



CHOICE, QUALITY AND VALUE FROM THE WORLD LEADER IN SCIENCE

Trace Metal Analysis

As low as 1 to 100 ppt



OPTIMA® for Ultra Trace Metal analysis

as low as 1-100 ppt level detection

The highest purity of acids & bases: all products are certified below 100 parts per trillion (ppt or pg/g).

This range contains the fewest trace metallic impurities of any other acids tested up to 65 parameters at ppt levels.

FISHER CHEMICAL OPTIMA® PACKAGING:

Teflon FEP bottle, Teflon PFA with HCl and HF (to avoid vapor permeability issues)

- 1 Bottled in class 10 clean room conditions.
- 2 Individually double bagged in class 100 clean room for product integrity.
- 3 Each bottle is packaged individually.



Product Code	Description	Pack size	Type of packaging
A/0415/07	Acetic acid glacial min. 99%	250 ml	Pre-cleaned Teflon FEP
A/0415/08		500 ml	
A/0415/15		1 l	
A/3365/07	Ammonia solution 20-22%	250 ml	Pre-cleaned HDPE
A/3365/08		500 ml	
A/3365/15		1 l	
H/0955/08	Hydrobromic acid 44-49%	500 ml	Pre-cleaned Teflon FEP
H/1205/07	Hydrochloric acid 32-35%	250 ml	Pre-cleaned Teflon PFA
H/1205/08		500 ml	
H/1205/15		1 l	
H/1435/07	Hydrofluoric acid 47-51%	250 ml	Pre-cleaned Teflon PFA
H/1435/08		500 ml	
H/1435/15		1 l	
H/1830/08	Hydrogen peroxide 30-32%	500 l	Pre-cleaned Teflon FEP
N/2275/07	Nitric acid 67-70%	250 ml	Pre-cleaned Teflon FEP
N/2275/08		500 ml	
N/2275/15		1 l	
P/1295/07	Perchloric acid 65-71%	250 ml	Pre-cleaned Teflon FEP
P/1295/08		500 ml	
P/1295/15		1 l	
S/9225/07	Sulfuric acid 93-98%	250 ml	Pre-cleaned Teflon FEP
S/9225/08		500 ml	
S/9225/15		1 l	
W/0115/08	Water	500 ml	Pre-cleaned LDPE
W/0115/15		1 l	

The Certificate of Analysis is delivered with each bottle & available on the website.

Instrumentation
from Thermo Fisher Scientific

ICP-Mass Spectrometry

ICP-MS is the routine tool for multielement analysis. From ultra-trace (ppq) to matrix (%) elements in a large variety of samples – the whole periodic table can be analyzed routinely in a few minutes. Thermo Fisher Scientific provides the most complete range of ICP-MS instrumentation.

To exploit the full power of ICP-MS chemicals of highest quality and purity are prerequisite.

Thermo Fisher Scientific with its combined strengths in chemicals and analytical instrumentation guarantees unmatched quality for highest performance and undisputable results. Fisher Scientific Optima® Series provides a full range of chemicals for ultra-pure analysis – superiority is guaranteed by quality control when using unparalleled instrumentation from Thermo Fisher Scientific.

For more information, go to www.thermo.com/trace



TRACE METAL® Grade for Trace Metal analysis

1 ppb level detection

High purity acids and bases: these products are certified below one part per billion (ppb or ng/g) and tested up to 65 parameters at ppb levels.



FISHER CHEMICAL TRACE METAL® PACKAGING:

- 1 Safety packaging PVC coated bottle: even if the glass bottle breaks, the safety coating will remain intact.
- 2 Bottled in class 10 clean room conditions.

Product Code	Description	Pack size	Type of packaging
A/0418/PB08 A/0418/PB15	Acetic acid glacial min. 99%	500ml 1l	PVC coated bottle
A/3362/08	Ammonia solution 20-22%	500ml	HDPE bottle
H/1202/PB08 H/1202/PB15	Hydrochloric acid 34-37%	500ml 1l	PVC coated bottle
H/1432/08	Hydrofluoric acid 47-51%	500ml	LDPE bottle
N/2273/PB08 N/2273/PB15	Nitric acid 67-70%	500ml 1l	PVC coated bottle
P/1292/PB08 P/1292/PB15	Perchloric acid 67-71%	500ml 1l	PVC coated bottle
S/9232/PB08 S/9232/PB15	Sulfuric acid 94-98%	500ml 1l	PVC coated bottle

The Certificate of Analysis is available on the website.

