USDA COMMODITY REQUIREMENTS

CSM1
CORN SOY MILK
FOR USE IN EXPORT PROGRAMS

Effective Date: 10/04/05
Table of Contents

Part 1  COMMODITY SPECIFICATIONS 1
Section 1.1  CORN SOY MILK REQUIREMENTS 1
Section 1.2  QUALITY ASSURANCE 10
Section 1.3  SAMPLING AND TESTING PROTOCOL 10
Section 1.4  QUALITY DISCOUNTS 11

Part 2  CONTAINER AND PACKAGING REQUIREMENTS 12
Section 2.1  GENERAL 12
Section 2.2  CONTAINERS AND MATERIALS 12
Section 2.3  25-KILOGRAM MULTIWALL PAPER BAGS 12
Section 2.4  25-KILOGRAM HIGH PERFORMANCE PACKAGING CONSTRUCTIONS 14
Section 2.5  OUTER CLOSURE AND SEALS 14
Section 2.6  PERFORMANCE TEST PROCEDURES 14
Section 2.7  SEAL PEEL TEST 15

Part 3  MARKING REQUIREMENTS 16
Section 3.1  MARKINGS 16
Section 3.2  MARKING DESCRIPTIONS 17
Section 3.3  EMPTY BAG DIMENSIONS 19
Section 3.4  CONTAINERS WITH INCORRECT MARKINGS 19

Marking Exhibits 21
Part 1  COMMODITY SPECIFICATIONS

Section 1.1  CORN SOY MILK REQUIREMENTS

A. Quality of Corn Soy Milk

(1) Corn shall be sampled and tested for the Cry9C protein pursuant to Food and Drug Administration (FDA) guidelines, and such test results shall be negative.

(2) Corn shall be tested for aflatoxin in accordance with procedures approved by Federal Grain Inspection Service (FGIS). If the aflatoxin test proves positive, a quantitative test shall be performed. If the result of the quantitative test exceeds 20 p.p.b., the corn shall not be used in the production of the commodity.

(3) The product shall be essentially free from foreign material and shall have a good characteristic taste and odor, free from rancid, bitter, musty, sour, and other undesirable or foreign tastes and odors. It shall be identical to or lighter in yellow color than the Munsell Color Standard #13649, and that which is darker in color shall be rejected. Color plate #13649 may be purchased from: Macbeth Division of Kollmogran Corporation, Little Britain Road, Drawer 950, Newburgh, New York 12550.

(4) The product shall be of small particle size suitable for use as a dietary supplement for infants and children for serving as porridge, gruel, or an extender to other foods and shall meet the following requirements:

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirements 1 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture</td>
<td>Minimum</td>
</tr>
<tr>
<td>Protein (N x 6.25)</td>
<td>19.0%</td>
</tr>
<tr>
<td>Fat</td>
<td>6.0%</td>
</tr>
<tr>
<td>Crude Fiber</td>
<td>---</td>
</tr>
<tr>
<td>Material that will pass through a U.S. Standard No. 6 Woven-Wire-Cloth Sieve</td>
<td>99.0%</td>
</tr>
<tr>
<td>Material that will pass through a U.S. Standard No. 30 Woven-Wire-Cloth Sieve</td>
<td>---</td>
</tr>
<tr>
<td>Material that will pass through a U.S. Standard No. 60 Woven-Wire-Cloth Sieve</td>
<td>---</td>
</tr>
<tr>
<td>Consistency (Bostwick Value) uncooked</td>
<td>---</td>
</tr>
<tr>
<td>Consistency (Bostwick Value) cooked, 12.25% gruel</td>
<td>10.0 cm</td>
</tr>
</tbody>
</table>

1 Unless otherwise specified analyses are expressed on a moisture-free basis.

2 For method of analyses see Section 1.1.B.
B. Methods of Analyses

(1) Consistency (Bostwick value) for uncooked product for corn soy milk.
   a. Apparatus
      (i) 1 250 ml. Pyrex beaker
      (ii) 1 wooden-handled spatula with 3-inch stainless steel blade
      (iii) 1 consistometer, Cenco-Bostwick Central Scientific Stock No. 24925
   b. Method
      Place 100 ml. water at 25˚ C in the 250 ml. glass beaker. Gradually add 45.0 grams of corn-soy blend being tested while stirring vigorously with the spatula. Then stir gently for 3 minutes using the spatula to smooth out any lumps that may form. Allow the slurry to stand an additional 2 minutes to complete hydration. Then stir gently for about 15 seconds with the spatula. Pour into the reservoir of the Bostwick consistometer until it is filled higher than its top level. Strike off the excess with a straight edge. Allow the slurry to rest for 30 seconds. Trip the release lever of the consistometer and read the Bostwick value after exactly 1 minute.

(2) Consistency (Bostwick value) for cooked product 12.25 percent gruel for corn-soy-milk.
   a. Apparatus
      (i) 1 400 ml. Pyrex beaker
      (ii) 1 stainless steel kitchen fork
      (iii) 1 30˚ C water bath
      (iv) 1 consistometer, Cenco-Bostwick, Central Scientific Stock No. 24925
   b. Method
      Place 175 grams of boiling water in the 400 ml. beaker, cover with watch glass, and bring to boiling on an electrically heated hot plate with surface temperature 600˚ - 650˚ F. Gradually add 23.5 grams of the commodity to be tested, while stirring vigorously with the fork. Bring to boiling and boil for 2 minutes while stirring vigorously with fork. Remove from the hot plate and stir 1/2-minute.
      Place the cooked slurry in the 30˚ C water bath and hold there for 10 minutes. Place on the scale and add water lost by evaporation so that total slurry weight is now 200 grams. Stir...
25 times with the fork. Place cooked slurry in the 30°C water bath and hold there for 1 hour. Remove from the bath and pour into the reservoir of the Bostwick consistometer until it is filled higher than its top level. Strike off the excess with a straight edge. Allow the cooked slurry to rest for 30 seconds. Trip the release lever of the consistometer and read the Bostwick value after exactly 1 minute.

