Detection of Lead, Mercury and Arsenic in Amino Acid Hydrating Mask

1 Sample solution preparation：

1g sample (precision to one ten thousandth) was weighed and placed in a high pressure digestion can, added with 3mL nitric acid, set aside overnight, then added with 2mL hydrogen peroxide, covered with lid, put into stainless steel outer tank, placed in oven at 140°C for 3h. After that, it was cooled back to room temperature, taken out and transferred to a 10 mL volumetric flask. The tank was to be rinsed with deionized water for at least 3 times.

Pb: The treated solution was injected directly into the machine (matrix modifier is 1% ammonium dihydrogen phosphate)

As: hydride-AAS

2 mL treated solution was taken, added with 1 mL 10% thiourea-ascorbic acid solution, added with 0.53 mL hydrochloric acid, and made up to 10mL.

Carrier solution: 5.3% hydrochloric acid solution

Potassium borohydride: 1.5%

Hg: hydride-AAS

2 mL treated solution was taken, added with 0.5 mL hydroxylamine hydrochloride solution (120 g/L), made up to 10 mL.

Carrier solution: 10% hydrochloric acid solution

Potassium borohydride: 20g/L

2 Experimental equipment and reagents

AA7000 series atomic absorption spectrophotometer (with Pb, As, Hg hollow cathode lamp, EWAI Inc.)

High pressure digestion can

Oven

Hydrogen peroxide: excellent grade purity

Nitric acid (HNO_3): excellent grade purity

Ammonium dihydrogen phosphate: excellent grade purity

Pb standard solution (National Reference Materials Research Center)

As standard solution (National Reference Materials Research Center)

Hg standard solution (National Reference Materials Research Center)

3 Instrument conditions

Parameter	Wavelength (nm)	Slit width (nm)	Lamp current (mA)	Method
As	193.7	0.2	2.0	Hydride - AAS
Hg	253.65	0.2	1.0	Hydride - AAS

Element	Wavelength (λ/nm)	Lamp current (I/mA)	D2 lamp current (I/mA)	Spectral bandpass width (△λ/nm)	Background correction
Pb	283.31	1.3	100	0.2	D2 lamp

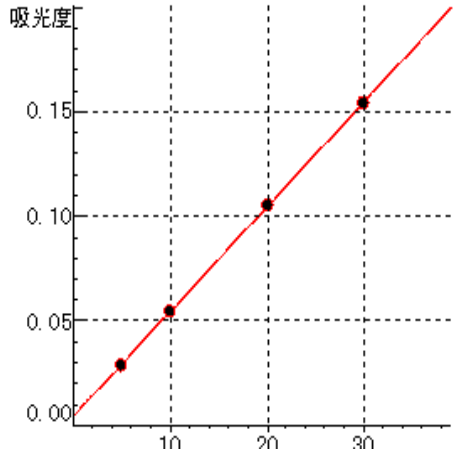
Graphite furnace temperature curve

No	Step	Start temp (℃)	End temp (℃)	Heating time (s)	Inner gas path	Auxiliary gas path	Mode	Alarm
1	Drying	40	90	20	Open	Off	Power	Open
2	Drying	90	120	10	Open	Off	Power	Open
3	Ashing	120	600	10	Open	Off	Power	Open
4	Ashing	600	600	8	Open	Off	Power	Open
5	Ashing	600	600	6	Off	Off	Power	
6	Atomization	2000	2000	3	Off	Off	Power	Open
7	Cleaning	2200	2200	3	Open	Off	Power	
8	Cooling	0	0	20	Open	Off	Power	
9	Cooling	0	0	1	Off	Off	Power	Open

4 Standard solution preparation

Concentration	Concentration (μg/L)				
As	0	1	5	10	20
Hg	0	1	2	5	10
Pb	0	5	10	20	30

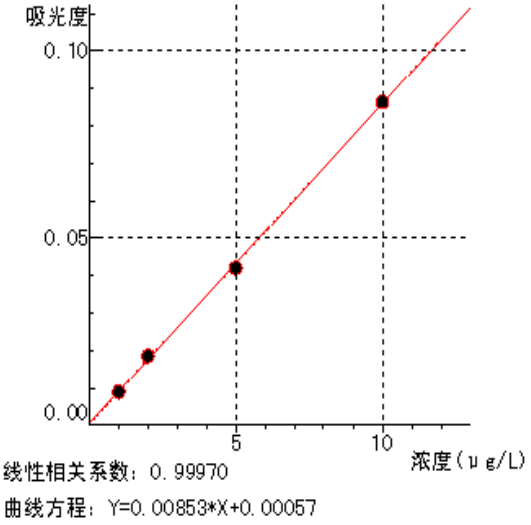
5 Standard curve



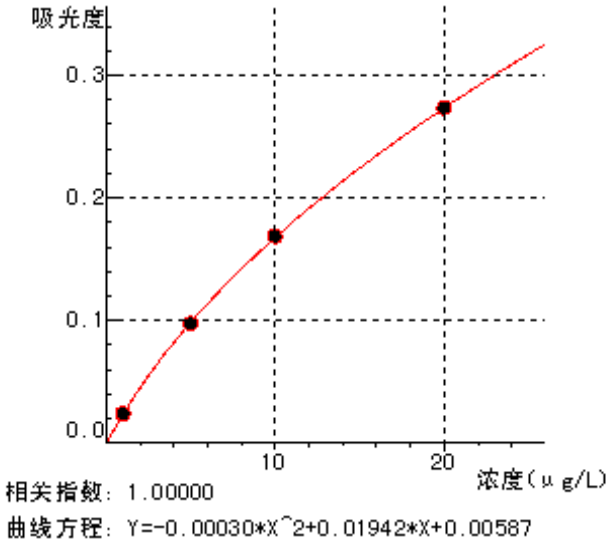
linearity coefficient：0.99990

curve equation：Y=0.00503*X+0.00388

Pb



Hg



As