

HfCl₄



Properties: It is white crystalline solid. It is strongly oxidizing, corrosive and hygroscopic, and it hydrolyzes to form hafnium hydroxide and hydrochloric acid after contact with air. It is insoluble in most organic solvents, soluble in anhydrous ether and carbon tetrachloride.

Uses: High-k thin film deposition precursor in ALD/CVD process for high-end integrated circuit manufacturing; key raw material for synthesizing hafnium-containing thin film precursors.

· Identifier

Chemical Formula	HfCl ₄
CAS No.	13499-05-3
EINECS No.	236-826-5

· Physical and chemical properties

Molecular weight	320.3 g/mol	Flash point	-18℃	Reactivity	strong hygroscopicity, easy hydrolysis
Appearance	White solid	Melting point	320℃	Solubility	soluble in anhydrous ether and carbon tetrachloride
Density	1.89 g/cm ³	Boiling point	315℃	Storage	Keep away from inflammables and oxidants, keep sealed and anhydrous

· Metal impurities

Impurities	Unit	Specification	Impurities	Unit	Specification
Ag	ppm	≤0.2	Na	ppm	≤1
Al	ppm	≤0.2	Nb	ppm	≤0.2
As	ppm	≤0.2	Ni	ppm	≤0.5
Ba	ppm	≤0.2	P	ppm	≤1
Ca	ppm	≤0.2	Pb	ppm	≤0.2
Cd	ppm	≤0.2	Sb	ppm	≤0.2
Co	ppm	≤0.2	Si	ppm	≤1
Cr	ppm	≤0.2	Sn	ppm	≤0.2
Cu	ppm	≤0.2	Sr	ppm	≤0.2
Fe	ppm	≤0.5	Ti	ppm	≤0.5
Ga	ppm	≤0.2	U	ppm	≤0.2
Ge	ppm	≤1	V	ppm	≤0.2
K	ppm	≤1	W	ppm	≤0.2
Li	ppm	≤0.2	Zn	ppm	≤0.2
Mg	ppm	≤0.2	Zr	ppm	≤200
Mn	ppm	≤0.2	Mo	ppm	≤0.2
Total	ppm	≤1(except Zr)			

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