(3) Consistency for ingredient specification cornmeal, processed (gelatinized).

a. Apparatus
   (i) 1 800 ml. Pyrex beaker
   (ii) 1 wooden-handled spatula with a 5 inch stainless steel blade
   (iii) 1 cylindrical open-bottom container, i.e., a 3 inch long section of seamless steel tubing 3.0 inch o.d. and 2.87 inch i.d.
   (iv) 1 glass plate 10 by 10 inches
   (v) 1 paper measuring scale, 10 by 10 inches containing a drawn 3-inch diameter center circle and concentric circles drawn of increasing diameter every one inch. Space between circles is divided to indicate each 1/4 inch diameter.

b. Method
   Place 400 ml. of water at 25°C in an 800 ml. beaker. Gradually add 125 g. of the gelatinized (processed) cornmeal while stirring vigorously with a wooden-handled spatula with a 5 inch stainless steel blade. Then stir gently for 3 minutes using a spatula to smooth any lumps that may form. Allow the slurry to stand an additional 2 minutes for hydration. Then stir gently for about 10 seconds with the spatula. Place a glass plate over a paper measuring scale and center the cylindrical container over the scale. Transfer the slurry to the retaining cup which is resting in the vertical position on the flat glass plate. Transfer the slurry until the cup is filled higher than its top level. Strike off the excess with a straight edge. Allow the slurry to rest for 30 seconds. Then remove the cup from the glass plate with a vertical pull, avoiding lateral motion. Allow the cup to drain onto the patty for 10 seconds. After waiting 1 minute for the size of the patty to reach equilibrium, read its diameter to the nearest 1/8 inch, as shown on the scaled sheet of paper underneath the glass.

3 Mixing may be done using a Hobart Model N-50, slow speed; or equipment giving equivalent results.
D. Proportions
The ingredients of the product shall be in the following proportions:

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Pounds per 2,000-lb. Batch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cornmeal, processed gelatinized ⁴</td>
<td>1,178</td>
</tr>
<tr>
<td>Soy flour, defatted (toasted) ⁵</td>
<td>350</td>
</tr>
<tr>
<td>Nonfat dry milk, spray process</td>
<td>300</td>
</tr>
<tr>
<td>Minerals</td>
<td>60</td>
</tr>
<tr>
<td>Vitamin Premix</td>
<td>2</td>
</tr>
<tr>
<td>Soybean oil, refined, deodorized, stabilized ⁶</td>
<td>110</td>
</tr>
</tbody>
</table>

E. Ingredient Specifications
(1) Cornmeal, Processed (Gelatinized)
   a. Material and Processing
      The cornmeal processed (gelatinized) shall be prepared from shelled yellow corn that has been dehulled and degemred. The corn used shall be clean, sound, and essentially free from other grains, weed seeds, and other foreign material. It shall be free of rancid, bitter, musty, sour, and other undesirable or foreign tastes and odors. The processed cornmeal shall be produced from yellow corn, as defined in the "Official United States Standards for Grain," (http://151.121.3.117/reference-library/standards/standards.htm), in effect at the time the applicable solicitation for offers is issued, using the conventional corn dry-milling process.

      The cornmeal shall be processed by adding moisture and partially cooking in continuous cookers or on heated flaking rolls, drying and cutting, or by any other process that yields a product meeting the requirements for the finished processed cornmeal, and for the corn-soy blend product. A corn germ fraction may be added for fat enrichment prior to cooking.

   b. Analysis
      The cornmeal, processed (gelatinized) shall conform with the

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⁴ A corn germ fraction in amount not over 10 percent of the weight of the mixed product may be added to the cornmeal before processing and the amount of added oil contained therein omitted from the soy oil added to the soy flour fraction or to the final mix, provided the blend contains a minimum of 17.5 percent of fat-free soy flour. The weight of processed cornmeal plus soy oil specified shall include the weight of any corn germ fraction added thereto.

⁵ The stabilized oil may be added to this soy flour fraction or full-fat soy flour may be used in place of all or part of the defatted soy flour plus soy oil, as specified, provided the blend contains a minimum of 17.5 percent fat-free soy flour.

⁶ The stabilized oil may be added to the mix in order to obtain the required minimum fat level of 6.0 percent in the blend.

Any combination of footnotes may be used to obtain desired results.
following detailed requirements:

### Cornmeal (gelatinized)

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
</tr>
<tr>
<td>Moisture</td>
<td>----</td>
</tr>
<tr>
<td>Ash (^8)</td>
<td>----</td>
</tr>
<tr>
<td>Material Through a U.S. Standard No. 6 Woven-Wire-Cloth Sieve</td>
<td>99.0%</td>
</tr>
<tr>
<td>Material Through a U.S. Standard No. 30 Woven-Wire-Cloth Sieve</td>
<td>----</td>
</tr>
<tr>
<td>Material Through a U.S. Standard No. 60 Woven-Wire-Cloth Sieve</td>
<td>----</td>
</tr>
<tr>
<td>Consistency (inches)</td>
<td>4.5</td>
</tr>
<tr>
<td>Total bacteria count, per gram</td>
<td>----</td>
</tr>
</tbody>
</table>

(2) Soy Flour, Defatted (Toasted)

c. Material and Processing

Soy flour, defatted (toasted) shall be the screened, finely-ground product obtained from selected soybeans by cleaning, cracking, dehulling, tempering, flaking, defatting with hexane, desolventizing, deodorizing, toasting (full cook with color change to light yellow or golden buff), and cooling.

d. Analysis

The soy flour, defatted (toasted) shall conform to the following detailed requirements:

