



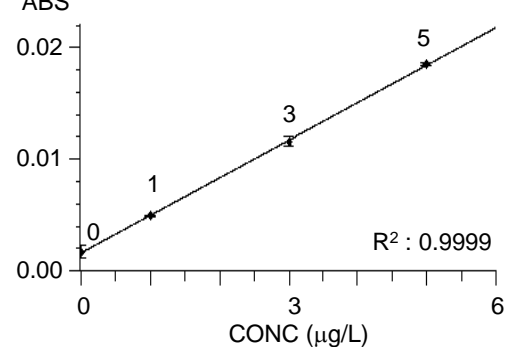
## Analysis of Pb in Milk (Electrothermal Method)

### ZA3000

**INTRODUCTION:** By using the twin injection function, newly installed to the ZA3000 series, lead in milk was analyzed by only diluting with purified water. Milk contains protein, fat, etc. and the stability of the measured values is affected by foams generated during the sample drying stage. By using the specially designed twin cuvette (Pyro D HR), a sample is injected into two different injection ports. Therefore, the size of the liquid droplet is reduced to a half compared to the size when injected in only one port while the amount of the sample injected is the same, resulting in the reduced effect by foaming during the drying. As a result, the analysis with a good reproducibility is possible.

INSTRUMENT CONDITIONS	MEASUREMENT PARAMETERS	GA AUTOSAMPLER																														
Element : Pb Instrument : ZA3000 Atomization : GA Wavelength : 283.3 nm Lamp Current : 7.5 mA Slit Width : 1.3 nm Cuvette : Pyro D HR	Meas. Mode : Working Curve Signal Mode : BKG Corrected Curve Order : Linear Calculation : Peak Area Time Constant : 0.1 sec Temp. Control : ON	Sample Volume : 20 $\mu$ L Addition : Speed : 4 <hr/> <b>MATRIX MODIFIER</b> Matrix Modifier : 1000 mg/L Pd+Mg Volume : 10 $\mu$ L Order : After																														
TEMPERATURE PROGRAM		NOTE																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Stage</th> <th>Initial/Final Temperature (<math>^{\circ}</math>C)</th> <th>Heating/Keeping (sec)</th> <th>Gas Flow Rate (mL/min)</th> <th>Gas</th> </tr> </thead> <tbody> <tr> <td>1 Drying</td> <td>50 / 90</td> <td>60 / 0</td> <td>200</td> <td>Normal</td> </tr> <tr> <td>2 Incineration</td> <td>90 / 300</td> <td>20 / 0</td> <td>200</td> <td>Normal</td> </tr> <tr> <td>3 Atomization</td> <td>800 / 800</td> <td>20 / 0</td> <td>200</td> <td>Normal</td> </tr> <tr> <td>4 Cleaning</td> <td>2000 / 2000</td> <td>0 / 3</td> <td>0</td> <td>Normal</td> </tr> <tr> <td></td> <td>2800 / 2800</td> <td>0 / 4</td> <td>200</td> <td>Normal</td> </tr> </tbody> </table>	Stage	Initial/Final Temperature ( $^{\circ}$ C)	Heating/Keeping (sec)	Gas Flow Rate (mL/min)	Gas	1 Drying	50 / 90	60 / 0	200	Normal	2 Incineration	90 / 300	20 / 0	200	Normal	3 Atomization	800 / 800	20 / 0	200	Normal	4 Cleaning	2000 / 2000	0 / 3	0	Normal		2800 / 2800	0 / 4	200	Normal	The specially designed twin injection cuvette, Pyro D HR, was used for the measurement. The sample diluted to 1/5 with purified water was used for the measurement.	
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CONC ( $\mu$ g/L)	Mean ABS	SD	RSD	REF	ABS
STD 1	0.00	0.0017	0.0006	35.29 %	0.2018
STD 2	1.00	0.0049	0.0001	2.04 %	0.1891
STD 3	3.00	0.0116	0.0004	3.45 %	0.1902
STD 4	5.00	0.0185	0.0001	0.54 %	0.1851
1	0.26	0.0025	0.0001	4.00 %	0.2854
	0.26 $\times$ 5 = 1.30 $\mu$ g/L				
1+ Pb 5 $\mu$ g/L	1.27	0.0059	0.0001	1.69 %	0.2822
	1.27 $\times$ 5 = 6.35 $\mu$ g/L				



Sample	Pb concentration ( $\mu$ g/L)	Recovery rate (%)
Milk	1.30	—
Milk + Pb 5 $\mu$ g/L	6.35	101



<b>KEY WORDS</b> Bio/Medical Science/Food/Pharmaceutical, Food, Food Chemistry, Food Component, Milk, Lead, Pb, Flameless, Graphite Furnace, AA, ZA3000, GA, Pyro D HR, Food	Atomic Absorption Photometer (AA)
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