TRACE METAL® 1 ppb level detection

Instrumentation
from Thermo Fisher Scientific

ICP Emission Spectrometry

Fast multi-element analysis

ICP is a fast multi-element analysis technique capable of determining up to 72 elements in a very wide range of samples including food, environmental, metallurgy and petrochemical samples. With detection limits ranging from sub ppb to % levels and typical analysis times of 60-90 seconds, it is ideally suited for busy laboratories with a large workload. The Thermo Scientific iCAP 6000 Series is a dramatically different ICP specifically designed to have high performance, occupy less bench space, be easier to use, and reduce the cost of ownership.

The best performing ICP on the market deserves the best reagents. Thermo Scientific with its combined strengths in reagents and instrumentation guarantees unmatched quality for highest performance and the best results. Fisher Chemical Trace Metal® and Primar® grade reagents allow the ultimate performance of the iCAP to be achieved and guarantee high quality results every time.

For more information, go to www.thermo.com/trace



PRIMAR PLUS® for Trace Metal analysis

I-10 ppb level detection

Range of acids for trace elemental analysis tested up to 40 parameters at ppb levels.



FISHER CHEMICAL PRIMAR PLUS® PACKAGING:

- 1 Safety packaging coated glass bottle.

Product Code	Description	Pack size	Type of packaging
A/0411/PB07	Acetic acid glacial min. 99%	250 ml	coated glass bottle
A/0411/PB08		500 ml	
A/0411/PB15		1 l	
A/0411/PB17		2,5 l	
H/1196/PB07	Hydrochloric acid min. 35% d=1,18	250 ml	coated glass bottle
H/1196/PB08		500 ml	
H/1196/PB15		1 l	
H/1196/PB17		2,5 l	
N/2272/PB08	Nitric acid min. 68% d=1,42	500 ml	coated glass bottle
N/2272/PB15		1 l	
N/2272/PB17		2,5 l	
S/9231/PB07	Sulfuric acid min. 95% d=1,83	250 ml	coated glass bottle
S/9231/PB08		500 ml	
S/9231/PB15		1 l	
S/9231/PB17		2,5 l	

The Certificate of Analysis is available on the website – Lot Analysis is available on the label.

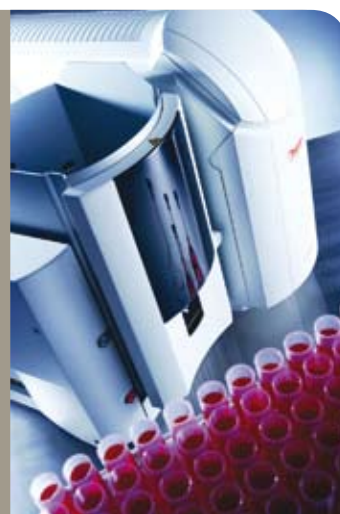
PRIMAR PLUS®
I-10 ppb level detection

Instrumentation
from Thermo Fisher Scientific

AA spectrometry

AA spectrometry provides parts per million and parts per billion detection limits for most metallic elements in many different sample matrices with minimal interferences. Although invented over 50 years ago AA is still the technique of choice for many laboratories. Thermo Scientific has developed revolutionary stylish, intelligent and fully automatic AA spectrometers coupled with intelligent accessories that will meet and exceed your performance criteria for a wide range of analyses including environmental, clinical, food and WEEE/RoHS applications.

For more information, go to www.thermo.com/trace



Do you want to improve your detection limits?



Look closer for answers to your analytical challenges

At a time when you are striving for new levels of integration, sensitivity and performance in your laboratories, Thermo Fisher Scientific's portfolio of solutions provides an unmatched breadth of offering from the most common to the most complex applications.

Quality products with the highest specification

The specifications of the new Optima[®] and Trace Metal[®] Grade grades offer unmatched reliability and quality.