### Soy Flour Defatted (Toasted)

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
</tr>
<tr>
<td>Moisture</td>
<td>----</td>
</tr>
<tr>
<td>Protein (N\times6.25) (^9)</td>
<td>50.0%</td>
</tr>
<tr>
<td>Fat (^10)</td>
<td>0.6%</td>
</tr>
<tr>
<td>Fiber</td>
<td>----</td>
</tr>
<tr>
<td>Ash</td>
<td>----</td>
</tr>
<tr>
<td>Material Through a U.S. Standard No. 100 Woven-Wire-Cloth Sieve</td>
<td>95.0%</td>
</tr>
<tr>
<td>Nitrogen Solubility, increase in pH</td>
<td>10.0</td>
</tr>
</tbody>
</table>

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7 For methods of analyses see Section 1.1.B.
8 Moisture-free basis.
9 For methods of analysis see Section 1.1.B.
10 Moisture-free basis.
11 See Section 1.1.D.
### Soy Flour, Full Fat

e. Material and Processing
Soy flour, full fat shall be the screened, finely-ground product obtained from selected soybeans by cleaning, cracking, (optional) dehulling, tempering, cooking (full cook with color change to light yellow or golden buff), and cooling.

f. Analysis
The soy flour, full fat shall conform to the following detailed requirements:

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urease activity, increase in pH</td>
<td>0.05 - 0.15</td>
</tr>
<tr>
<td>Total bacteria count, per gram</td>
<td>---- - 50,000</td>
</tr>
<tr>
<td>Color</td>
<td>Light yellow to golden buff</td>
</tr>
<tr>
<td>Odor</td>
<td>Neutral to nutty</td>
</tr>
<tr>
<td>Taste</td>
<td>Pleasant, neutral to slightly nutty</td>
</tr>
<tr>
<td>Texture</td>
<td>A homogeneous flour</td>
</tr>
</tbody>
</table>

12 For methods of analyses see Section 1.1.B.

13 Moisture-free basis.

14 See Section 1.1.D.
g. Soy oil, refined, deodorized, and stabilized, shall contain 0.005 percent citric acid added on the cooling side of deodorization. The soy oil shall comply with the requirements of the latest revisions and amendments for Commercial Item Description A-A-20091D (May 7, 2002), http://www.ams.usda.gov/fqa/aa20091d.htm; type IV not winterized salad oil.\textsuperscript{15}

h. Before addition to the product, the oil may be stabilized by the addition of butylated hydroxy anisole and butylated hydroxy toluene, each at a level of 2.5 mg. per 100 grams of formulated product. \textbf{Caution:} Antioxidant may be added to either the soy oil or to the vitamin antioxidant premix, but it shall not be added to both.

(5) Nonfat Dry Milk

a. Nonfat dry milk (spray process) is to be furnished by the Government or contractor (as specified in the solicitation) and shall be U.S. Standard Grade or better as defined in Section 58.2528 of U.S. Standard for grades of nonfat dry milk (spray process). Grading certificates shall be dated not more than 180 days prior to the date of manufacture of the corn-soy-milk.

b. If the Government is supplying the milk, the Government shall deliver the nonfat dry milk (spray process) for its account, f.o.b. cars or trucks, at the option of the Government at the contractor’s plant. If the contractor’s plant is not served by a railroad and the Government does not choose to deliver the nonfat dry milk (spray process) f.o.b. trucks, then the Government shall make delivery f.o.b. cars at the railroad delivery point customarily used by the contractor. The cost of unloading the nonfat dry milk (spray process) and any transportation from unloading point to plant shall be at the expense of the contractor. It shall be the responsibility of the contractor to unload cars within the free time period allowed by the railroad. The nonfat dry milk (spray process) shall be delivered in sufficient time for the contractor to begin processing the finished product so as to meet the contract shipping schedule.

c. Since the title to the nonfat dry milk (spray process) delivered by the Government is at all times vested in the Government while such commodity is in the custody of the contractor, the contractor shall not substitute any commodity owned by the Government.

\textsuperscript{15} Analytical Data for type IV Salad Oil in Commercial Item Description A-A-20091D as follows:

(i) Stability, active oxygen method (AOM), PV not greater than 100 meg/kg (hours) maximum: 15 hours
d. The contractor shall be liable for loss, damage, destruction, or deterioration from any cause whatsoever of the nonfat dry milk (spray process) received from the Government until the finished product has been delivered to the Government in accordance with the provisions of the contract. Any quantity of the finished product which is ultimately rejected to the contractor, the nonfat dry milk (spray process) portion of the quantity shall be for the contractor’s account and the Government shall deduct from any amount due the contractor or hold the contractor liable for an amount equal to the value of the nonfat dry milk (spray process) as determined by the Government.

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
</tr>
<tr>
<td>Protein (Nx6.38)</td>
<td>29.0%</td>
</tr>
<tr>
<td>Moisture</td>
<td>----</td>
</tr>
<tr>
<td>Fat</td>
<td>----</td>
</tr>
<tr>
<td>Ash</td>
<td>----</td>
</tr>
<tr>
<td>Standard Plate Count</td>
<td>----</td>
</tr>
<tr>
<td>Coliform Count</td>
<td>----</td>
</tr>
<tr>
<td>Scorched Particles</td>
<td>----</td>
</tr>
<tr>
<td>pH (1:9 dilution at 20° C)</td>
<td>6.6</td>
</tr>
</tbody>
</table>

e. The product shall be a free flowing powder, cream to light yellow in color and bland in flavor. Compliance of modified whey product with these specifications shall be evidenced by an inspection certificate issued by Dairy Division, Agricultural Marketing Service.

