

**Heartland Corn Products
Winthrop, Minnesota**

IOWA TESTING LAB REPORT NO: 04-000543
DATE: 1/27/2004
REC'D DATE: 1/19/2004
METHOD: AOAC; ICP; MOD/AOAC

PROXIMATE ANALYSIS, CALCULATED DE, ME AND NE VALUES FOR SWINE, AND MINERAL AND AMINO ACID CONTENT OF DDGS.¹

Proximate Analysis:

Dry Matter (%)	Crude Protein (%)	Crude Fat (%)	AH Fat (%)	Crude Fiber (%)	Ash (%)	Nitrogen Free Extract (%)	Carbohydrates (%)	Acid Detergent Fiber (%)	Total Digestible Nutrients (%)	Digestible Energy ² (kcal/kg)	Metabolizable Energy ² (kcal/kg)	Net Energy ³ (kcal/kg)
88.20	30.90	11.12	ND ⁴	6.54	6.80	44.64	51.18	9.60	86.66	4036	3786	2206

Mineral Analysis:

Calcium (%)	Phosphorus (%)	Potassium (%)	Magnesium (%)	Sulfur (%)	Sodium (%)	Chloride (%)	Zinc (ppm)	Manganese (ppm)	Copper (ppm)	Iron (ppm)
0.08	0.77	1.00	0.34	0.66	0.18	0.17	52	16	3	108

Amino Acid Analysis:

Arginine (%)	Histidine (%)	Isoleucine (%)	Leucine (%)	Lysine (%)	Methionine (%)	Cystine (%)	Phenylalanine (%)	Threonine (%)	Tryptophan (%)	Valine (%)
1.33	0.87	1.25	3.68	0.96	0.63	0.70	1.53	1.18	0.25	1.68

¹ Nutrient values expressed on 100% dry matter basis.

² DE (for swine) = 4,151 – (122 x % Ash) + (23 x %CP) + (38 x %Fat) – (64 x %Crude Fiber); ME (for swine) = DE x [1.003 - (0.0021 x %CP)], Noblet and Perez (1993).

³ NE (for swine) = 328 + (0.599 x ME) – (15 x %Ash) – (30 x %ADF), Ewan (1989).

⁴ ND = not determined.

APPARENT AND STANDARDIZED TRUE ILEAL DIGESTIBILITY OF CRUDE PROTEIN AND AMINO ACIDS OF DDGS FOR SWINE (100% DRY MATTER BASIS).

	DM	CP	Agr	His	Ile	Leu	Lys	Met	Phe	Thr	Trp	Val	Ala	Asp	Cys	Glu	Gly	Pro	Ser
TOTAL, %	86.4	30.65	1.30	0.80	1.09	3.43	0.93	0.53	1.44	1.14	0.25	1.47	2.23	2.00	0.52	5.11	1.19	2.35	1.43
AID¹, %		57.64	67.10	73.22	68.43	81.15	51.91	77.19	74.33	56.70	48.21	67.87	70.10	57.63	68.57	77.81	25.49	-3.45	66.35
A DIG², %		17.66	0.87	0.58	0.75	2.79	0.48	0.41	1.07	0.64	0.12	0.99	1.56	1.15	0.36	3.98	0.30	-0.08	0.95
SID³, %		66.99	75.72	76.35	71.56	82.90	55.75	78.89	78.13	63.61	56.20	71.51	74.16	63.03	72.65	80.26	52.70	46.94	72.58
S DIG⁴, %		20.53	0.98	0.61	0.78	2.84	0.52	0.42	1.13	0.72	0.14	1.05	1.65	1.26	0.38	4.10	0.63	1.10	1.04

	NDF, %	ADF, %	ADICP ⁵ , %	Mean particle size, µm	Soluble CP, %	Ash, %	Bulk density, lbs/ft3	pH
OTHER	22.66	8.53	2.01	968.97	26.01	3.99	31.91	4.00

¹ AID = Apparent Ileal Digestibility

² A DIG = Apparent Ileal Digestible CP & Amino Acids

³ SID = Standardized True Ileal Digestibility

⁴ S DIG = Standardized True Ileal Digestible CP & Amino Acids

⁵ ADICP = Acid Detergent Insoluble Crude Protein



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