

Trace Metal Grade Acids and Bases

Now packaged in Polybottles

Fisher Chemical high purity acids and bases have set the standard of excellence for demanding applications involving trace metal analysis in diverse fields such as environmental testing and electronics research. Popular instrument systems such as atomic absorption spectroscopy (AAS) and inductively coupled plasma mass spectrometry (ICP-MS) require samples prepared with the the highest purity acids in order to carry out exacting measurements of trace metal content.

Selected Fisher Chemical Trace Metal Grade Acids and Bases are now available in polybottles (Table 1). These bottles consist of a new high density polyethylene made with a proprietary resin that provides up to 80% less metallic extractables compared to glass. This new packaging material for Trace Metal Acids and Bases provides more convenience and stability during transport coupled with increased resistance to breakage compared to conventional glass packaging.

Tables 2 and 3 show trace metal content by ICP-MS in A509 Nitric Acid and A508 Hydrochloric Acid after one year of storage in a polyethylene bottle. The highlighted analytes demonstrate a reduction in the level of metallic extractables from polyethylene compared to glass.

KEY FEATURES

- Best acids available in the market due to low metallic extractables from the polybottles (up to 80% less than glass bottles).
- Proprietary distillation techniques achieve metal concentrations in the sub-ppb range.
- From date of manufacture expiration date for A509 (Nitric Acid) is 2 years and 3 years for all other products. The actual expiration date is given on the product label.

PACKAGING ADVANTAGES

- Polybottles provide reduced weight for safer and easier handling in the laboratory and limited or no breakage during transportation.
- Fully recyclable package and polybottle for reduced waste disposal.
- Polybottles take up less space than glass bottles, providing better chemical storage space utilization in the laboratory.
- With the polybottle there is no longer a need to remove the PVC coating on glass to allow for disposal in landfills or recycling glass.



A508-P500 and A508-P212

TABLE 1. FISHER CHEMICAL TRACE METAL GRADE ACIDS AND BASES PACKAGED IN NEW POLYBOTTLE

NEW CATALOG NUMBER	PRODUCT NAME	PACK SIZE	CURRENT CATALOG NUMBER (PVC COATED OR HDPE BOTTLE)
A507-P500	Acetic Acid, Trace Metal Grade	500 mL	A/0418/PB08
A507-P1		1L	A/0418/PB15
A507-P212		2.5 L	no
A512-P500	Ammonia solution 20-22%, Trace Metal Grade	500 mL	A/3362/08
A508-P500	Hydrochloric Acid 34-37%, Trace Metal Grade	500 mL	H/1202/PB08
A508-P1		1L	H/1202/PB15
A508-P212		2.5 L	H/1202/PB17
A513-500	Hydrofluoric Acid 47-51%, Trace Metal Grade	500 mL	H/1432/08
A509-P500	Nitric Acid 67-70%, Trace Metal grade	500 mL	N/2273/PB08
A509-P1		1L	N/2273/PB15
A509-P212		2.5 L	N/2273/PB17
A511-P500	Perchloric Acid 67-71%, Trace Metal Grade	500 mL	P/1292/PB08
A511-P1		1L	P/1292/PB15
A511-P212		2.5 L	P/1292/PB17
A510-P500	Sulfuric Acid 94-98%, Trace Metal Grade	500 mL	S/9232/PB08
A510-P1		1L	S/9232/PB15
A510-P212		2.5 L	S/9232/PB17

TABLE 2. TRACE IMPURITIES BY ICP-MS IN A509 NITRIC ACID AFTER ONE YEAR STORAGE IN NEW POLYETHYLENE BOTTLE

Product Code A509	Max. Spec.	Typical Value*	Product Code A509	Max. Spec.	Typical Value*	Product Code A509	Max. Spec.	Typical Value*	Product Code A509	Max. Spec.	Typical Value*
Assay (HNO ₃ , w/w)	67 - 70%	69%	Cesium (Cs)	0,1	< 0.1	Magnesium (Mg)	1	< 0.1	Sodium (Na)	1	< 1
Colour (APHA)	10	< 10	Chromium (Cr)	1	< 0.5	Manganese (Mn)	0,1	< 0.1	Strontium (Sr)	0,1	< 0.1
Analyte	Trace Impurities (µg/g, ppm)		Cobalt (Co)	0,5	< 0.1	Mercury (Hg)	0,1	< 0.1	Tantalum (Ta)	Info Only	< 0.1
Chloride (Cl-)	0,2	< 0.2	Copper (Cu)	0,5	< 0.1	Molybdenum (Mo)	0,1	< 0.1	Tellurium (Te)	0,1	< 0.1
Total Phosphorus (P)	0,01	< 0.01	Dysprosium (Dy)	0,1	< 0.1	Neodymium (Nd)	0,1	< 0.1	Terbium (Tb)	0,1	< 0.1
Total Sulphur (S)	0,3	< 0.3	Erbium (Er)	0,1	< 0.1	Nickel (Ni)	0,5	< 0.1	Thallium (Tl)	0,1	< 0.1
Analyte	Trace Impurities (ng/g, ppb)		Europium (Eu)	0,1	< 0.1	Niobium (Nb)	0,1	< 0.1	Thorium (Th)	0,1	< 0.1
Aluminum (Al)	1	< 0.5	Gadolinium (Gd)	0,1	< 0.1	Palladium (Pd)	0,5	< 0.1	Thulium (Tm)	0,1	< 0.1
Antimony (Sb)	0,5	< 0.1	Gallium (Ga)	0,1	< 0.1	Platinum (Pt)	0,5	< 0.1	Tin (Sn)	0,5	< 0.1
Arsenic (As)	0,5	< 0.1	Germanium (Ge)	0,1	< 0.1	Potassium (K)	1	< 0.1	Titanium (Ti)	0,5	< 0.1
Barium (Ba)	0,1	< 0.1	Gold (Au)	0,1	< 0.1	Praseodymium (Pr)	0,1	< 0.1	Tungsten (W)	0,1	< 0.1
Beryllium (Be)	0,1	< 0.1	Hafnium (Hf)	0,1	< 0.1	Rhenium (Re)	0,1	< 0.1	Uranium (U)	0,1	< 0.1
Bismuth (Bi)	0,1	< 0.1	Holmium (Ho)	0,1	< 0.1	Rhodium (Rh)	0,5	< 0.1	Vanadium (V)	0,5	< 0.1
Boron (B)	1	< 0.5	Indium (In)	0,1	< 0.1	Rubidium (Rb)	0,1	< 0.1	Ytterbium (Yb)	0,1	< 0.1
Cadmium (Cd)	0,5	< 0.1	Iron (Fe)	1	< 0.5	Ruthenium (Ru)	0,5	< 0.1	Yttrium (Y)	0,1	< 0.1
Calcium (Ca)	1	< 0.5	Lanthanum (La)	0,1	< 0.1	Samarium (Sm)	0,1	< 0.1	Zinc (Zn)	0,5	< 0.1
Cerium (Ce)	0,1	< 0.1	Lead (Pb)	0,1	< 0.1	Scandium (Sc)	0,1	< 0.1	Zirconium (Zr)	0,1	< 0.1
			Lithium (Li)	0,1	< 0.1	Selenium (Se)	1	< 0.5			
			Lutetium (Lu)	0,1	< 0.1	Silver (Ag)	0,1	< 0.1			

