

三氟化氮 Nitrogen Trifluoride

1、产品介绍 Product introduction

三氟化氮(NF₃), 是一种无色、无臭、性质稳定的气体, 是一种强氧化剂。三氟化氮熔点为-206.8°C, 沸点为-129.0°C, 不溶于水。三氟化氮在微电子工业中作为一种优良的等离子蚀刻气体, 在等离子蚀刻时裂解为活性氟离子, 对硅和氮化硅蚀刻时, 采用三氟化氮比四氟化碳和四氟化碳与氧气的混合气体有更高的蚀刻速率和选择性, 尤其是在厚度小于 1.5 μm 的集成电路材料的蚀刻中, 三氟化氮具有非常优异的蚀刻速率和选择性, 在被蚀刻物表面不留任何残留物, 同时也是非常良好的清洗剂。

Nitrogen trifluoride (NF₃) is a kind of colorless, odorless and character stable gas, it is also a kind of strong oxidant. Its melting point is 206.8 °C, boiling point is 129.0 °C, insoluble in water. Nitrogen trifluoride in the microelectronics industry is a kind of excellent plasma etching gas, which is cracked into active fluorine ion during the process of plasma etching. For the plasma etching of silicon and silicon nitride, using nitrogen trifluoride has higher etching rate and selectivity than using of carbon tetrafluoride or carbon tetrafluoride and oxygen mixed gas, especially in the process of etching integrated circuit material with the thickness of less than 1.5 μm, nitrogen trifluoride has excellent etching rate and selectivity, what's more, there is no pollution on the surface of etched material, it is also a good cleaning agent.

2、产品指标 Quality specification

项目 Items	单位 Unit	指标 Indexs				
三氟化氮 (NF ₃) ≥	Vol.%	99.5	99.9	99.98	99.99	99.996
四氟化碳 (CF ₄) ≤	Vol.ppm	1500	500	100	50	20
氮气 (N ₂) ≤	Vol.ppm	700	50	10	10	5
氧加氩 (O ₂ +Ar) ≤	Vol.ppm	700	50	10	5	3
一氧化碳 (CO) ≤	Vol.ppm	50	10	10	5	1
二氧化碳 (CO ₂) ≤	Vol.ppm	25	10	10	5	0.5
氧化亚氮 (N ₂ O) ≤	Vol.ppm	50	10	10	5	1
六氟化硫 (SF ₆) ≤	Vol.ppm	50	50	10	5	2
可水解氟化物 Hydrolyzable fluoride (Measured by HF) ≤	Vol.ppm	1	1	1	1	1
水 (H ₂ O) ≤	Vol.ppm	1	1	1	1	1

3、产品用途 Application

三氟化氮可用作高能化学激光气的氟源，又可用于多晶硅、氮化硅、硅化钨等半导体材料的蚀刻剂。其亦可用作半导体芯片生产的化学气相沉积室和液晶显示器面板的清洗剂，使用三氟化氮作为 CVD 箱清洗剂，与全氟烃相比，可减少污染物排放量约 90%，且可显著提高清洗速度，提升清洗能力。

Nitrogen trifluoride can be used as fluorine source of high energy chemical laser gas and as etching agent for semiconductor materials such as polysilicon, silicon nitride and tungsten silicide. It can also be used as a cleaning agent for chemical vapor deposition chamber and LCD panel. Nitrogen trifluoride is used as a cleaning agent for CVD box, which can reduce pollutant emission by 90% compared with perfluorocarbons, and significantly improve the cleaning speed and cleaning capacity.

4、包装 Packaging

三氟化氮充装在钢质无缝气瓶中，钢瓶容积分别为 8L、40L、43.3L、47L；钢瓶压力为 9.0-13.0MPa。具体包装规格可根据用户需求定制更改。

Nitrogen trifluoride is filled in a steel seamless cylinder with the volume of 8L, 40L, 43.3L and 47L, respectively. The pressure of cylinder is 9.0-13.0MPa. Packaging specifications can be customized according to customers' requirements.