

Ultrapur Ultrapure Reagents



Kanto Reagents

For the precise trace analysis of ;

Semi-conductor industries

Ceramics / Nano Technology industries

Environmental analysis for heavy metal ions

Iron and Steel industries

Nonferrous metal industries

Space industries etc.

Ultrapur is the brand name of highly purified reagent group specially designed for precise instrumental trace analysis of metal impurities.

The modern analytical instruments, for example ICP-MS, the detection limit have advanced from ppb (10^{-9}) to ppt (10^{-12}) level.

To solve the increasing demands for highest purity of reagents from modern analytical instruments, Ultrapur acids should have their impurity level less than 10 ppt.



Kanto Kagaku

Typical Lot Analysis

Test items	Acetic acid CH ₃ COOH		Hydrochloric acid HCl		Hydrofluoric acid HF		Nitric acid HNO ₃	
	01021-2B	250mL	18078-1B	250mL	18083-1B	250mL	28163-1B	250mL
Purity	99.2	%	-		-		-	
Concentration	-		31	%	49	%	61	%
Lithium (Li)	< 0.08	ppt	< 0.08	ppt	< 0.08	ppt	< 0.08	ppt
Sodium (Na)	4.7	ppt	2.1	ppt	2	ppt	4	ppt
Potassium (K)	3.8	ppt	1.5	ppt	1.1	ppt	< 1	ppt
Rubidium (Rb)	< 0.05	ppt	< 0.05	ppt	< 0.05	ppt	< 0.05	ppt
Copper (Cu)	1.4	ppt	2.5	ppt	< 1	ppt	2	ppt
Silver (Ag)	< 0.5	ppt	< 0.5	ppt	< 0.5	ppt	< 0.5	ppt
Gold (Au)	< 3	ppt	< 3	ppt	< 3	ppt	< 3	ppt
Beryllium (Be)	< 0.2	ppt	< 0.2	ppt	< 0.2	ppt	< 0.2	ppt
Magnesium (Mg)	2.3	ppt	1	ppt	1.3	ppt	< 0.5	ppt
Calcium (Ca)	7.3	ppt	< 4	ppt	< 4	ppt	< 4	ppt
Strontium (Sr)	< 0.08	ppt	< 0.08	ppt	< 0.08	ppt	< 0.08	ppt
Barium (Ba)	0.9	ppt	< 0.08	ppt	0.7	ppt	< 0.08	ppt
Zinc (Zn)	< 3	ppt	< 3	ppt	< 2.5	ppt	< 3	ppt
Cadmium (Cd)	< 1	ppt	< 1	ppt	< 1	ppt	< 1	ppt
Mercury (Hg)	< 0.3	ppt	0.4	ppt	-		1.3	ppt
Europium (Eu)	-		< 0.3	ppt	< 0.3	ppt	< 0.3	ppt
Thorium (Th)	< 0.05	ppt	< 0.005	ppt	< 0.005	ppt	< 0.005	ppt
Uranium (U)	< 0.02	ppt	< 0.002	ppt	< 0.002	ppt	< 0.002	ppt
Aluminium (Al)	1.8	ppt	3.8	ppt	2	ppt	2.9	ppt
Germanium (Ge)	-		< 4	ppt	< 4	ppt	< 4	ppt
Tin (Sn)	2.0	ppt	< 1	ppt	< 1	ppt	< 1	ppt
Lead (Pb)	< 0.5	ppt	< 0.5	ppt	< 0.5	ppt	1	ppt
Tantalum (Ta)	-		< 0.5	ppt	< 0.5	ppt	< 0.5	ppt
Arsenic (As)	< 0.1	ppt	2.3	ppt	-		< 0.5	ppt
Antimony (Sb)	< 0.5	ppt	< 0.5	ppt	< 0.5	ppt	< 0.5	ppt
Bismuth (Bi)	< 0.3	ppt	< 0.3	ppt	< 0.3	ppt	< 0.3	ppt
Chromium (Cr)	0.7	ppt	1.1	ppt	1.5	ppt	2.5	ppt
Molybdenum (Mo)	-		< 3	ppt	< 3	ppt	< 3	ppt
Tungsten (W)	-		< 6	ppt	< 6	ppt	< 6	ppt
Selenium (Se)	-		< 10	ppt	-		< 10	ppt
Manganese (Mn)	< 0.5	ppt	< 0.5	ppt	< 0.5	ppt	< 0.5	ppt
Iron (Fe)	4.0	ppt	7.3	ppt	8.4	ppt	7.9	ppt
Cobalt (Co)	1.0	ppt	< 0.3	ppt	< 0.3	ppt	< 0.3	ppt
Rhodium (Rh)	-		< 0.3	ppt	< 0.3	ppt	< 0.3	ppt
Nickel (Ni)	8.3	ppt	3.1	ppt	2.2	ppt	2.3	ppt
Platinum (Pt)	-		< 3	ppt	3	ppt	< 3	ppt

