

	<p align="center">PRODUCT SPECIFICATIONS SHEET</p> <p align="center">Supercereal Plus (CSB ++)</p> <p align="center">1.5kg bag</p>	<p>UNICEF Stock number: S0000295</p> <p>Author: A Fleet</p> <p>Revision: MEF, AF</p> <p>Version: 3.0</p> <p>Date: 14.11.2016</p>
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General Description:

Supercereal Plus (CSB++)/BAG-1.5kg is a formulated supplementary food for infants and young children between 6-59 months of age, packed in 1.5kg bags. Supercereal Plus (CSB++)/BAG-1.5 KG is to be used as a complement to breastfeeding and not a breast-milk substitute.

Super cereal Plus (CSB++) is prepared from heat treated maize and de-hulled soy beans, sugar, dried skim milk, refined soya bean oil, vitamins and minerals. If SuperCereal Plus is consumed as a porridge or gruel, it should be prepared by mixing an appropriate proportion of flour and clean water. (i.e. 50g of Super Cereal plus with 250ml of water) followed by simmering for 5 to 10 minutes maximum.

Technical Specifications:

Formula:

Maize (white or yellow): 58.30%

De-hulled soya beans: 20%

Dried skim milk powder: 8%

Sugar: 9%

Refined soya bean oil: 3%

Vitamin and Mineral premix: 0.20%

Dicalcium phosphate anhydrous: 1.23%

Potassium chloride: 0.27%

Vitamins and mineral content per 100 g dry matter of finished product:

Vitamin A: 3460 IU (as dry Vitamin A Palmitate 250 Cold Water Dispersible Stabilized)

Vitamin D3: 441.6 IU (as Dry Vitamin D3 100 Water Dispersible Stabilized)

Vitamin E: TE 8.3 mg (as dry Vitamin E Acetate 50% Water Dispersible)

Vitamin K1: 30 µg (as dry Vitamin K1 5% Water Dispersible)

Vitamin B1: 0.2 mg (as Thiamine mononitrate)

Vitamin B2: 1.4 mg (as vitamin B2 fine powder)

Vitamin B6: 1 mg (as pyridoxine hydrochloride)

Vitamin C: 90 mg (as Ascorbic acid)

Pantothenic acid: 1.6 mg (as Calcium D Panthotenate)

Folate (DFE): 110 µg (as Folic acid*)

Niacin: 8 mg (as Niacinamide)

Vitamin B12: 2 µg (as Vitamin B12 0.1% or 1% Spray Dried)

Biotin: 8.2 µg (as Biotin 1%)

Iodine: 40 µg (as Potassium Iodide*)

Iron: (a) 4 mg (as Ferrous fumarate fine powder)

Iron: (b) 2.5 mg (as Iron-sodium EDTA)

Zinc: 5 mg (as Zinc Sulphate Monohydrate)

Carrier: Corn maltodextrin

* Adequate dilution must be used to guarantee premix homogeneity.

Other minerals:

-Potassium: 140 mg (as Potassium Chloride with 0.5% silicon dioxide as anticaking agent, compliant with food chemical Codex, min 90%<425 micron and min 60%<250 micron)

-Calcium: 362 mg and Phosphorus: 280 mg (as Dicalcium Phosphate Anhydrous, compliant with food chemical Codex, min 95%<250 micron, total aerobic viable count <1000 CFU/g, yeast<10 CFU/g, mould <100 CFU/g, and enterobacteria neg. in 1 g.)

Note: Variable levels of micronutrients (i.e. iron, zinc, etc.) naturally present in maize and soya may lead to variable number of micronutrients in finished product.

Standards and recommendations

Supercereal Plus (CSB++)/BAG-1.5kg shall comply, in terms of raw materials, composition or manufacture, except when specified otherwise in the contract, with the following guidelines or standards of Codex Alimentarius.

-Guidelines on Formulated Supplementary Foods for Older Infants and Young Children, CAC/GL 08-1991 of the Codex Alimentarius.

-Code of Hygienic Practice for Foods for Infants and Children CAC/RCP 66 - 2008 of the Codex Alimentarius;

-Recommended International Code of Practice: General Principles of Food Hygiene CAC/RCP 1-1969 Rev 4 - 2003 including Annex "Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for its application".

