

# 四氟化锗 Germanium Tetrafluoride

## 1、产品介绍 Product introduction

四氟化锗 (GeF<sub>4</sub>) 是一种锗的氟化物，分子量为 148.63，无色、辛辣大蒜气味气体，空气中遇水产生大量白烟。常态下四氟化锗性质稳定，在水中发生水解，生成 GeO<sub>2</sub> 和 H<sub>2</sub>GeF<sub>6</sub>。四氟化锗在半导体行业中用于掺杂和离子注入。四氟化锗结合乙硅烷气体，可以直接在玻璃基底上制造硅锗微晶。

Germanium tetrafluoride (GeF<sub>4</sub>) is a kind of fluoride of germanium with molecular weight of 148.63, it is colorless gas with pungent odor of garlic, it reacts with water to generate a lot of white smoke in the air. Germanium tetrafluoride is stable at normal temperature and pressure, and it is hydrolyzed in water and with generation of GeO<sub>2</sub> and H<sub>2</sub>GeF<sub>6</sub>. Germanium tetrafluoride is used for doping and ion implantation in the semiconductor industry. Combined with ethylsilane gas, germanium tetrafluoride can be used to produce Si-Ge microcrystals on glass substrates.

## 2、产品指标 Quality specification

项目 Items	单位 Units	指标 Index
四氟化锗 Germanium tetrafluoride (GeF <sub>4</sub> ) ≥	Vol.%	99.99
四氟化碳 Carbon tetrafluoride (CF <sub>4</sub> ) ≤	Vol.ppm	10
氮气 Nitrogen (N <sub>2</sub> ) ≤	Vol.ppm	10
氧+氩 Oxygen+ Argon (O <sub>2</sub> +Ar) ) ≤	Vol.ppm	20
一氧化碳 Carbon monoxide (CO) ≤	Vol.ppm	10
二氧化碳 Carbon dioxide (CO <sub>2</sub> ) ≤	Vol.ppm	5
二氧化硫 Sulfur dioxide (N <sub>2</sub> O) ≤	Vol.ppm	10
氟化氢 Hydrogen fluoride (HF) ≤	Vol.ppm	35
铬 Chromium (Cr) ≤	µg/L	0.05
铁 Iron (Fe) ≤	µg/L	0.08
锰 Manganese (Mn) ≤	µg/L	0.01

### 3、产品用途 Application

四氟化锗在半导体行业中用于掺杂和离子注入。四氟化锗结合乙硅烷气体，可以直接在玻璃基底上制造硅锗微晶。四氟化锗在化学工业中还可用于合成试剂。

Germanium tetrafluoride is used for doping and ion implantation in the semiconductor industry. Combined with ethylsilane gas, germanium tetrafluoride can be used to produce Si-Ge microcrystals on glass substrates. Germanium tetrafluoride can also be used to synthesize reagents in the chemical industry.

### 4、包装、贮藏 Packaging and storage

四氟化锗充装在钢质无缝气瓶中，钢瓶容积分别为 2 L、5 L、8 L、10 L 等。具体包装规格可根据用户需求定制更改。四氟化锗储存于阴凉、通风的库房，远离火种、热源。储区应备有泄漏应急处理设备。

Germanium tetrafluoride is stored in standard seamless cylinders, the packing specifications include 2L, 5L, 8L and 10L respectively. Specific packaging specifications can be customized according to user requirements. Germanium tetrafluoride is stored in a shady and ventilated storeroom away from fire and heat source. The storage area shall be equipped with equipment for emergency.