OPTIMA[®]

OPTIMA [®] Nitric Acid, N/2275		
Assay (HNO ₃ , w/w):	67 - 70%	70%
Analyte	Trace Impurities in ppt (pg/g)	
	Maximum Specifications	Typical Values
Aluminum (Al)	20	<10
Antimony (Sb)	10	<10
Arsenic (As)	20	<10
Barium (Ba)	10	<1
Beryllium (Be)	10	<5
Bismuth (Bi)	10	<0.1
Boron (B)	20	<10
Cadmium (Cd)	10	<1
Calcium (Ca)	20	<10
Cerium (Ce)	10	<0.05
Cesium (Cs)	10	<0.05
Chromium (Cr)	20	<10
Cobalt (Co)	10	<1
Copper (Cu)	20	<3
Dysprosium (Dy)	1	<0.01
Erbium (Er)	1	<0.01
Europium (Eu)	1	<0.01
Gadolinium (Gd)	1	<0.01
Gallium (Ga)	10	<1
Germanium (Ge)	10	<1
Gold (Au)	20	<10
Hafnium (Hf)	10	<0.05
Holmium (Ho)	1	<0.01
Indium (In)	1	<1
Iron (Fe)	20	<10
Lanthanum (La)	1	<0.05
Lead (Pb)	10	<1
Lithium (Li)	10	<1
Lutetium (Lu)	1	<0.01
Magnesium (Mg)	10	<5
Manganese (Mn)	10	<2
Mercury (Hg)	100	<20
Molybdenum (Mo)	10	<1
Neodymium (Nd)	1	<0.05
Nickel (Ni)	50	<10
Niobium (Nb)	1	<1
Palladium (Pd)	20	<10
Platinum (Pt)	20	<1
Potassium (K)	10	<5
Praseodymium (Pr)	1	<0.05
Rhenium (Re)	10	<1
Rhodium (Rh)	10	<1
Rubidium (Rb)	10	<1
Ruthenium (Ru)	20	<10
Samarium (Sm)	1	<0.01
Scandium (Sc)	10	<1
Selenium (Se)	Information only	<20
Silver (Ag)	10	<2
Sodium (Na)	10	<5
Strontium (Sr)	10	<1
Tantalum (Ta)	Information only	<10
Tellurium (Te)	1	<1
Terbium (Tb)	1	<0.01
Thallium (Tl)	10	<0.1
Thorium (Th)	1	<0.05
Thulium (Tm)	1	<0.01
Tin (Sn)	20	<10
Titanium (Ti)	10	<10
Tungsten (W)	10	<5
Uranium (U)	1	<0.01
Vanadium (V)	10	<1
Ytterbium (Yb)	1	<0.01
Yttrium (Y)	1	<1
Zinc (Zn)	20	<5
Zirconium (Zr)	10	<1