(6) Minerals

<table>
<thead>
<tr>
<th>Formulation</th>
<th>Ingredients</th>
<th>Per 2,000 lbs. of Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>2% Tri-Calcium Phosphate</td>
<td>40.0 lbs</td>
</tr>
<tr>
<td>or B</td>
<td>1.8% Calcium Carbonate + 1.6% Monobasic Sodium Phosphate</td>
<td>36.0 lbs</td>
</tr>
<tr>
<td>or C</td>
<td>1.8% Calcium Carbonate + 1.6% Monobasic Potassium Phosphate</td>
<td>36.0 lbs</td>
</tr>
<tr>
<td>or D</td>
<td>1.3% Tri-Calcium Phosphate + 0.6% Dibasic Calcium Phosphate</td>
<td>26.0 lbs</td>
</tr>
<tr>
<td>or E</td>
<td>0.9% Tri-Calcium Phosphate + 0.6% Calcium Carbonate + 0.8% Monobasic Sodium Phosphate</td>
<td>18.0 lbs</td>
</tr>
<tr>
<td>or F</td>
<td>0.9% Tri-Calcium Phosphate + 0.6% Calcium Carbonate + 0.8% Monobasic Potassium Phosphate</td>
<td>18.0 lbs</td>
</tr>
<tr>
<td></td>
<td>1.7% Di-Calcium Phosphate Anhydrous + 0.5% Calcium Carbonate</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>or G</td>
<td>34.0 lbs</td>
<td>10.0 lbs</td>
</tr>
<tr>
<td>or H</td>
<td>2.2% Di-Calcium Phosphate + 0.5% Calcium Carbonate</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Zinc Sulfate, Monohydrate (ZnSO₄ 7H₂O) ¹⁶</td>
<td>0.25 lbs (113.45 g)</td>
</tr>
<tr>
<td>3</td>
<td>Ferrous Fumarate, FCC grade, purified</td>
<td>0.92 lbs (418 g)</td>
</tr>
<tr>
<td>4</td>
<td>Magnesium Oxide (MgO)</td>
<td>2.75 lbs</td>
</tr>
<tr>
<td>5</td>
<td>Iodized Salt (0.007% 12) ¹⁷</td>
<td>16.25 lbs</td>
</tr>
</tbody>
</table>

(7) Vitamin Antioxidant Premix

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Per 2,000 lbs. of Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiamin monoitrate</td>
<td>2.5 grams</td>
</tr>
<tr>
<td>Riboflavin</td>
<td>3.5 grams</td>
</tr>
<tr>
<td>Pyridoxine hydrochloride</td>
<td>1.5 grams</td>
</tr>
<tr>
<td>Niacin</td>
<td>45.0 grams</td>
</tr>
<tr>
<td>Ca D-pantothenate</td>
<td>25.0 grams</td>
</tr>
<tr>
<td>Folic acid</td>
<td>1.8 grams</td>
</tr>
<tr>
<td>Vitamin B12 ¹⁸</td>
<td>12.0 milligrams</td>
</tr>
<tr>
<td>Vitamin A Palmitate (stabilized)¹⁹</td>
<td>21.0 million IU</td>
</tr>
<tr>
<td>Vitamin D (stabilized)</td>
<td>1.8 million IU</td>
</tr>
<tr>
<td>Alpha tocopherol acetate</td>
<td>68,000 IU</td>
</tr>
<tr>
<td>Butylated hydroxy anisole ²⁰</td>
<td>20.0 grams</td>
</tr>
<tr>
<td>Butylated hydroxy toluene</td>
<td>20.0 grams</td>
</tr>
<tr>
<td>Ascorbic acid (stabilized), ethyl-cellulose (coated), Soy flour, defatted (toasted) or starch to reach total weight; (additional soy flour may be added as a carrier, if desired)</td>
<td>364.0 grams</td>
</tr>
<tr>
<td>Total</td>
<td>2.0 lbs.</td>
</tr>
</tbody>
</table>

¹⁶ The amount of zinc sulfate monohydrate shown is equivalent to 0.4 pound zinc sulfate heptahydrate

¹⁷ The increase in iodized salt content represents a 25 percent increase in iodine content from previous specifications as recommended.

¹⁸ Represents a reduction of 67 percent from previous specifications.

¹⁹ Vitamin A Palmitate (stabilized) shall be added in encapsulated form containing 250,000 IU Vitamin A Palmitate/g. Particle size shall comply with the requirement that at least 98 percent shall pass through a U.S. Standard No. 50 sieve, at least 90 percent through a U.S. Standard No. 60 sieve, and at least 45 percent through a U.S. Standard No. 100 sieve. The product shall be not less than 95 percent of the all-trans isomer as determined by the USP assay procedure. The Vitamin A Palmitate shall have storage stability such that not more than 20 percent of its original activity shall be lost when stored for 21 days at 45° C in a sealed container at a level of 10,000 to 12,000 IU per pound in cornmeal having a moisture content in the range of 13.5 to 14.5 percent.

²⁰ If antioxidant is added in soy oil, omit from this premix [See Section I.D (4)]
(8) The minerals and vitamin premix shall not be combined and shall be added to the formulation separately.

Section 1.2 QUALITY ASSURANCE

A. The contractor shall perform the product testing and quality analysis to ensure that the product meets the commodity specifications. The results shall be evidenced by a Certificate of Analysis (COA). Copies of the original COA must be submitted as part of the invoice package. The COA shall provide the results of all tests specified. If quality discounts are provided in the contract, and the product to be delivered by the contractor falls within the quality discount table, those factors shall be identified by an asterisk on the copies of the COA.

B. Contractors shall notify the Government immediately of lots that fail to meet contract requirements.

C. Unless otherwise specified, test methods for the finished product, and any ingredients therein, shall be those of the AOAC INTERNATIONAL, the American Association of Cereal Chemists (AACC), or the American Oil Chemists’ Society (AOCS), as applicable and in effect on the date of issuance of the solicitation, or in accordance with methods that give equivalent results.

Section 1.3 SAMPLING AND TESTING PROTOCOL

A. As a minimum, suppliers shall use the following sampling procedures which are based on FGIS’ Processed Commodities Handbook, Chapter 2.

B. Lot size quantity and sample rate shall be as follows:

<table>
<thead>
<tr>
<th>LOT SIZE (IN POUNDS)</th>
<th>LOT SIZE (IN KILOGRAMS)</th>
<th>NUMBER OF BAGS SAMPLED PER LOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>45,000 OR LESS</td>
<td>20,250 OR LESS</td>
<td>12</td>
</tr>
<tr>
<td>45,001-180,000</td>
<td>20,251 - 81,000</td>
<td>20</td>
</tr>
</tbody>
</table>

The maximum lot size shall be 180,000 pounds or 81,000 Kg.