-General principles for addition of essential nutrients to foods: CAC/GL 09-1987 (amended 1989, 1991), of the Codex Alimentarius.

Raw Materials

Main ingredients

Supercereal Plus (CSB++)/BAG-1.5kg shall be manufactured from fresh maize grain and soy beans of good quality, free from foreign materials, substances hazardous to health, excessive moisture, insect damage and fungal contamination and shall comply with all relevant national food laws and standards. Sugar, dried milk powder and soya bean oil shall be of optimal food quality and meet the Codex standards for these commodities. Requirements for the raw materials are:

Maize:

Conform to Codex STAN 153-1985.

http://www.fao.org/input/download/standards/51/CXS_153e.pdf

Be tested for aflatoxin (recommended method AACC 45-05 or AOAC 26.049 / 1984).

Be obtained from non-genetically modified varieties.

Soya beans:

Conform to Codex STAN 171-1989 (Rev.1-1995).

http://www.fao.org/input/download/standards/56/CXS_171e.pdf

Be obtained from non-genetically modified varieties.

Be dehulled (minimum of 85% hull removal)

Maize and soya beans must be stored under dry, ventilated and hygienic conditions. Only safe insecticides (i.e. phosphine) may be used for fumigation control. Where needed, fumigation must be performed by certified operators.

Sugar:

Conform to Codex STAN 212-1999. To meet particle size specification 100% through a 1mm screen, 95% through a 600 micron screen.

http://www.fao.org/input/download/standards/338/CXS_212e_u.pdf

Dried Skim Milk:

Conform to Codex STAN 207-1999. To meet particle size specification 100% through a 1mm screen, 95% through a 600 micron screen. To be provided with a certificate of analysis confirming absence of melamine.

http://www.fao.org/input/download/standards/333/CXS_207e.pdf

Refined Soya Bean Oil:

Conform to Codex STAN 210-1999. Only refined-deodorised-bleached oils are acceptable. Codex permitted anti-oxidants (BHA/BHT) may be included in the oil.

https://mvo.nl/media/voedselveiligheid/codex_standard_named_vegetable_oils.pdf

Vitamins and minerals

Complete mineral and vitamin premix can not be produced by the Supercereal manufacturer itself and should be supplied only from validated supplier of premix. A list of example sources of premix established and updated by the World Food Programme (WFP), available at: <https://foodqualityandsafety.wfp.org/fortification-of-powdered-products>

Micronutrient premixes are used at the following rate per metric ton of finished product:

- 2.0 kg of vitamin premix (FBF-V-13).

- 12.3 kg of Dicalcium Phosphate Anhydrous.

- 2.7 kg of Potassium chloride.

Requirements for Potassium chloride and Dicalcium Phosphate Anhydrous are:

- Must meet at least food chemical codex.

- Particle size for Potassium chloride min 60% < 250 µm (microns).

- Dicalcium Phosphate Anhydrous, compliant with food chemical codex, min 95% < 250 micron, total aerobic viable count < 1000 CFU/g, yeast < 10 CFU/g, mould < 100 CFU/g, and enterobacteria negative in 1 g

It is recommended that micronutrient premixes should be stored in a dry, cool and clean place where the temperature is a maximum of 25 degrees celsius degree. Care must be taken during manufacturing to ensure these storage requirements are maintained and that any un-used portion of the micronutrient powder is protected from air, light, heat and moisture.

Homogeneity of micronutrients

Theoretical calculations indicate that a mixing system with a Coefficient of Variation of 10% using iron as the indicator element, will enable product to meet the above variation target on

95%, provided that all conditions of mixing are rigorously applied. To conduct these calculations see the WFP handbook: Fortified Blended Food- GMP and HACCP and fortification guide in <http://foodqualityandsafety.wfp.org>

Processing instructions:

Supercereal Plus (CSB++)/BAG-1,5kg shall be manufactured from fresh ingredients of good quality, free from foreign materials, substances hazardous to health, excessive moisture, insect damage and fungal contamination.

The ingredients shall comply with all relevant national food laws and standards.

The ingredients must be stored under dry, ventilated and hygienic conditions.

