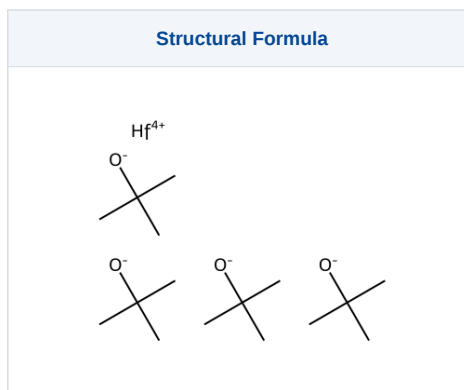


CERTIFICATE OF ANALYSIS

Standard product specification — applicable to all consignments of this product and grade supplied by Scapex Exports Pvt. Ltd., manufacturer and supplier of quality chemicals.

Product Name	Hafnium tert-butoxide
C.A.S. Number	2172-02-3
Molecular Formula	C ₁₆ H ₃₆ HfO ₄
Molecular Weight	470.95
Grade / Standard	99.9% (metals basis), excluding Zr(Zr
Physical Form	Crystalline powder
Product Category	Inorganic Salts & Compounds
Country of Origin	India



ANALYTICAL RESULTS

S. No.	Test Parameter	Specification	Result	Method
1	Description	Crystalline powder	Complies	Visual
2	Identification	Conforms to the structure of the substance	Complies	FTIR / Chemical test
3	Solubility	As per specification	Complies	Visual / Monograph
4	Assay	Not less than 99.9 % w/w	100.00	Titrimetry / Instrumental
5	Matter Insoluble in Water	Not more than 0.05 % w/w	0.016	Gravimetry
6	pH (5 % w/v aqueous solution)	As per specification	7.0	Potentiometry
7	Chloride (as Cl)	Not more than 0.01 % w/w	0.0016	Turbidimetry / IC
8	Sulphate (as SO ₄)	Not more than 0.02 % w/w	0.0067	Turbidimetry / IC
9	Iron (as Fe)	Not more than 20 ppm	2.7 ppm	ICP-OES / AAS
10	Heavy Metals (as Pb)	Not more than 10 ppm	Less than 5 ppm	ICP-OES
11	Moisture	Not more than 1.0 % w/w	0.23	Karl Fischer / Gravimetry
12	Structure	Conforms to reference structure	Complies	FTIR / NMR

Remarks

Material supplied against this specification is analysed on every production lot and **conforms** to the limits stated above in all tested parameters. Results shown are the typical values obtained for this grade.

Retained samples are held against every export consignment. Store in tightly closed original packing, in a cool, dry, well-ventilated place away from incompatible materials and direct sunlight.

Checked and Approved by

Prem Panchal
Quality Assurance
Scapex Exports Pvt. Ltd.

This document sets out the standard specification for the product named above and applies to all consignments of this grade. It is issued by Scapex Exports Pvt. Ltd. as manufacturer and supplier. Refer to the Material Safety Data Sheet (MSDS) before handling.