

## Nitric Acid, TraceMetal Grade, Fisher Chemical

Product Code		Typical Value	Typical Value
<b>A509</b>	Maximum Specification	One Year Storage in Glass	One Year Storage in Polyethylene
Assay (HNO <sub>3</sub> , w/w )	67 - 70%	69%	69%
Colour (APHA)	10	< 10	< 10
<b>Analyte</b>	<b>Trace Impurities (in µg/g, ppm)</b>		
Chloride (Cl)	0.2	< 0.2	< 0.2
Total Phosphorus (P)	0.01	< 0.01	< 0.01
Total Sulphur (S)	0.3	< 0.3	< 0.3
<b>Analyte</b>	<b>Trace Impurities (in ng/g, ppb)</b>		
Aluminum (Al)	1	5	< 0.5
Antimony (Sb)	0.5	< 0.5	< 0.1
Arsenic (As)	0.5	< 0.5	< 0.1
Barium (Ba)	0.1	< 0.1	< 0.1
Beryllium (Be)	0.1	< 0.1	< 0.1
Bismuth (Bi)	0.1	< 0.1	< 0.1
Boron (B)	1	< 1	< 0.5
Cadmium (Cd)	0.5	< 0.1	< 0.1
Calcium (Ca)	1	10	< 0.5
Cerium (Ce)	0.1	< 0.1	< 0.1
Cesium (Cs)	0.1	< 0.1	< 0.1
Chromium (Cr)	1	< 0.5	< 0.5
Cobalt (Co)	0.5	< 0.1	< 0.1
Copper (Cu)	0.5	< 0.5	< 0.1
Dysprosium (Dy)	0.1	< 0.1	< 0.1
Erbium (Er)	0.1	< 0.1	< 0.1
Europium (Eu)	0.1	< 0.1	< 0.1
Gadolinium (Gd)	0.1	< 0.1	< 0.1
Gallium (Ga)	0.1	< 0.1	< 0.1
Germanium (Ge)	0.1	< 0.1	< 0.1
Gold (Au)	0.1	< 0.1	< 0.1
Hafnium (Hf)	0.1	< 0.1	< 0.1
Holmium (Ho)	0.1	< 0.1	< 0.1
Indium (In)	0.1	< 0.1	< 0.1
Iron (Fe)	1	2	< 0.5
Lanthanum (La)	0.1	< 0.1	< 0.1
Lead (Pb)	0.1	< 0.1	< 0.1
Lithium (Li)	0.1	< 0.1	< 0.1
Lutetium (Lu)	0.1	< 0.1	< 0.1
Magnesium (Mg)	1	1	< 0.1
Manganese (Mn)	0.1	< 0.1	< 0.1
Mercury (Hg)	0.1	< 0.1	< 0.1
Molybdenum (Mo)	0.1	< 0.1	< 0.1
Neodymium (Nd)	0.1	< 0.1	< 0.1
Nickel (Ni)	0.5	< 0.5	< 0.1
Niobium (Nb)	0.1	< 0.1	< 0.1
Palladium (Pd)	0.5	< 0.1	< 0.1
Platinum (Pt)	0.5	< 0.1	< 0.1
Potassium (K)	1	1	< 0.1
Praseodymium (Pr)	0.1	< 0.1	< 0.1
Rhenium (Re)	0.1	< 0.1	< 0.1
Rhodium (Rh)	0.5	< 0.1	< 0.1
Rubidium (Rb)	0.1	< 0.1	< 0.1
Ruthenium (Ru)	0.5	< 0.1	< 0.1
Samarium (Sm)	0.1	< 0.1	< 0.1
Scandium (Sc)	0.1	< 0.1	< 0.1
Selenium (Se)	1	< 0.5	< 0.5
Silver (Ag)	0.1	< 0.1	< 0.1
Sodium (Na)	1	25	< 1
Strontium (Sr)	0.1	< 0.1	< 0.1
Tantalum (Ta)	Information Only	< 0.1	< 0.1
Tellurium (Te)	0.1	< 0.1	< 0.1
Terbium (Tb)	0.1	< 0.1	< 0.1
Thallium (Tl)	0.1	< 0.1	< 0.1
Thorium (Th)	0.1	< 0.1	< 0.1
Thulium (Tm)	0.1	< 0.1	< 0.1
Tin (Sn)	0.5	< 0.5	< 0.1
Titanium (Ti)	0.5	< 0.5	< 0.1
Tungsten (W)	0.1	< 0.1	< 0.1
Uranium (U)	0.1	< 0.1	< 0.1
Vanadium (V)	0.5	< 0.5	< 0.1
Ytterbium (Yb)	0.1	< 0.1	< 0.1
Yttrium (Y)	0.1	< 0.1	< 0.1
Zinc (Zn)	0.5	0.5	< 0.1
Zirconium (Zr)	0.1	< 0.1	< 0.1