TRACE METAL[®] GRADE

TRACE METAL [®] GRADE Nitric Acid, N/2273		
Assay (HNO ₃ , w/w):	67 - 70%	70%
Colour (APHA)	10	<10
Analyte	Trace Impurities (in ppb)	
	Maximum Specifications	Typical Values
Aluminum (Al)	1	<0.5
Antimony (Sb)	1	<0.1
Arsenic (As)	1	<0.1
Barium (Ba)	1	<0.1
Beryllium (Be)	1	<0.1
Bismuth (Bi)	1	<0.1
Boron (B)	1	<0.5
Cadmium (Cd)	1	<0.1
Calcium (Ca)	1	<0.5
Cerium (Ce)	0.5	<0.1
Cesium (Cs)	0.5	<0.1
Chromium (Cr)	1	<0.5
Cobalt (Co)	1	<0.1
Copper (Cu)	1	<0.1
Dysprosium (Dy)	0.5	<0.1
Erbium (Er)	0.5	<0.1
Europium (Eu)	0.5	<0.1
Gadolinium (Gd)	0.5	<0.1
Gallium (Ga)	0.5	<0.1
Germanium (Ge)	0.5	<0.1
Gold (Au)	0.5	<0.1
Hafnium (Hf)	0.5	<0.1
Holmium (Ho)	0.5	<0.1
Indium (In)	0.5	<0.1
Iron (Fe)	1	<0.5
Lanthanum (La)	0.5	<0.1
Lead (Pb)	1	<0.1
Lithium (Li)	1	<0.1
Lutetium (Lu)	0.5	<0.1
Magnesium (Mg)	1	<0.2
Manganese (Mn)	1	<0.1
Mercury (Hg)	1	<0.2
Molybdenum (Mo)	1	<0.1
Neodymium (Nd)	0.5	<0.1
Nickel (Ni)	1	<0.1
Niobium (Nb)	0.5	<0.1
Palladium (Pd)	0.5	<0.1
Platinum (Pt)	0.5	<0.1
Potassium (K)	1	<0.2
Praseodymium (Pr)	0.5	<0.1
Rhenium (Re)	0.5	<0.1
Rhodium (Rh)	0.5	<0.1
Rubidium (Rb)	0.5	<0.1
Ruthenium (Ru)	0.5	<0.1
Samarium (Sm)	0.5	<0.1
Scandium (Sc)	0.5	<0.1
Selenium (Se)	1	<0.1
Silver (Ag)	1	<0.1
Sodium (Na)	1	<0.2
Strontium (Sr)	1	<0.1
Tantalum (Ta)	Information only	<0.1
Tellurium (Te)	0.5	<0.1
Terbium (Tb)	0.5	<0.1
Thallium (Tl)	0.5	<0.1
Thorium (Th)	1	<0.1
Thulium (Tm)	0.5	<0.1
Tin (Sn)	1	<0.1
Titanium (Ti)	1	<0.1
Tungsten (W)	0.5	<0.1
Uranium (U)	1	<0.1
Vanadium (V)	1	<0.1
Ytterbium (Yb)	0.5	<0.1
Yttrium (Y)	0.5	<0.1
Zinc (Zn)	1	<0.2
Zirconium (Zr)	1	<0.1
Analyte	Trace Impurities (in ppb)	
Chloride (Cl)	0.2	<0.2
Total Phosphorus (P)	0.01	<0.01
Total Sulfur (S)	0.3	<0.3

Product Overview

Choose from a complete product range:

- Convenient and safe packaging
- Highest quality reagents
- Select between Optima[®], Trace Metal[®] Grade and Primar Plus[®], depending on your application.
- Complete specifications and certificates of analysis are available.



Description	Pack size	Optima [®] as low as 1-100 ppt level detection	Trace Metal [®] Grade 1 ppb level detection	Primar Plus [®] 1-10 ppb level detection
Acetic acid glacial min. 99%	250 ml	A/0415/07		A/0411/PB07
	500 ml	A/0415/08	A/0418/PB08	A/0411/PB08
	1 l	A/0415/15	A/0418/PB15	A/0411/PB15
	2,5 l			A/0411/PB17
Ammonia solution 20-22%	250 ml	A/3365/07		
	500 ml	A/3365/08	A/3362/08	
	1 l	A/3365/15		
Hydrobromic acid 44-49%	500 ml	H/0955/08		
Hydrochloric acid 32-35%	250 ml	H/1205/07		H/1196/PB07
	500 ml	H/1205/08	H/1202/PB08	H/1196/PB08
	1 l	H/1205/15	H/1202/PB15	H/1196/PB15
	2,5 l			H/1196/PB17
Hydrofluoric acid 47-51%	250 ml	H/1435/07		
	500 ml	H/1435/08	H/1432/08	
	1 l	H/1435/15		
Hydrogen peroxide 30-32%	500 ml	H/1830/08		
Nitric acid 67-70%	250 ml	N/2275/07		
	500 ml	N/2275/08	N/2273/PB08	N/2272/PB08
	1 l	N/2275/15	N/2273/PB15	N/2272/PB15
	2,5 l			N/2272/PB17
Perchloric acid 65-71%	250 ml	P/1295/07		
	500 ml	P/1295/08	P/1292/PB08	
	1 l	P/1295/15	P/1292/PB15	
Sulfuric acid 93-98%	250 ml	S/9225/07		S/9231/PB07
	500 ml	S/9225/08	S/9232/PB08	S/9231/PB08
	1 l	S/9225/15	S/9232/PB15	S/9231/PB15
	2,5 l			S/9231/PB17
Water	500 ml	W/0115/08		
	1 l	W/0115/15		

Order today !

Fisher Chemical reagents for trace metal analysis are available from the Fisher Scientific distribution network globally.



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