

Application Note - The Digestion of Animal Feed

Introduction:

This study evaluated the effectiveness of the *DigiPREP* Jr. to digest animal feed samples. The method is based on the AOAC 957.02a method using AAFCO Milk Replacer 200226 as a reference material.

Sample Type:

Animal feed (AAFCO Milk Replacer 200226)

- Sample weight: 0.5 g.

Supplies and Reagents:

- 1) Graphite block digestion system, *DigiPREP* Jr. *
- 2) *DigiPREP* Touch screen controller *
- 3) *DigiPROBE* *
- 4) *DigiTUBE*s, Polypropylene Flat Bottom Tubes, 50 ml *
- 5) *DigiFILTER*, 45µm
- 6) Nitric Acid, grade *PlasmaPURE* Trace Metal HNO₃ (p/n 250-038-175)
- 7) Hydrochloric Acid, *PlasmaPURE* Trace Metal HCl (p/n 250-038-155)
- 8) Polypropylene watch glass *
- 9) ICP-OES Spectrometer, Spectro Analytical Inc., Spectroflame Modula FMD-07 model
- 10) Baffled Cyclonic spray chamber*
- 11) Nebulizer, Mini X-Flow*
- 12) Torch with alumina injector, 1.2 mm diameter*
- 13) Pasteur pipettes
- 14) Rubber bulb
- 15) Analytical balance
- 16) Deionized water
- 17) Graduated cylinder, Corning, 10 ml *
- 18) Analytical balance

Sample Preparation Procedure:

The sample was weighted directly in the *DigiTUBE*. A mixture of 6 ml of HNO₃ and 1 ml of HCl was then added to the tube. The sample was digested following the temperature profile noted below. At the end of the digestion, the sample was cooled to room temperature and normalized to 50 ml with deionized water. It was then filtered on a *DigiFILTER*.

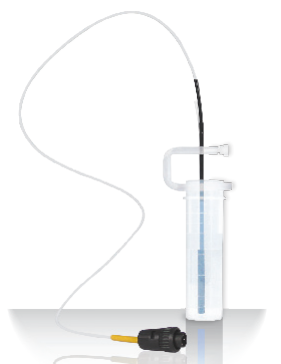


Figure 1. External Temperature Sensor (SCP SCIENCE, *DigiPROBE*)



Figure 2. Polypropylene Class "A" Graduated Digestion Vessel (SCP SCIENCE, *DigiTUBE*)



Figure 3. 24 Position Graphite Digestion Block (SCP SCIENCE, *DigiPREP* Jr.) with Touch Screen Controller (SCP SCIENCE, *DigiPREP* Touch Screen Controller)

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DigiPREP Jr Touch Screen Controlled Heating Program:

STAGE	RAMP TIME (Minutes)	PRESSURE (psi-limit)	TEMPERATURE (°C)	HOLD TIME (Minutes)
1	30	435	45	1
2	30	435	65	5
3	20	435	100	35

Recoveries:

Element Symbol	λ (nm)	DigiPREP Jr. (ppm)	SD (ppm)	Certified Value (ppm)	Uncertainty (ppm)	Recovery (%)
Ca	315.89	9600	400	10400	300	92
Cu	324.75	21.20	2.03	22.10	0.79	96
Na	589.59	6500	400	7000	200	93
Mg	279.08	1700	100	1600	0	106
K	766.49	23000	1100	24200	600	95
Mn	259.37	42.48	7.90	38.76	1.87	109
Fe	259.94	140.13	33.15	154.28	10.23	91
P	213.62	8300	400	8700	300	95
Zn	206.19	79.98	11.50	90.47	5.32	89

References:

Official Methods of Analysis (1988), 16th ed., AOAC

*Manufactured by **SCP SCIENCE**

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CANADA / USA

Tel.: (800) 361-6820

Fax: (800) 253-5549

FRANCE

Tel.: +33 (0) 1 69 18 71 17

Fax: +33 (0)1 60 92 05 67

INTERNATIONAL

Tel.: (514) 457-0701

Fax: (514) 457-4499

www.scpscience.com
sales@scpscience.com