Only safe insecticides may be used for storage.

The production process shall be in accordance with the 'Code of Hygienic Practice Low Moisture Foods http://www.fao.org/input/download/standards/13921/CXP_075e_2015.pdf and Code of Practice, General Principles of Food Hygiene.

<http://www.fao.org/3/y1579e/y1579e02.htm>

Supercereal Plus (CSB++)/BAG-1,5kg shall be processed as a partially pre-cooked food under conditions which permit improvements in the digestibility of starches and proteins and in particular the de-activation of trypsin inhibitors in soya as indicated by the urease test. Preferred heat treatments include extrusion or roasting.

Extrusion:

Cleaned cereals and pulses/oilseeds/soya beans are mixed in the correct amount, gritted and precooked through extrusion at a temperature not exceeding 160°C.

The extrusion product is cooled to ambient temperature immediately after extrusion and milled into a fine flour.

Roasting/milling:

Cereals and pulses/oilseeds/soya beans are separately roasted at a temperature not exceeding 180°C (recommended: cereals 10 min. at 140°C; pulses/oilseeds/soya beans 15 min. at 170°C).

The roasted products are cooled to ambient temperature immediately after roasting, mixed in the correct amount and milled into a fine flour.

Subsequently the flour is homogeneously mixed with the vitamin/mineral supplement and (if applicable) sugar and/or oil.

The following requirements need to be met:

Organoleptic:

It shall have a pleasant smell and palatable taste.

Shelf-life:

12 months minimum, preferably 18 months from the date of manufacture when stored at dry and ambient temperatures prevalent in the country of destination.

Flour characteristics:

It shall be a uniform fine texture with the following particle distribution:

95% must pass through a 600 micrometer sieve;

100% must pass through a 1000 micrometer sieve.

Dispersibility:

It shall be free from lumping or balling when mixed with water of ambient temperature.

Cooking time:

It shall be suitable for young children and adults after a cooking at simmering point for a minimum of five minutes and a maximum of ten minutes.

Consistency / Viscosity of porridge:

Bostwick test: min 100 mm per 30 sec at 45C and at the proposed preparation dosage (i.e. 50g of product plus 250g water after cooking at simmering point for five minutes), or equivalent.

Anti-nutrients:

The urease index of Supercereal Plus (CSB++)/BAG-1.5kg should be between 0.01 and 0.2 pH units.

Moisture and crude fibre:

It shall contain a moisture content not exceeding 7% and a fibre content (based on dry product) not exceeding 5%.

Nutritional value:

It shall contain not less than the following nutritional value per 100g dry product:

- Energy: 410 kcal minimum
- Protein: 16.0 % (N x 6.25) minimum
- Fat: 9.0 % minimum
- Crude fibre: 2.9 % maximum
- Ash: 4.6%

Variation in nutrient specification:

The variation of the final product with respect to contents of protein and fat shall not exceed minus five percent of the specified value using standard analytical techniques. The moisture and crude fibre should not exceed five percent of the specified values. Products not meeting this requirement are liable for rejection.

Safety:

Supercereal Plus (CSB++)/BAG-1.5kg shall be free from objectionable matter. It shall not contain any substances originating from microorganisms, or any other poisonous or deleterious substances like anti-nutrient factors, pesticides, pharmacologically active substances, hormone residues, antibiotics, heavy metals or pesticide residues, in amounts which may represent a hazard to health.

- Permitted level of total aflatoxin: 5 ppb (B1, B2, G1, G2).
- Permitted level of Deoxynivalenol (DON): 0.2 mg/kg (=200ppb)
- Heavy metals: below levels specified in Codex Stan 193-1995, in particular Pb max 20 ppb and Cd max 100 ppb.
- Permitted levels of tropane alkaloids to be a maximum of 0.016 µg /kg of bodyweight as established by the European Food Safety Authority (EFSA) to be the acute reference dose (ARfD) for atropine and scopolamine.

