .70
Boiling Point (°F) @ 1 Atm	-6.8
Color	Colorless
Odor	Slight ethereal
Critical Temperature (°F)	260
Critical Pressure (psig)	586
Specific Volume (cu. ft./lb) Vapor @ 70°F, and 1 Atm	3.32
Specific Gravity of Liquid @ 70°F, and 1 Atm	1.27
Specific Gravity of Vapor (Air = 1) @ 70°F, and 1 Atm	3.47
Heat of Vaporization (BTU/lb) @ boiling point	89.9

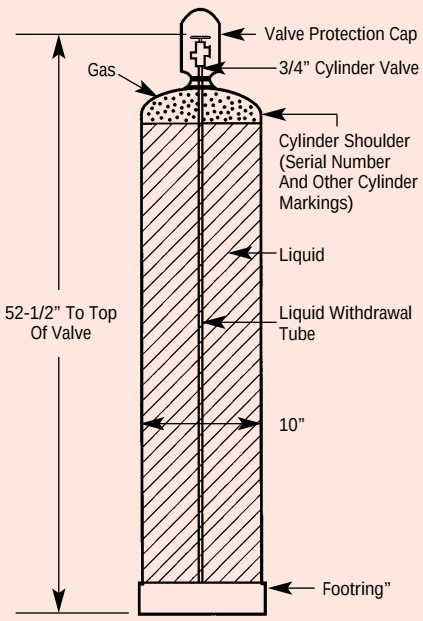
CYLINDER DESCRIPTION

- The most common style container in which Oxyfume 2002 Sterilant is supplied is an FC style cylinder.
- The FC style cylinder is manufactured to D.O.T. 4BA300 specifications.
- Net contents: 135 pounds.
- Gross Weight: 195 pounds (approximate).
- Materials of construction:
  Cylinder made of steel.
  Liquid withdrawal tube of stainless steel–reduces tube breakage and minimizes polymer growth
  Brass valve–eliminates rust and corrosion
- 375 psig pressure relief device.
- Gas tight plug in the valve –prevents gas escaping in the event a valve is accidentally opened or leaks.

LIQUID WITHDRAWAL VALVE



FC STYLE OXYFUME 2002 CYLINDER (CROSS SECTION)



CYLINDER CONNECTIONS

- Cylinder Valve – CGA 510 connection (left-handed thread). Use brass nut and nipple connectors.

Material of Body Construction .....**Brass**

Pressure Relief Device .....**375 POP Safety**

Valve Type .....**Diaphragm**

- In sterilant filling plants, 3,000 psig double braided, stainless steel, PTFE-lined 1/2" flexible hoses are used for liquid transfer

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