## Hydrochloric Acid, TraceMetal Grade, Fisher Chemical

Product Code	Maximum Specification	Typical Value One Year Storage in Glass	Typical Value One Year Storage in Polyethylene
<b>A508</b>			
Assay (HCl, w/w):	34 - 37%	35%	35%
Colour (APHA)	10	< 10	< 10
Analyte	Trace Impurities (in µg/g, ppm)		
Bromide (Br <sup>-</sup> )	10	< 10	< 10
Free Chlorine (Cl <sub>2</sub> )	0.5	< 0.5	< 0.5
Total Phosphorus (P)	0.01	< 0.01	< 0.01
Total Sulphur (S)	0.3	< 0.3	< 0.3
Analyte	Trace Impurities (in ng/g, ppb)		
Aluminum (Al)	1	5	< 0.5
Antimony (Sb)	0.5	< 0.5	< 0.1
Arsenic (As)	0.5	< 0.5	< 0.1
Barium (Ba)	0.1	< 0.1	< 0.1
Beryllium (Be)	0.1	< 0.1	< 0.1
Bismuth (Bi)	0.1	< 0.1	< 0.1
Boron (B)	1	< 1	< 0.5
Cadmium (Cd)	0.1	< 0.1	< 0.1
Calcium (Ca)	1	10	< 0.5
Cerium (Ce)	0.1	< 0.1	< 0.1
Cesium (Cs)	0.1	< 0.1	< 0.1
Chromium (Cr)	0.5	< 0.5	< 0.1
Cobalt (Co)	0.1	< 0.1	< 0.1
Copper (Cu)	0.5	< 0.5	< 0.1
Dysprosium (Dy)	0.1	< 0.1	< 0.1
Erbium (Er)	0.1	< 0.1	< 0.1
Europium (Eu)	0.1	< 0.1	< 0.1
Gadolinium (Gd)	0.1	< 0.1	< 0.1
Gallium (Ga)	0.1	< 0.1	< 0.1
Gold (Au)	0.5	< 0.1	< 0.1
Hafnium (Hf)	0.1	< 0.1	< 0.1
Holmium (Ho)	0.1	< 0.1	< 0.1
Indium (In)	0.1	< 0.1	< 0.1
Iron (Fe)	1	2	< 0.5
Lanthanum (La)	0.1	< 0.1	< 0.1
Lead (Pb)	0.1	< 0.1	< 0.1
Lithium (Li)	0.1	< 0.1	< 0.1
Lutetium (Lu)	0.1	< 0.1	< 0.1
Magnesium (Mg)	0.5	1	< 0.1
Manganese (Mn)	0.1	< 0.1	< 0.1
Mercury (Hg)	0.1	< 0.1	< 0.1
Molybdenum (Mo)	0.1	< 0.1	< 0.1
Neodymium (Nd)	0.1	< 0.1	< 0.1
Nickel (Ni)	0.5	< 0.5	< 0.1
Niobium (Nb)	0.1	< 0.1	< 0.1
Palladium (Pd)	Information Only	< 0.1	< 0.1
Platinum (Pt)	Information Only	< 0.1	< 0.1
Potassium (K)	1	1	< 0.1
Praseodymium (Pr)	0.1	< 0.1	< 0.1
Rhenium (Re)	0.1	< 0.1	< 0.1
Rhodium (Rh)	0.1	< 0.1	< 0.1
Rubidium (Rb)	0.1	< 0.1	< 0.1
Ruthenium (Ru)	0.1	< 0.1	< 0.1
Samarium (Sm)	0.1	< 0.1	< 0.1
Scandium (Sc)	0.1	< 0.1	< 0.1
Selenium (Se)	1	< 0.5	< 0.5
Silver (Ag)	1	< 0.1	< 0.1
Sodium (Na)	1	25	< 1
Strontium (Sr)	0.1	< 0.1	< 0.1
Tantalum (Ta)	Information Only	< 0.1	< 0.1
Tellurium (Te)	0.1	< 0.1	< 0.1
Terbium (Tb)	0.1	< 0.1	< 0.1
Thallium (Tl)	0.1	< 0.1	< 0.1
Thorium (Th)	0.1	< 0.1	< 0.1
Thulium (Tm)	0.1	< 0.1	< 0.1
Tin (Sn)	0.5	< 0.5	< 0.1
Titanium (Ti)	0.5	< 0.5	< 0.1
Tungsten (W)	0.1	< 0.1	< 0.1
Uranium (U)	0.1	< 0.1	< 0.1
Vanadium (V)	0.5	< 0.5	< 0.1
Ytterbium (Yb)	0.1	< 0.1	< 0.1
Yttrium (Y)	0.1	< 0.1	< 0.1
Zinc (Zn)	1	0.5	< 0.1
Zirconium (Zr)	0.1	< 0.1	< 0.1