C. Bags shall be selected for sampling using a random number generator or a random number table. Samples shall be drawn from the selected filled and unclosed bag utilizing a stainless steel single-tube open-ended trier. The trier shall be inserted at one corner of the open end of the filled bag and moved diagonally through the center to the opposite corner of the bottom of the bag.

D. Samples drawn from each sampled bag shall be composited to represent the lot. The composite sample shall weigh approximately five pounds. This composite sample will be divided into two equal subsamples; one will be for analysis and the other retained as a reserve by the supplier.
E. All sample analysis may be performed by the supplier’s own in-house laboratory. The analytical results of each sample may be reported on the Certificate of Analysis (COA), refer to Exhibit C. This form is available at http://www.fsa.usda.gov/daco/export.htm#Forms.

F. The contractor is responsible for ensuring that the commodity is uniform and substantially conforms to the specifications on a bag by bag basis.

G. In the event the Government exercises its right, pursuant to FAR clause 52.246.2, Inspection of Supplies—Fixed Price, to perform its own testing, the following testing methods shall apply and will govern determinations as to whether or not the product meets the required specifications.

<table>
<thead>
<tr>
<th>TESTING METHOD</th>
<th>PROTEIN</th>
<th>MOISTURE</th>
<th>FAT</th>
<th>CRUDE FIBER</th>
<th>IRON</th>
<th>VITAMIN A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AOAC 992.23</td>
<td>AOAC 925.10</td>
<td>AOAC 922.06</td>
<td>AOAC 962.09E</td>
<td>AOAC 999.11</td>
<td>AACC 86-06</td>
</tr>
</tbody>
</table>

Note: Any AOAC testing methods shall be as prescribed in the latest edition of the AOAC’s “Official Methods of Analysis” in effect at the time of testing.

Section 1.4 QUALITY DISCOUNTS

If the product to be delivered by the contractor does not meet the quality specification, but falls within the discounts listed, the product may be delivered to the Government, but the purchase price shall be reduced in accordance with the following schedules of discounts for each 100 pounds of commodity delivered:

<table>
<thead>
<tr>
<th>Corn Soy Milk</th>
<th>Excess Moisture</th>
<th>Deficient Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.6% or 9.7%</td>
<td>$0.10</td>
<td>18.9% thru 18.6%</td>
</tr>
<tr>
<td>9.8% or 9.9%</td>
<td>$0.20</td>
<td>18.5% thru 18.3%</td>
</tr>
<tr>
<td>10.0%</td>
<td>$0.35</td>
<td>18.2% or 18.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Deficient Fat</th>
<th>Excess Crude Fiber</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.9% or 5.8%</td>
<td>$0.10</td>
<td>2.1% thru 2.2%</td>
</tr>
<tr>
<td>5.7% or 5.6%</td>
<td>$0.20</td>
<td>2.3% thru 2.4%</td>
</tr>
<tr>
<td>5.5%</td>
<td>$0.35</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Deficient Granulation Through No. 6 Woven-Wire-Cloth Sieve</th>
<th>Excess Granulation Through No. 30 Woven-Wire-Cloth</th>
</tr>
</thead>
<tbody>
<tr>
<td>98% or 97%</td>
<td>$0.10</td>
<td>93% or 94%</td>
</tr>
<tr>
<td>96% or 95%</td>
<td>$0.20</td>
<td>95% or 96%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Excess Granulation Through No. 60 Woven-Wire-Cloth Sieve</th>
<th>Excess Consistency (Uncooked) Bostwick Units</th>
</tr>
</thead>
</table>
Part 2 CONTAINER AND PACKAGING REQUIREMENTS

Section 2.1 GENERAL
This part provides the container specifications and packaging materials requirements used under this contract.

Section 2.2 CONTAINERS AND MATERIALS
A. All containers and packaging materials shall be manufactured and assembled in the United States. The components that make up the fabricating materials of the containers and packaging materials shall be of U.S. origin to the extent that they are commercially available. Questions concerning the availability of a material should be directed to:
USDA/FSA/DACO
Room 5755 – South Bldg, STOP 0551
1400 Independence Avenue SW
Washington, DC  20250-0551
ATTN: Packaging

B. Constructed to meet the requirements of the Food and Drug Administration (FDA) for safe contact with the packaged product.

C. The contractor shall obtain and maintain documentation from the container or packaging material manufacturer to verify that the containers and packaging materials used in this contract were in compliance with the Government’s requirements.

Section 2.3 25-KILOGRAM MULTIWALL PAPER BAGS
A. Twenty-five kilograms of product shall be packed in Pinch Bottom Open Mouth (PBOM) style multiwall paper bags. The use of recycled materials is not required if performance or food safety is jeopardized.

B. The bag shall have two inner walls of 50-pound nominal basis weight natural kraft paper and an outer third wall of 60-pound nominal basis weight wet strength paper in accordance with Uniform Freight Classification, Rule 40, Section 10, Tables A and B, as amended.

C. The bag shall have a inner plastic liner constructed of linear low density polyethylene (LLDPE) film. The film liner shall:
(1) Be a minimum thickness of 2.5 mil, with a density of 0.914 to 0.929
g/cc and a minimum heat-seal coefficient of 0.60. The film shall have a
minimum impact resistance of 265g when tested in accordance with
ASTM D-1709 Method A, as amended, Falling Dart.

(2) The film liner shall have 8 to 12 micro perforations in each gusset area
to allow for the evacuation of air from the product after filling and
sealing.

(3) Have a sufficient amount of anti-block. It shall be free from any
blocking at 50°C and not subject to reblock at 70°C.