<https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2013.3386>

Microbiology:

Not exceed the following levels of microbiological contamination in the finished product (maximum/gram finished product):

Mesophillic aerobic bacteria: 10,000 cfu per g

Coliforms: 10 cfu per g
Salmonella: 0 per 25g
Escherichia Coli: 0 cfu per g
Staphylococcus aureus: 0 cfu per g
Bacillus cereus: 50 cfu per g
Yeasts and moulds: 100 per g

Requirements for stability:

The supplier should conduct shelf life studies to confirm shelf-life as per *Interagency Stability Study Requirements, Revision 7*.

Packaging:

Packed in airtight sachets of 1.5 kg, sachet foil includes an aluminium layer to protect against UV light and humidity. The product should be packed under inert gas (e.g nitrogen) to prolong shelf life.

Primary packaging Plastic foil:

PE60/Met polyester 12

Characteristics of the metalized layer:

Specific weight: 1.4g/cm³

Thickness of the base film: 12.0 microns

Yield 59.5 m²/kg

Tensile strength at break 21.0kg/mm² (ASTM D882)

Elongation at break 100% (ASTM D882)

Shrinkage: 2.0%

Shrinkage: (150 degrees C 30) 0.2% (ASTM D1204)

Optical density: 2.2

Permeability Oxygen: (38 degrees – 45% RH) 1.5cc/m²/24h (ASTM D1484)

Permeability vapour: (38 degrees C – 90% RH) 1.5 cc/m²/24h (ASTM E 96)

Melting point: 260 degrees C

Outer packaging:

Carton boxes: Dimensions: 400 x 280 x 210 (Lx1xH)

Composition: 5 ply – 5 mm thickness, markings to indicate:

Keep dry, keep away from heat, stack limitation, do not destroy barrier, top of box.

Labelling:

The label of the product should contain the following information:

Name of the product;

Target age group

Manufacturers brand*

List of ingredients in descending order, specifying quantities

Net content: 1.5kg

Kcal/100g

Batch number / lot number/ production date/ Expiry date;

Manufacturers storage conditions;

Directions for use;

Manufacturer name and address.

*use of UNICEF logo on products is subject to prior approval

Predelivery Inspection (PDI) is mandatory for this item

Storing:

Supercereal Plus (CSB++)/BAG-1.5kg must be stored under dry (<30°C), ventilated and hygienic conditions.

A Certificate of Analysis is required for every batch supplied against UNICEF Supply Division Purchase Orders.

The principal tests listed below must be performed in order to check if the quality of CSB++ meets below requirements. Additional analyses shall be defined in case of further quality assessment.

List of compulsory tests for Certificate of Analysis and reference methods:

Energy: min. 410kcal/100g (by calculation)

Protein: min 16% total energy (AOAC 981.10, ISO 20483:2006)

Lipids: min 9% total energy (AOAC 954.02; ISO 11085:2008)

Sugar: 9.00% by weight

Fibre: <2.9% max (AI+OAC 962.09)

Ash (total): Max 5% (Reference method: ISO 2171:2007)

Moisture content: Max 7 % (Reference method: ISO 712-2009 or equiv)

Chemico-physical characteristics of the flour:

Peroxide value: max 10 meq/kg fat. (AOAC 965.33)

Urease index: 0.2pH units max (AOCS Ba 9-58 (1997)

Particle size: -95% must pass through a 600 micron sieve, 100% must pass through a 1000 micron sieve

Organoleptic (smell, taste, colour): pleasant smell, and palatable taste, typical colour

Consistency (Boswick flow rate) min 100 mm/30s for 17% dry matter porridge

Vitamin A:2780-4170 IU/100g (AOAC 992.04/AACC 86-03)

Iron: 9.9-14.8 mg /100g

Potassium:700-1050mg/100g

Calcium:440-660mg/100g

Mesophilic aerobic bacteria: 10.000 cfu/g

Coliform: 10cfu/g

Salmonella: neg/ 25g

Escherichia Coli 0 cfu per g

St. Aureus: neg/g

Bacillus cereus:50cfu/g

E-coli: 0cfu/g

Yeast/Mould:<100cfu/g

GMO -ve <0.9% of GMO (if required by destination country)

Total aflatoxin: <5ppb (B1, B2, G1, G2) (AACC 45-16)

Deoxynivalenol (DON) 0.2 mg/kg max (EN 15891:2010)

Melamine: 1mg/kg max