

**ANALYSIS OF DAIRY SAMPLES WITH THE FLASH 2000
 COMBUSTION NITROGEN PROTEIN ANALYZER**

- **Large Sample Size Capability**
 - **Inconel crucible for ashes removal**
 - **Easy and fast to maintain**
 - **Reliable and reproducible results**
 - **Conforms to ALL AOAC Methods**
- for Combustion N/Protein (Dumas)**



Description of the analytical method

The Flash 2000 Nitrogen/Protein Analyzer, which is based on the dynamic flash combustion principle, requires no sample digestion or toxic chemicals, while providing important advantages in terms of time, automation, and quantitative determination of nitrogen in all sample matrices. The instrument equipped with the new MAS200R electronic autosampler provides automated, unattended analyses of up to 125 samples. Additionally, the new electronic mass flow control of both the helium carrier gas and oxygen for combustion assures the stability of the analytical conditions and eliminates the need for frequent re-calibration.

Maintenance

With the Inconel crucible the ash removal can be performed at operating conditions (900°C), avoiding time consumed due to cooling down and heating up the reactor. We suggest removing the ash after 100-200 analyses. The crucible, cleaned after cooling, can be used again for further runs. The lifetime of the reactor tube is indefinite with the catalyst lasting from 2,000 to 3,000 analyses. Copper lasts approximately 1,500 samples with a properly optimised OxyTune™.

The sample is weighed into a tin capsule and introduced into the combustion reactor via the MAS200R. The proper amount of oxygen, based on the weight and type of sample, is determined by OxyTune™ and introduced to insure a complete combustion of the sample.

Following combustion, the gases produced are carried by the helium flow through the reduction reactor filled with copper, the swept through CO₂ and H₂O traps, a GC separation column and finally detected by a Thermal Conductivity Detector. **The Eager Xperience dedicated software then automatically generates a complete report.**

Analytical conditions

Combustion temperature:	900°C
Reduction Temperature:	840° C
Oven temperature:	50°C
GC Column:	0.5M Activated Carbon
Helium flow rate:	Measurement: 140 ml/min
	Reference: 100 ml/min
Oxygen flow rate:	300 ml/min
Analytical Time:	300 Seconds
Sample Delay Time:	10 Seconds

Figure 1 – N/Protein Configuration

Analytical Layout of FlashEA™ 1112 Protein Analyzer

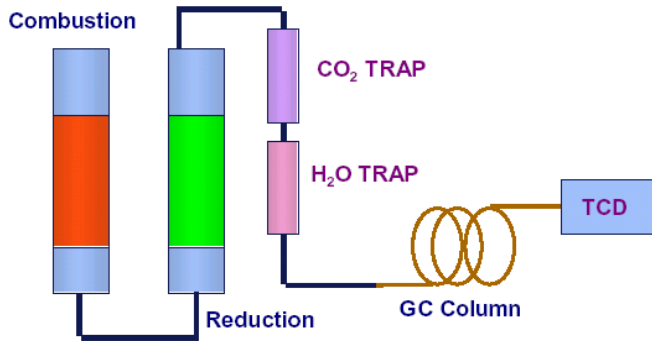


Table 1 – AOAC 990.03 Performance Requirements (10 samples)

Standards	N%	SD %	RSD %
Nicotinic Acid	11.375	0.067	0.590
Lysine-HCl	15.217	0.054	0.361
AOAC Mix N%	3.263	0.012	0.076
AOAC Mix N/P	20.396	0.327	0.373

Liquid Milk	volume (µl)	N %	Protein %
Sample A	100	0.475	2.971
Sample B	100	0.475	2.969
Sample C	100	0.474	2.962
Average		0.475	2.968
% RSD		1.61	1.61
Milk Powder	Weight (mg)	N %	Protein %
Sample A	150	4.25	26.57
Sample B	150	4.24	26.53