(4) The film liner shall be loose for the full length of the bag except around
the bottom and top closure areas. At the top and bottom closure areas,
the liner shall adhere to the inner-most paper ply (time lamination).
The laminating adhesive shall be machine direction applied in narrow
strips no longer than 4 inches from each end. The use of gravure
lamination to bond the liner to the inner-most paper ply for the entire
length of the bag is prohibited.

(5) Be adhered to prevent product from getting between the inner film and
the next outer paper ply.

(6) Not exceed a maximum average water vapor permeability of 0.65
grams per 100 square inches in 24 hours at 90 percent relative humidity
and a temperature of 100°F plus or minus 5 degrees.

(7) Be manufactured to meet Food and Drug Administration requirements
for food products (21 CFR 177.1520, as amended).

(8) Be heat-sealed at the bottom by the bag manufacturer. The top of the
liner shall be heat-sealed by the packer once the bag has been filled
with product.

D. Longitudinal seams of the outer wall of the bag shall be glued so that there is
no more than 3/16-inch of unglued edge on the outer surface of the bag. The
adhesives used in the longitudinal seams and pasted end closures shall be water
resistant. Water resistant adhesive of outer ply longitudinal seams or pasted
end closures shall be tested for resistance to water in accordance with TAPPI
T456 (Wet Tensile Test), except as follows:

Cut test specimens 1-inch wide so that the longitudinal seam or pasted end
closure runs perpendicular to and is centered relative to the long dimension of
the specimen. The test specimen shall encompass all adhesive bonded areas
included in fabricating the seam or end closure. In the case of multi-ply end
closures, clamp all plies in the jaws of the tester. Immerse the specimens in not
less than 1-inch of the distilled water for 24 hours. Run a wet tensile test. A
test specimen fails the test if failure occurs with the separation of the seam or
closure and less than 25% of the separated adhesive area shows fiber tear.
Failure of more than 10% of the specimens shall be reported as failure of the
adhesive.
Section 2.4 25-KILOGRAM HIGH PERFORMANCE PACKAGING CONSTRUCTIONS

A. Contractors shall utilize one of the following constructions when the solicitation requires the use of high performance packaging:

(1) Multiwall paper bag constructed of: One (1) ply inner film liner guaranteed 2.5 mil. minimum thickness linear low density polyethylene, four (4) plies of 50-pound natural multiwall kraft (N MK) paper, and one (1) outer ply of 60-pound wet strength natural multiwall kraft (WSN MK) paper; or

(2) Multiwall paper bag constructed of: 3.1 mil. (70 grams per square meter) film consisting of two or more layers of co-extruded polyolefin film with alternating angles of orientation, laminated together and biaxially oriented, two (2) plies of 50-pound N MK paper, and one (1) outer ply of 60-pound WSN MK paper. The bag shall be heat-sealed at the bottom, by the bag manufacturer. The top of the liner shall be heat-sealed by the packer once the bag has been filled with products.

(3) Both bag constructions shall:

(a) be uniquely marked with a one (1) inch blue stripe located approximately three (3) inches above the letters “USA” and extending around the width of each bag;

(b) meet the specifications and testing requirements outlined in these commodity requirements.

Section 2.5 OUTER CLOSURE AND SEALS

A. The bottom and top of the 25-kilogram bag shall be closed to provide a tight seal using hot-melt or thermoplastic adhesive applied in a single band along the top edge of the long side of the bag and extending downward at least 3/4 inches. The fold line on the manufacturer closure end shall be 1-3/4 inches plus or minus 1/4-inch. The fold line on the field closure end shall be 1-5/8 inches plus or minus 1/4-inch. Refer to section 3.1.L. for bag closure guide location bars.

B. The outer wall of the bag shall be stepped at the bottom and top fold over flap, beyond all inner walls, in order to provide a positive seal over the ends of the inner walls so that there is no more than 3/16 inches un bonded edge beyond the adhesive line. The inner polyethylene film may be heat-sealed.

Section 2.6 PERFORMANCE TEST PROCEDURES

A. All bags shall be capable of withstanding the following performance test for impact resistance:

(1) Ten filled and sealed bags shall each survive a single drop test on the butt and side on a shock machine that produces for each test a velocity change of 195 inches per second using a shock duration of .002 seconds without loss of product.

(2) Testing shall be conducted under standard temperature (73.4°F plus or minus 1.8°F) and relative humidity (50% plus or minus 2%) conditions.
(3) Filled bags shall be placed in the conditioned atmosphere for sufficient time before the tests are conducted for the bag materials to reach equilibrium.

(4) Bags submitted under this performance specification shall conform to all other applicable material, construction, and performance specifications.

B. Test Laboratories

Independent or private laboratories known to be capable of conducting the shock machine test described above are as follows:

<table>
<thead>
<tr>
<th>Michigan State University</th>
<th>Lansmont Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>School of Packaging</td>
<td>1287 Reamwood</td>
</tr>
<tr>
<td>East Lansing, MI 48824-1223</td>
<td>Sunnyvale, CA 94089</td>
</tr>
<tr>
<td>(517) 355-9580</td>
<td>(408) 734-9724</td>
</tr>
<tr>
<td><a href="http://packaging.msu.edu/">http://packaging.msu.edu/</a></td>
<td>Lansmont Corporation</td>
</tr>
<tr>
<td></td>
<td>6539 Westland Way, Suite 24</td>
</tr>
<tr>
<td></td>
<td>Lansing, MI 48917</td>
</tr>
<tr>
<td></td>
<td>(888) 526-7666</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.lansmont.com">www.lansmont.com</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rutgers University</th>
<th>Ten-E Packaging Services, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging Science and Engineering Dept.</td>
<td>1666 County Road 74</td>
</tr>
<tr>
<td>P.O. Box 909</td>
<td>Newport, MN 55055</td>
</tr>
<tr>
<td>Piscataway, NJ 08854</td>
<td>(651) 459-0671</td>
</tr>
<tr>
<td>(201) 932-3679</td>
<td><a href="http://www.ten-e.com">www.ten-e.com</a></td>
</tr>
</tbody>
</table>

Section 2.7 SEAL PEEL TEST

A. The contractor shall perform periodic seal peel tests on the filling end of multiwall paper bags to determine whether the paper plies are adequately adhered. The seal peel test shall be performed at every start up and a minimum of every hour during commodity packing operations. The seal peel test shall demonstrate tear of paper fiber (fiber tear) for all paper plies. The contractor shall maintain records of seal peel test results for review by the Government.