TABLE 3. TRACE IMPURITIES BY ICP-MS IN A508 HYDROCHLORIC ACID AFTER ONE YEAR STORAGE IN NEW POLYETHYLENE BOTTLE

Product Code A508	Max. Spec.	Typical Value*	Product Code A508	Max. Spec.	Typical Value*	Product Code A508	Max. Spec.	Typical Value*	Product Code A508	Max. Spec.	Typical Value*
Assay (HCl, w/w):	34 - 37%	35%	Cerium (Ce)	0,1	< 0.1	Lutetium (Lu)	0,1	< 0.1	Silver (Ag)	1	< 0.1
Colour (APHA)	10	< 10	Cesium (Cs)	0,1	< 0.1	Magnesium (Mg)	0,5	< 0.1	Sodium (Na)	1	< 1
Analyte	Trace Impurities (µg/g, ppm)		Chromium (Cr)	0,5	< 0.1	Manganese (Mn)	0,1	< 0.1	Strontium (Sr)	0,1	< 0.1
Bromide (Br-)	10	< 10	Cobalt (Co)	0,1	< 0.1	Mercury (Hg)	0,1	< 0.1	Tantalum (Ta)	Info Only	< 0.1
Free Chlorine (Cl ₂)	0,5	< 0.5	Copper (Cu)	0,5	< 0.1	Molybdenum (Mo)	0,1	< 0.1	Tellurium (Te)	0,1	< 0.1
Total Phosphorus (P)	0,01	< 0.01	Dysprosium (Dy)	0,1	< 0.1	Neodymium (Nd)	0,1	< 0.1	Terbium (Tb)	0,1	< 0.1
Total Sulphur (S)	0,3	< 0.3	Erbium (Er)	0,1	< 0.1	Nickel (Ni)	0,5	< 0.1	Thallium (Tl)	0,1	< 0.1
Analyte	Trace Impurities (ng/g, ppb)		Europium (Eu)	0,1	< 0.1	Niobium (Nb)	0,1	< 0.1	Thorium (Th)	0,1	< 0.1
Aluminum (Al)	1	< 0.5	Gadolinium (Gd)	0,1	< 0.1	Palladium (Pd)	Info Only	< 0.1	Thulium (Tm)	0,1	< 0.1
Antimony (Sb)	0,5	< 0.1	Gallium (Ga)	0,1	< 0.1	Platinum (Pt)	Info Only	< 0.1	Tin (Sn)	0,5	< 0.1
Arsenic (As)	0,5	< 0.1	Germanium (Ge)	<	< 0.1	Potassium (K)	1	< 0.1	Titanium (Ti)	0,5	< 0.1
Barium (Ba)	0,1	< 0.1	Gold (Au)	0,5	< 0.1	Praseodymium (Pr)	0,1	< 0.1	Tungsten (W)	0,1	< 0.1
Beryllium (Be)	0,1	< 0.1	Hafnium (Hf)	0,1	< 0.1	Rhenium (Re)	0,1	< 0.1	Uranium (U)	0,1	< 0.1
Bismuth (Bi)	0,1	< 0.1	Holmium (Ho)	0,1	< 0.1	Rhodium (Rh)	0,1	< 0.1	Vanadium (V)	0,5	< 0.1
Boron (B)	1	< 0.5	Indium (In)	0,1	< 0.1	Rubidium (Rb)	0,1	< 0.1	Ytterbium (Yb)	0,1	< 0.1
Cadmium (Cd)	0,1	< 0.1	Iron (Fe)	1	< 0.5	Ruthenium (Ru)	0,1	< 0.1	Yttrium (Y)	0,1	< 0.1
Calcium (Ca)	1	< 0.5	Lanthanum (La)	0,1	< 0.1	Samarium (Sm)	0,1	< 0.1	Zinc (Zn)	1	< 0.1
			Lead (Pb)	0,1	< 0.1	Scandium (Sc)	0,1	< 0.1	Zirconium (Zr)	0,1	< 0.1
			Lithium (Li)	0,1	< 0.1	Selenium (Se)	1	< 0.5			

* One Year Storage in Polyethylene

For more information, contact your local distributor.



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