HIGH-PURITY STANDARDS
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Certificate of Analysis

Product Description:

Name: **Soybean Meal**
Part Number: **CRM-SBM-S**
Lot Number: **124122**

Certified Values:

Metals in CRM-SBM-S

Element	Microwave Digestion Conc. (µg/g)			Total Digestion Conc. (µg/g)		
Al	600	±	37	570	±	26
Ca	4370	±	130	4280	±	170
Fe	490	±	14	500	±	20
K	22200	±	1300	21800	±	560
Mg	3260	±	170	3200	±	100
Na	590	±	32	580	±	45
P	6900	±	370	6500	±	400
Ag		< 0.005			< 0.005	
As		< 0.005			< 0.005	
Ba	7.1	±	0.6	6.5	±	0.5
Be		(0.06)			(0.06)	
Cd		(0.05)			(0.05)	
Cr	2.6	±	0.3	2.6	±	0.2
Co	0.66	±	0.03	0.67	±	0.04
Cu	15.9	±	0.9	16.1	±	1.2
Mn	45.9	±	3.1	46.7	±	2.8
Mo		(4)			(3)	
Ni	4.3	±	0.3	4.1	±	0.3
Pb	2.4	±	0.3	2.3	±	0.2
Sb		< 0.005			< 0.005	
Se		< 0.005			< 0.005	
Sn		(2)			< 0.01	
Sr	6.2	±	0.4		(6)	
Tl		< 0.005			< 0.005	
V		< 0.01			< 0.01	
Zn	62	±	5	60	±	4

(Concentrations in parenthesis are given for reference only)

The soybean meal samples are randomly selected and digested using microwave and total digestion methods. The metals are determined by inductively coupled plasma optical emission spectrometry (ICP-OES) and atomic absorption spectrometry (AAS) using an internal laboratory developed methods. The certified values were based on

the combination of results by different analytical techniques. The combined effect of uncertainty components associated with sample variation, errors of measurements and method bias were estimated, and the expanded uncertainty in the certified value was calculated at a 95% confidence interval and coverage factor *k* is approximately 2.

Carbon, Nitrogen and Sulfur in CRM-SBM-S

Analyte	Concentration by mass fraction (%)
C	42.0 ± 1.6
S	(0.4)
N (total)	(7.6)
Protein (crude)	(43.4)*

The values in parenthesis are given for information purpose only
*Factor – 5.71

The soybean meal material is proceeded with vacuum-dry at approximately 25°C for 24 hours at a pressure not greater than 70 Pa (0.5 mm Hg) with a cold trap at a temperature of about -30°C before performing C, N, and S analysis by CNS analyzers

Additional Information:

Ash: 7.1% @ 600ºC for 2 hrs. (AOAC Method 942.05)
Moisture: 10.6% @ 130 ± 3ºC for 2 hrs. (AOAC Method 945.39)

Preparation Information:

This soybean meal was obtained from local Milling Co. The ground soybean meal was sieved and only particles that passed a 35 mesh sieve were saved. The saved material was transferred to a 30-gal polyethylene mixing-drum and blended for several hours. Then the material was bottled into 50-g units under UV lamps. Randomly selected bottles were taken for the homogeneity testing and certification

Traceability Information:

The traceability of this product is maintained through an unbroken chain of comparisons to appropriate standards with suitable procedure and measurement uncertainties. The maintenance of the base and derived units of International System of Units (SI) with traceability of measurement results (contemporary metrology) to SI ensures their comparability over time as follows.

a. **Standard Weight and Analytical Balance**
The standard weights (NBS weights Inventory No 20231A) are calibrated every two years by South Carolina Metrology Laboratory that is a participant in "NIST Weights and Measures Measurement Assurance Program" with a certificate of measurement traceability to NIST primary standards.
The balances are calibrated yearly by the ISO 17025 accredited metrology service, and are verified weekly by an in-house method using standard weights.

b. **Volumetric Device**
The calibration of volumetric vessels is checked annually using the ASTM E542 method

c. **Thermometer**
The standard thermometers are calibrated every year by the ISO 17025 accredited metrology service. The thermometers used in-house are verified against the standard thermometers yearly.

d. Calibration Standards
The calibration standards used for determination of metals are traceable to the NIST SRM3100 series.

Packaging and Storage Conditions:

The soybean meal is packaged in a pre-cleaned amber glass bottle. To maintain the integrity of the material, the product should be kept tightly capped and stored under normal laboratory conditions.

Refer to Material Safety Datasheet (SDS) for hazardous information.

Expiration Information:

The expiry date is guaranteed to be valid for 3 years from the shipping date provided. For this reason, standards from the same lot may have different expiration dates

Shipped Date:

Expiration Date:

Certificate Issue Date: August 20, 2015

Moven Mututuvari

Moven Mututuvari PhD., Laboratory Manager