B. The seal peel test shall be performed as follows:

1. Run an empty bag through the sealing unit.
2. Cut bag approximately 3 to 8 inches below the seal.
3. Cut both gussets along the center crease to the top of the bag end.
4. Spread bag to expose poly liner.
5. Check inside plastic liner along the closure and gussets to determine that the liner is heat-sealed. Pinholes, no larger than 1/8 inch in diameter, are allowable in the closure.
(6) Grip inside fold at center of the bag end.
(7) Pull apart sides of the bag end at the center, separating seals. (If the 
seal is good, fibers shall completely cover adhesive. If the seal is poor, 
glossy adhesive will show).

C. The contractor's seal peel test records shall include the following information 
for each test: date, time, employee's name, product, contract number, railcar 
number, and result of the test. The result of the test shall be reported as either 
"good seal" or "poor seal", "insufficient fiber tear", as applicable. The 
contractor shall take corrective action if the seal peel test indicates a poor seal 
and shall retest until a good seal is achieved.

PART 3 MARKING REQUIREMENTS

Section 3.1 MARKINGS

A. The bags shall be marked in the color specified in the markings exhibits. Any 
markings not shown on the exhibits shall be printed in blue. When printed on the 
bag, the colors blue and red shall match the Pantone Matching System (PMS) 
chart numbers 280 and 200, respectively, to the extent practicable.

B. All dimensions are approximate. Unless otherwise specified, all characters shall 
be in normal block print.

C. The letters USA shall be Univers black (75) oblique, or Helvetica extra bold with 
70% scaling and -70 tracking or equivalent to match the style as shown in the 
exhibits. The letters USA shall be 4 3/4 inches high and 9 3/4 inches in total 
width. The three stripes adjacent USA shall be 1 inch high and shall extend to the 
edge of the panel.

D. The USAID logo shall be printed in the same style as shown in the exhibits. The 
logo shall be sized approximately 4 5/8 inches in diameter. The USDA logo shall 
be 4 1/2 inches high and 6 1/2 inches in total width. See exhibits.

E. The commodity name shall be 1 1/4 inch print. Immediately below the 
commodity name on the front and back panels, insert additional commodity 
description in 5/8 inch print, if applicable.

F. The contract number and the statement "NOT TO BE SOLD OR EXCHANGED" 
shall be 3/4 inch print. The net weight, bag dimensions, and the Standard 
Marking Requirements (SMR) or Language Marking Requirements (LMR) 
number shall be centered at the bottom of the bag in 1/2 inch print. See exhibits. 
The contractor shall obtain a waiver, in writing, from the Government to print the 
contract number using on-line printing on filled bags.

G. The US Flag shall be 5 inches high and 9 inches in total width, on the back of the 
applicable bag. See exhibits.
H. The letters or symbols used in the language markings for LMR-1, LMR-3 and LMR-4, LMR-5, LMR-7, and LMR-8 should be sized approximately 1 5/8 inches. The language markings for LMR-2 and LMR-6 should be sized to fit. See exhibits.

I. Lot numbers, production codes or any other means of identification required to meet the traceability requirement shall be printed as small as possible, yet legible.

J. Gussets. The letters USA shall be 3 inches high and printed in both gussets.

K. Bag Closure Guide Location Bars (BCGL) shall be printed on the front panel of all multi-wall paper bags, as shown in the exhibits. The BCGL bars shall be plainly visible, approximately one inch in length, printed in blue in two parallel rows evenly spaced over the entire width of the bag. The BCGL bars are to be used as visual quality control verification. Visually identifying two bars or no bars on the bag would indicate a bag closure failure. Visually identifying one bar would indicate a proper bag closure. (Exhibits A & B)

Section 3.2 MARKING DESCRIPTIONS

The Government shall furnish required markings within two business days after the date of the contract. The procurement of containers should be deferred for at least two business days after the date of the contract.

The following standard marking requirements may be requested under the contract:

**Standard Marking Requirement #1 (SMR-1)**
**USAID – Distribution**
Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USAID logo, contract number, net weight, dimensions, "SMR-1". See exhibit SMR-1, front.
Back: US Flag in place of the USA with stripes, otherwise same as front. See exhibit SMR-1, back.

**Standard Marking Requirement #2 (SMR-2)**
**FAS - Distribution**
Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USDA logo, contract number, net weight, dimensions, "SMR-2". See exhibit SMR-2, front.
Back: Identical. See exhibit SMR-2, back.

**Standard Marking Requirement #3 (SMR-3)**
**USAID – Monetization**
Front: USA with stripes, the commodity name, USAID logo, contract number, net weight, dimensions, "SMR-3". See exhibit SMR-3, front.
Back: US Flag in place of the USA with stripes, otherwise, same as front. See
Standard Marking Requirement #4 (SMR-4)
FAS or USAID - Monetization
Front: USA with stripes, the commodity name, contract number, net weight, dimensions, “SMR-4”. See exhibit SMR-4, front.
Back: Identical. See exhibit SMR-4, back.

Language Marking Requirement #1 (LMR-1)
USAID – Distribution for North Korea
Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USAID logo, contract number, net weight, dimensions, and “LMR-1.”. See exhibit LMR-1, front.
Back: US Flag, the commodity name, North Korean language panel, and “LMR-1” only. See exhibit LMR-1, back.

Language Marking Requirement #2 (LMR-2)
USAID – Distribution for Afghanistan, with Pashtu and Dari
Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USAID logo, contract number, net weight, dimensions, and “LMR-2.” See exhibit LMR-2, front.
Back: US Flag, the commodity name, Pashtu and Dari language panel, and “LMR-2” only. See exhibit LMR-2, back.

