

HALOCARBON 14 - (CF₄)

Ultraplus - 4.7

DESCRIPTION : (Tetrafluoromethane) A colorless, non flammable, high-pressure gas..	APPLICATIONS : With added oxygen, CF ₄ (usually > 80% mixture concentration) is used for plasma etching of polysilicon, silicon dioxide, silicon nitride, refractory metals and metal silicides. Etching and stripping of photoresists and other polymers also are major uses of CF ₄ (usually < 20 %) + oxygen mixtures. Halocarbon-14 4.7 can be especially useful for the very thin and precise etching requirements of VLSI and ULSI devices. Ask your local Praxair semiconductor gases specialist for additional information.	ADR Item No. : 2, 1 A
		ADR Label 2.2 Non flammable, non toxic gas
		MSDS REFERENCE : 116
		CHEMICAL ABSTRACTS : 75-73-0
		UN No. : 1982

PRODUCT		PRESSURE BARG	VALVE TYPE	VALVE OUTLET DIN 477 No	VALVE MATERIALS OF CONSTRUCTION
CYLINDER	CONTENTS				
50H(A)	40 kg	156	Diaphragm	6	316L SS

PRODUCT CHARACTERISTICS	PRAXAIR SPECIFICATIONS	METHOD OF ANALYSIS (SEE KEY)
MINIMUM PURITY	99.997 %	
Nitrogen (N ₂)	≤ 10 ppm	A
Oxygen (O ₂)	≤ 5 ppm	A
Water (H ₂ O)	≤ 2 ppm	E
Other Halocarbons	≤ 1 ppm	H
Sulfur Hexafluoride (SF ₆)	≤ 1 ppm	A
Carbon Monoxide (CO)	≤ 1 ppm	J
Carbon Dioxide (CO ₂)	≤ 1 ppm	J
Total Hydrocarbons	≤ 1 ppm	B
Acidity (HF)	≤ 0,1 wt ppm	H
Sum total of all impurities not to exceed 30 ppm.		
METALS/DOPANTS		
See back for specifications		

- ◆ Cylinder sizes, contents, valve types and valve connections other than those indicated above are available on request.
- ◆ All expressions for concentration are for gas phase, by volume unless otherwise noted.
- ◆ MSDS Ref.: More detailed Safety Information can be obtained from the Material Safety Data Sheet No. 116

Key to Analytical Techniques			
A	Gas Chromatograph with Thermal Conductivity Detector	D	Specific Oxygen Analyzer
B	Gas Chromatograph with Flame Ionization Detector	E	Specific Water Analyzer
C	Gas Chromatograph with Ultrasonic Detector	F	Total Hydrocarbon Analyzer
		G	Infrared
		H	Proprietary
		I	Gas Chromatograph with Helium Ionization Detector
		J	Flame Ionization with Methanizer
		K	Gas Chromatograph - Photo Ionization
		L	Gas Chromatograph - Flame Photometric
		M	Mass Spectrometry
		N	Wet Chemical
		O	Gas Chromatograph with Discharge Ionization Detector
		P	Gas Chromatograph with Methanizer Carbonizer
		Q	Gas Chromatograph with Electrolytic Conductivity
		R	Gas Chromatograph with Reduction Gas Analyzer
		S	Gaschromatograph with High Frequency Discharge Detector

IMPORTANT
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To ensure you have the latest available information, refer to this number when contacting your local Praxair office.

EG 41-4.7
08/2004

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METALS/DOPANTS		
Iron (Fe)	0,01 ppm/w	
Copper (Cu)	0,01 ppm/w	
Lead (Pb)	0,01 ppm/w	
Calcium (Ca)	0,01 ppm/w	
Sodium (Na)	0,01 ppm/w	
Zinc (Zn)	0,01 ppm/w	
Manganese (Mn)	0,01 ppm/w	
Nickel (Ni)	0,01 ppm/w	
Cobalt (Co)	0,01 ppm/w	
Chromium (Cr)	0,01 ppm/w	

Notes :

1. Other halocarbons defined as halocarbons 13, 23 and 116.