



Certificate of Analysis

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Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System
Standard ISO9001:2015 by SAI Global Certificate Number CERT – 0120633

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Products are for research use or further manufacturing. Not for direct administration to humans or animals. It is the responsibility of the final formulator and end user to determine suitability based on the intended use of the end project. Products are tested to meet the analytical requirements of the noted grade. The following information is the actual analytical results obtained.

Catalog Number	A467	Quality Test / Release Date	10/02/2025
Lot Number	1225081	Expiration Date	10/02/2028
Description	NITRIC ACID (OPTIMA)		
Country of Origin	Canada		
Chemical Origin	Inorganic		
BSE/TSE Comment	No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product.		

Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Clear, colorless liquid
ASSAY (HNO ₃)	% by w/w	67 - 70%	68%
ALUMINUM (Al)	ppt	<= 20	< 1
ANTIMONY (Sb)	ppt	<= 10	< 0.01
ARSENIC (As)	ppt	<= 20	< 0.02
BARIUM (Ba)	ppt	<= 10	< 0.05
BERYLLIUM (Be)	ppt	<= 10	< 0.01
BISMUTH (Bi)	ppt	<= 10	< 0.01
BORON (B)	ppt	<= 10	< 5
CADMIUM (Cd)	ppt	<= 10	< 0.01
CALCIUM (Ca)	ppt	<= 10	< 2
CERIUM (Ce)	ppt	<= 10	< 0.01
CESIUM (Cs)	ppt	<= 10	< 0.01
CHROMIUM (Cr)	ppt	<= 10	< 1
COBALT (Co)	ppt	<= 10	< 0.5
COPPER (Cu)	ppt	<= 10	< 5
DYSPROSIUM (Dy)	ppt	<= 1	< 0.01
ERBIUM (Er)	ppt	<= 1	< 0.01
EUROPIUM (Eu)	ppt	<= 1	< 0.01
GADOLINIUM (Gd)	ppt	<= 1	< 0.01
GALLIUM (Ga)	ppt	<= 10	< 0.01
GERMANIUM (Ge)	ppt	<= 10	< 0.01
GOLD (Au)	ppt	<= 20	< 1
HAFNIUM (Hf)	ppt	<= 10	< 0.01
HOLMIUM (Ho)	ppt	<= 1	< 0.01
INDIUM (In)	ppt	<= 1	< 0.01
IRON (Fe)	ppt	<= 10	< 5
LANTHANUM (La)	ppt	<= 1	< 0.01
LEAD (Pb)	ppt	<= 10	< 0.2
LITHIUM (Li)	ppt	<= 10	< 0.01
LUTETIUM (Lu)	ppt	<= 1	< 0.01

Result Name	Units	Specifications	Test Value
MAGNESIUM (Mg)	ppt	<= 10	< 0.5
MANGANESE (Mn)	ppt	<= 10	< 0.1
MERCURY (Hg)	ppt	<= 50	< 5
MOLYBDENUM (Mo)	ppt	<= 10	< 0.1
NEODYMIUM (Nd)	ppt	<= 1	< 0.01
NICKEL (Ni)	ppt	<= 20	< 5
NIOBIUM (Nb)	ppt	<= 1	< 0.01
PALLADIUM (Pd)	ppt	<= 20	< 0.1
PLATINUM (Pt)	ppt	<= 20	< 0.1
POTASSIUM (K)	ppt	<= 10	< 0.2
PRASEODYMIUM (Pr)	ppt	<= 1	< 0.01
RHENIUM (Re)	ppt	<= 10	< 0.01
RHODIUM (Rh)	ppt	<= 10	< 0.01
RUBIDIUM (Rb)	ppt	<= 10	< 0.01
RUTHENIUM (Ru)	ppt	<= 20	< 0.05
SAMARIUM (Sm)	ppt	<= 1	< 0.01
SCANDIUM (Sc)	ppt	<= 10	< 0.01
SELENIUM (Se)	ppt	INFORMATION ONLY	< 10
SILVER (Ag)	ppt	<= 10	< 0.01
SODIUM (Na)	ppt	<= 10	< 0.5
STRONTIUM (Sr)	ppt	<= 10	< 0.01
TANTALUM (Ta)	ppt	INFORMATION ONLY	< 10
TELLURIUM (Te)	ppt	<= 1	< 0.01
TERBIUM (Tb)	ppt	<= 1	< 0.01
THALLIUM (Tl)	ppt	<= 10	< 0.01
THORIUM (Th)	ppt	<= 1	< 0.01
THULIUM (Tm)	ppt	<= 1	< 0.01
TIN (Sn)	ppt	<= 20	< 0.1
TITANIUM (Ti)	ppt	<= 10	< 0.2
TUNGSTEN (W)	ppt	<= 10	< 0.2
URANIUM (U)	ppt	<= 1	< 0.01
VANADIUM (V)	ppt	<= 10	< 0.01
YTTERBIUM (Yb)	ppt	<= 1	< 0.01
YTTRIUM (Y)	ppt	<= 1	< 0.01
ZINC (Zn)	ppt	<= 10	< 0.2
ZIRCONIUM (Zr)	ppt	<= 10	< 0.01

Kalyan Paruchuri - Quality Control Supervisor - Bridgewater

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above.
If there are any questions with this certificate, please call at (800) 227-6701.

*Based on suggested storage condition.