Language Marking Requirement #3 (LMR-3)
USAID – Distribution for South Africa Region
Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USAID logo, contract number, net weight, dimensions, and “LMR-3.”. See exhibit LMR-3, front.
Back: US Flag, the commodity name, English language panel, and “LMR-3” only. See exhibit LMR-3, back.

Language Marking Requirement #4 (LMR-4)
USAID – Distribution for Iraq with Arabic
Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USAID logo, contract number, net weight, dimensions, and “LMR-4.”. See exhibit LMR-4, front.
Back: US Flag, the commodity name, Arabic language panel, and “LMR-4” only. See exhibit LMR-4, back.

Language Marking Requirement #5 (LMR-5)
FAS – Distribution for North Korea
Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USDA logo, contract number, net weight, dimensions, and “LMR-5.”. See exhibit LMR-5, front.
Back: USA with stripes, the commodity name, North Korean language panel, and
“LMR-5” only. See exhibit LMR-5, back.

Language Marking Requirement #6 (LMR-6)
**FAS – Distribution for Afghanistan, with Pashtu and Dari**
Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USDA logo, contract number, net weight, dimensions, and “LMR-6.” See exhibit LMR-6, front.
Back: USA with stripes, the commodity name, Pashtu and Dari language panel, and “LMR-6” only. See exhibit LMR-6, back.

Language Marking Requirement #7 (LMR-7)
**FAS – Distribution for South Africa Region**
Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USDA logo, contract number, net weight, dimensions, and “LMR-7.” See exhibit LMR-7, front.
Back: USA with stripes, the commodity name, English language panel, and “LMR-7” only. See exhibit LMR-7, back.

Language Marking Requirement #8 (LMR-8)
**FAS – Distribution for Iraq with Arabic**
Front: USA with stripes, the commodity name, the words “NOT TO BE SOLD OR EXCHANGED,” USDA logo, contract number, net weight, dimensions, and “LMR-8.” See exhibit LMR-8, front
Back: USA with stripes, the commodity name, Arabic language panel, and “LMR-8” only. See exhibit LMR-8, back.

Section 3.3 **EMPTY BAG DIMENSIONS**
A. All bags shall be marked with the empty dimensions as follows:

<table>
<thead>
<tr>
<th>Gusseted Bags</th>
<th>Face Width X Gusseted Width X Finished Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat Tube Bags</td>
<td>Face Width X Finished Length</td>
</tr>
</tbody>
</table>

B. The bag dimensions shall be centered at the bottom of the bag, as small as possible, yet legible.

Section 3.4 **CONTAINERS WITH INCORRECT MARKINGS**
A. Any labels, bags, cans, can lids, cases, or any other type of packaging (hereinafter referred to as "containers") displaying incorrect markings may be used under a Government contract provided that the incorrect markings are obliterated and correct markings are applied in a permanent manner with approval of the contracting officer.

B. The appearance of containers in commercial or other channels either filled or unfilled bearing markings identifying the containers as part of a Government contract may cause the Government expense in determining whether commodities
have been diverted from authorized use and in answering inquiries. The contractor shall take all necessary action to prevent the appearance in commercial or other channels of containers and container materials bearing any markings required under a Government contract, including those held by the contractor or others; e.g., overruns, misprints, etc. The contractor shall ensure that any container from a Government contract that appears in commercial or other channels shall have all markings required under this contract permanently obliterated.
CORN SOY MILK

NET WEIGHT: 25 kg, 55.115 lb.
16 x 4 x 37
SMR-1

NOT TO BE SOLD OR EXCHANGED
CORN SOY MILK

NOT TO BE SOLD OR EXCHANGED

CONTRACT ABCD01234
NET WEIGHT: 25 kg, 55.115 lb.
16 x 4 x 37
SMR-2

USA

CONTRACK ABCD01234
NET WEIGHT: 25 kg, 55.115 lb.
16 x 4 x 37
SMR-2

CORN SOY MILK

NOT TO BE SOLD OR EXCHANGED

USA

CORN SOY MILK

NOT TO BE SOLD OR EXCHANGED

USA
CORN SOY MILK

NOT TO BE SOLD OR EXCHANGED

CONTRACT ABCD01234

NET WEIGHT: 25 kg, 55.115 lb.
16 x 4 x 37
LMR-2

USAID - Afghanistan (Feb. 2005)
Gift of the People of the United States of America

CORN SOY MILK

CORN SOY MILK

NOT TO BE SOLD OR EXCHANGED

NET WEIGHT: 25 kg, 55.115 lb.

16 x 4 x 37

LMR-3
CORN SOY MILK

NOT TO BE SOLD OR EXCHANGED

CONTRACT ABCD01234
NET WEIGHT: 25 kg, 55.115 lb.
16 x 4 x 37
LMR-4

USA

CORN SOY MILK

الهدية من الشعب الأمريكي
CORN SOY MILK

NOT TO BE SOLD OR EXCHANGED

CONTRACT ABCD01234
NET WEIGHT: 25 kg, 55.115 lb.
16 x 4 x 37
LMR-5

USA

CORN SOY MILK

미국에서
보내온 신물

LMR-5
CORN SOY MILK

NOT TO BE SOLD OR EXCHANGED

CONTRACT ABCD01234

NET WEIGHT: 25 kg, 55.115 lb.
16 x 4 x 37
LMR-6
CORN SOY MILK

NOT TO BE SOLD OR EXCHANGED

CONTRACT ABCD01234
NET WEIGHT: 25 kg, 55.115 lb.
16 x 4 x 37
LMR-7

Gift of the People of the United States of America

USA
CORN SOY MILK

NOT TO BE SOLD OR EXCHANGED

CONTRACT ABCD01234

NET WEIGHT: 25 kg, 55.115 lb.
16 x 4 x 37
LMR-8

USD A

USA
High Performance Bags:
1 inch blue stripe