Characteristics

1 Removal of impurities below detection limit of analytical instruments.

Ultrapur is purified in a designated clean room using Kanto's exclusive technique. The content of each impure element is reduced to the level of ppt, raising Ultrapur to the highest purity of reagents on the market.

2 Special contamination-proof containers

The glass bottles commonly used for reagents pose a risk of eluting traces of sodium (and other elements contained in glass) under acid/base conditions, leading to deterioration of the product's quality. Ultrapur is dispensed into Teflon (PFA) bottles of carefully selected quality to protect product purity. Thus, you do not worry about contamination from the container during storage. (*Ultrapure water is packed in a polyethylene bottle.)

Typical Lot Analysis

Test items	Perchloric acid HClO ₄		Sulfuric acid H ₂ SO ₄		Ultrapure water H ₂ O		Hydrogen peroxide H ₂ O ₂	
	32059-1B	250mL	37390-1B	250mL	43001-1B	1L	18084-2B	250mL
Purity	-		-		-		-	
Concentration	60	%	96	%	-		31.7	%
Lithium (Li)	< 0.2	ppt	2.3	ppt	< 0.08	ppt	< 0.08	ppt
Sodium (Na)	1.5	ppt	6.7	ppt	3.7	ppt	1.3	ppt
Potassium (K)	< 3	ppt	< 3	ppt	1.3	ppt	< 1	ppt
Rubidium (Rb)	-		-		< 0.05	ppt	< 0.05	ppt
Copper (Cu)	< 3	ppt	< 3	ppt	< 1	ppt	< 1	ppt
Silver (Ag)	< 1	ppt	< 1	ppt	< 0.5	ppt	< 0.5	ppt
Gold (Au)	< 3	ppt	< 3	ppt	< 0.5	ppt	< 3	ppt
Beryllium (Be)	< 0.4	ppt	< 0.4	ppt	< 0.2	ppt	< 0.2	ppt
Magnesium (Mg)	< 1	ppt	1.2	ppt	< 0.5	ppt	1.1	ppt
Calcium (Ca)	< 8	ppt	< 8	ppt	< 4	ppt	6.1	ppt
Strontium (Sr)	< 0.2	ppt	< 0.2	ppt	< 0.08	ppt	< 0.08	ppt
Barium (Ba)	-		-		< 0.08	ppt	0.1	ppt
Zinc (Zn)	< 5	ppt	< 5	ppt	< 3	ppt	< 3	ppt
Cadmium (Cd)	< 3	ppt	< 3	ppt	< 1	ppt	< 1	ppt
Mercury (Hg)	-		-		< 0.3	ppt	-	
Europium (Eu)	-		-		-		< 0.3	ppt
Thorium (Th)	< 0.05	ppt	< 0.05	ppt	< 0.005	ppt	< 0.005	ppt
Uranium (U)	-		-		< 0.002	ppt	< 0.002	ppt
Aluminium (Al)	< 3	ppt	4.6	ppt	2	ppt	< 1	ppt
Germanium (Ge)	-		-		< 4	ppt	< 4	ppt
Tin (Sn)	< 1	ppt	< 1	ppt	< 1	ppt	< 1	ppt
Lead (Pb)	< 1	ppt	< 1	ppt	< 0.5	ppt	< 0.5	ppt
Tantalum (Ta)	-		-		< 0.5	ppt	< 0.5	ppt
Arsenic (As)	-		-		< 0.1	ppt	< 1	ppt
Antimony (Sb)	< 0.5	ppt	< 0.5	ppt	< 0.5	ppt	< 0.5	ppt
Bismuth (Bi)	< 0.5	ppt	< 0.5	ppt	< 0.3	ppt	< 0.3	ppt
Chromium (Cr)	1.4	ppt	< 1	ppt	< 0.5	ppt	< 0.5	ppt
Molybdenum (Mo)	-		-		< 0.5	ppt	< 3	ppt
Tungsten (W)	-		-		< 6	ppt	< 6	ppt
Selenium (Se)	-		-		< 10	ppt	-	
Manganese (Mn)	< 1	ppt	< 1	ppt	< 0.5	ppt	< 0.5	ppt
Iron (Fe)	< 3	ppt	5.1	ppt	2.2	ppt	2.1	ppt
Cobalt (Co)	< 0.5	ppt	< 0.5	ppt	< 0.3	ppt	< 0.3	ppt
Rhodium (Rh)	-		-		-		< 0.3	ppt
Nickel (Ni)	< 3	ppt	< 3	ppt	< 1	ppt	< 1	ppt
Platinum (Pt)	-		-		< 3	ppt	< 3	ppt

