

# 三氯化硼 11 Boron11 Trichloride

## 1、产品介绍 Product introduction

常温常压下三氯化硼 11 ( $B^{11}Cl_3$ ) 为无色发烟气体，可燃，有刺激性、酸性气味，遇水分解生成氯化氢和硼酸，并放出大量热量，在湿空气中因水解而生成烟雾，在醇中分解为盐酸和硼酸酯。三氯化硼 11 反应能力较强，能形成多种配位化合物，三氯化硼加热能和玻璃、陶瓷起反应，也能和许多有机物反应形成各种有机硼化合物。高纯三氯化硼 11 主要用于（硅）半导体器件制造工艺中的扩散掺杂，在高温下，经过分解生成硼杂质向硅中扩散，形成 P 型半导体，也可用于 Al、 $MoSi_2$ 、 $TaSi_2$ 、 $TiSi_2$ 、 $WSi$  等材料的干法蚀刻。

At normal temperature and pressure, boron trichloride( $BCl_3$ ) is colorless smoke gas, which is flammable, pungent, acidic odor. Boron trichloride decomposes into hydrochloric acid and boric acid and releases a lot of heat encountering with water, it generates smoke in wet air because of hydrolysis, and  $BCl_3$  decomposes into hydrochloric acid and boric acid ester in alcohol. Boron trichloride has a strong reaction ability and can form a variety of coordination compounds. Boron trichloride can react with glass and ceramic when heated, and it also reacts with many organic compounds to form a variety of organoboron compounds. High purity boron11 trichloride is mainly used for diffusion doping in the manufacturing process of (silicon) semiconductor devices. Boron impurities are generated through decomposition of  $BCl_3$  and diffuse toward silicon to form p-type semiconductor at high temperature.  $BCl_3$  can also be used for dry etching of Al,  $MoSi_2$ ,  $TaSi_2$ ,  $TiSi_2$ ,  $WSi$  and other materials.

## 2、产品指标 Quality specification

项目 Items	单位 Units	指标 Index
三氯化硼 11 Boron11 Trichloride $\geq$	Vol.%	99.9995
氧+氩 Oxygen+Argon<	Vol.ppm	1
氮 Nitrogen<	Vol.ppm	4
一氧化碳 Carbon monoxide<	Vol.ppm	0.5
二氧化碳 Carbon dioxide<	Vol.ppm	0.2
甲烷 Methane <	Vol.ppm	0.5
总杂质含量 Total impurity content $\leq$	Vol.ppm	5
金属离子 Metal ion	Vol.ppm	供需双方商定 Supply and demand agreement

## 3、产品用途 Application

高纯三氯化硼 11 主要用于半导体器件和集成电路制造中扩散掺杂、离子注入、干法蚀刻等工艺。三氯化硼 11 也可用以制造高纯硼、有机合成用催化剂、硅酸盐分解时的助熔剂，在合金精制中作为除氧剂、氮化物和碳化物的添加剂。

High pure boron11 trichloride is mainly used in diffusion doping, ion implantation, dry etching and other processes in semiconductor devices and integrated circuit manufacture. Boron trichloride can be used to manufacture high pure boron, catalyst for organic synthesis, fluxing agent for silicate decomposition, and it also used as additive of deoxidizer, nitrides and carbides in alloy refining.

## 4、包装、贮藏 Packaging and storage

三氯化硼 11 充装于钢瓶中，包装规格为 10L 和 47L，具体包装规格可根据用户要求定制更改。产品储存于阴凉、干燥、通风库房内，库房温度低于 60℃。严禁暴晒，远离热源。包装必须密封，与碱类等危险品分开储存。

Boron11 trichloride is filled in the cylinder. The packaging specifications include 10L and 47L. The product is stored in a shady, dry and ventilated storeroom below 60℃. It is forbidden to expose to the sun and keeps away from heat sources. The package must be sealed and it should be separately stored with alkali and other hazardous articles.