

# Organic Application Note

## Nitrogen/Protein in Dairy Products

®

### Accessories

502-186 Tin Foil Cups, 501-614 Spatula, disposable eyedroppers

### Sample Weight

0.15 to 0.25 g

### Calibration Standard

502-092 EDTA, 502-211 Glycine, or other suitable standard

### Furnace Temperature

950°C

### Flow Profile

All High

### Atmospheric Blank (N)

~0.04 (solids)

### Protein Factor

6.38

### Crucible Changing Interval

200 to 300 analyses

### Procedure

1. Prepare the instrument by following the procedure as outlined in the operator's instruction manual (i.e. check gas supplies, perform any required maintenance, perform leak checks, etc.).
2. Analyze blanks (gas) until a plateau is reached. Analyze three to five additional blanks and set blank using these data.
3. Analyze five EDTA standards (using the 502-186 Tin Foil Cups) at 0.2 g and drift correct (if using the PC option). *NOTE: Each method on PC requires prior calibration with multiple weights of EDTA (0.035 to 0.4 g). If PC is not installed, analyze five EDTA standards and calibrate using the DSP screen menu.*
4. After mixing the sample well, weigh ~0.25 g dairy product into a 502-186 Tin Foil Cup. Seal the foil cup and analyze.
5. Analyze a standard at end of set to verify calibration.



**FP-528**

## Typical Results

Sample	Weight (g)	% Nitrogen	% Protein
Whey Protein	0.1761	14.81	94.47
Concentrate	0.1514	14.81	94.48
Powder	0.1702	14.78	94.32
	<b>Average</b> =	<b>14.80</b>	<b>94.42</b>
	<b>Std. Dev.</b> =	<b>0.017</b>	<b>0.09</b>
Whey Protein	0.2953	5.51	35.16
Isolate	0.2253	5.51	35.17
Powder	0.2604	5.52	35.20
	<b>Average</b> =	<b>5.51</b>	<b>35.18</b>
	<b>Std. Dev.</b> =	<b>0.006</b>	<b>0.02</b>

Sample	Weight (g)	% Nitrogen	% Protein
Cheddar Cheese	0.2350	3.93	25.06
	0.2675	3.99	25.44
	0.2819	3.97	25.31
	0.2983	3.99	25.47
	<b>Average</b> =	<b>3.97</b>	<b>25.32</b>
	<b>Std. Dev.</b> =	<b>0.024</b>	<b>0.16</b>
Whole Milk	0.2059	4.23	26.98
Powder	0.2013	4.22	26.92
NIST SRM 8435	0.2894	4.23	26.96
4.182 %N	0.2204	4.21	26.86
(dry basis) ±0.053	0.2375	4.22	26.92
	<b>Average</b> =	<b>4.22</b>	<b>26.93</b>
	<b>Std. Dev.</b> =	<b>0.008</b>	<b>0.05</b>



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