Characteristics

3 Addition of newly certificate elements for environmental analysis

To meet your requirements in measuring poisonous metals present in water, soil and air, we have guaranteed ppt levels of mercury, arsenic, and selenium (for 3 products: nitric acid, hydrochloric acid, and ultra-pure water). We guarantee Ultrapur to be free of other poisonous metals prescribed in water quality criteria.

4 Lot-specific Certificate of Analysis

Every lot is tested for elements of impurity by ICP/MS and AAS. The result of each analysis is attached to all the products for a proof of quality.

Precautions

In order to protect the quality of Ultrapur, we recommend you to wear disposable polyethylene gloves without fail and handle Ultrapur in a clean-box, -bench (-hood), or-room of Class 10 or below.

Typical Lot Analysis

Test items	Ammonia solution NH ₃ 01266-3B 250mL		Potassium hydroxide solu. (3mol/L) KOH 32947-3B 250mL		Sodium hydroxide solu. (3mol/L) NaOH 37960-1B 250mL	
	Concentration	28.3	%	15.1	%	11.3
Lithium (Li)	< 0.01	ppb	-		-	
Sodium (Na)	0.13	ppb	-		-	
Potassium (K)	0.22	ppb	-		-	
Copper (Cu)	0.06	ppb	1.8	ppb	1.2	ppb
Silver (Ag)	< 0.01	ppb	-		-	
Beryllium (Be)	< 0.01	ppb	-		-	
Magnesium (Mg)	0.06	ppb	< 1	ppb	< 1	ppb
Calcium (Ca)	0.13	ppb	< 1	ppb	< 1	ppb
Strontium (Sr)	< 0.01	ppb	< 1	ppb	< 1	ppb
Barium (Ba)	0.01	ppb	< 2	ppb	< 2	ppb
Zinc (Zn)	0.04	ppb	10	ppb	4	ppb
Cadmium (Cd)	< 0.01	ppb	0.1	ppb	0.1	ppb
Europium (Eu)	< 0.01	ppb	-		-	
Thorium (Th)	< 0.01	ppb	-		-	
Uranium (U)	< 0.01	ppb	-		-	
Aluminium (Al)	0.08	ppb	17	ppb	15	ppb
Gallium (Ga)	< 0.01	ppb	-		-	
Indium (In)	< 0.01	ppb	-		-	
Thallium (Tl)	0.04	ppb	-		-	
Silicon (Si)	0.70	ppb	-		-	
Germanium (Ge)	< 0.01	ppb	-		-	
Tin (Sn)	< 0.1	ppb	-		-	
Lead (Pb)	0.03	ppb	0.9	ppb	0.1	ppb
Arsenic (As)	< 0.1	ppb	3	ppb	< 3	ppb
Antimony (Sb)	< 0.1	ppb	-		-	
Bismuth (Bi)	0.01	ppb	-		-	
Chromium (Cr)	< 0.01	ppb	-		-	
Manganese (Mn)	0.01	ppb	-		-	
Iron (Fe)	0.28	ppb	4	ppb	2	ppb
Cobalt (Co)	< 0.01	ppb	-		-	
Nickel (Ni)	0.01	ppb	-		-	
Palladium (Pd)	< 0.01	ppb	-		-	



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