

ALADDIN SCIENTIFIC CORPORATION

14078 Meridian Parkway, Riverside, CA. 92518

## Certificate of Analysis

Date of Testing: 2022-05-18 17:31:00  
Date of Next Testing: 2025-05-17 17:31:00  
Product Name: **Hafnium chloride**  
CAS Number: 13499-05-3  
Specifications & Purity: Ultra dry, 99.9% (metals basis), Zr<0.5%  
Lot #: E2204154  
SKU #: **H284098**  
**Analysis:** **082500**  
Storage Temperature: Argon charged

Parameter	Limit Values	Result
Purity (Chloride Titration by AgNO <sub>3</sub> )	43.4-45.2 (%)	44.40 %
Purity(Based On Trace Rare Earth Analysis)	99.9-100(%)	99.90 %
Trace Metal Analysis	0-1500(ppm)	1000.00 ppm
Zirconium(Zr)	0-0.5(%)	0.30 %
Water by Karl Fischer	< 50 (ppm)	2.00 ppm
Appearance(H284098)	White Powder	White powder
ICP:Confirms Hafnium Component	Confirmed	Confirmed



John Su  
QA & QC Manager