

# 四氟化碳 Carbon Tetrafluoride

## 1、产品介绍 Product introduction

四氟化碳（CF<sub>4</sub>），又称四氟甲烷，相对分子量为 88，熔点为-183.6℃，沸点为-127.8℃，是一种无色无味的不可燃气体。常温下，四氟化碳属于易压缩性气体，挥发性较高，是最稳定的有机化合物之一，不易溶于水。四氟化碳与可燃性气体燃烧时，会分解产生有毒氟化物。四氟化碳在微电子工业等领域具有重要的应用，作为蚀刻二氧化硅和氮化硅的介质材料已成熟运用多年，也是目前微电子工业中用量最大的等离子蚀刻气体。

Carbon tetrafluoride (CF<sub>4</sub>) is a colorless, odorless flammable with relative molecular mass of 88, melting point of 183.6℃, boiling point of 127.8℃. At room temperature, CF<sub>4</sub> is a compressible gas with high volatility, it is one of the most stable organic compounds and does not dissolve in water. When carbon tetrafluoride burns with combustible gas, it will decompose to generate toxic fluoride. Carbon tetrafluoride has important application in microelectronics industry. Carbon tetrafluoride has been used as a dielectric material for etching silicon dioxide and silicon nitride for many years, it is also the largest dosage of plasma etching gas in the microelectronics industry at present.

## 2、产品指标 Quality specification

项目 Items	单位 Units	指标 Index
四氟化碳 Carbon tetrafluoride (CF <sub>4</sub> ) ≥	Vol.%	99.999
二氧化碳 Carbon dioxide (CO <sub>2</sub> ) ≤	Vol.ppm	1
一氧化碳 Carbon monoxide (CO) ≤	Vol.ppm	1
氮气 Nitrogen (N <sub>2</sub> ) ≤	Vol.ppm	4
其他卤代烃 Other halogenated hydrocarbons (CF <sub>3</sub> Cl,CF <sub>2</sub> Cl <sub>2</sub> ,CF <sub>3</sub> H) ≤	Vol.ppm	1
氧气 Oxygen (O <sub>2</sub> ) ≤	Vol.ppm	1
六氟化硫 Sulfur hexafluoride (SF <sub>6</sub> ) ≤	Vol.ppm	1
酸度 (HF) Acidity	Vol.ppm	0.1
水 Water (H <sub>2</sub> O) ≤	Vol.ppm	1

### 3、产品用途 Application

四氟化碳是目前微电子工业中用量最大的等离子蚀刻气体，与高纯氮气的混合体可广泛应用于硅、二氧化硅、氮化硅、磷硅玻璃及钨薄膜材料的蚀刻。此外，四氟化碳在低温下可作为低温流体应用，在制冷、气体绝缘、氟化剂、表面处理剂和激光气体泄漏检验剂领域中有一定的应用空间。

Carbon tetrafluoride is the largest dosage of plasma etching gas in the microelectronics industry at present. The mixture of carbon tetrafluoride and high purity nitrogen can be widely used in etch of silicon, silicon dioxide, silicon nitride, phosphoro-silicate glass and thin film materials of tungsten. At the same time, carbon tetrafluoride can be used as cryogenic fluid at low temperature, and it also can be applied in the fields of refrigeration, gas insulation, fluidizer, surface treating agent and inspection agent of laser gas leakage.

### 4、包装、贮藏 Packaging and storage

四氟化碳充装在钢质无缝气瓶中，钢瓶容积分别为 8 L、44 L、47 L，具体包装规格可根据用户需求定制更改。四氟化碳储存于阴凉、通风的不燃气体专用库房中，远离火种、热源，库温不宜超过 30℃。应与易（可）燃物、氧化剂分开存放，切忌混储。存应备有泄漏应急处理设备。

Carbon tetrafluoride is stored in standard seamless cylinders, the packing specifications include 8L, 44L and 47L respectively. Specific packaging specifications can be customized according to user requirements. Carbon tetrafluoride is stored in a shady and ventilated storeroom away from fire and heat source, temperature of storeroom does not exceed 30℃. It should be separately stored with inflammable (combustible) and oxidizing agent. The storage area should be equipped with emergency equipment for emergency.