

## **Item 10**

### **General Description:**

Supercereal (CSB+) with 10% sugar is a formulated supplementary food for children (from 2 years) and adults. Supercereal (previously known as Corn-Soya Blend Plus or CSB+) with 10% sugar is a pre-cooked blend consisting mainly of 64.24% maize, 24% soya-beans and 0.20% vitamin/mineral premix with addition of 10% sugar (against equivalent amount of cereals) packed in 25 kg bags.

### **Technical Specifications:**

#### **Formula:**

Maize (white or yellow): 78.24%  
Whole soya beans: 20%  
Vitamin and Mineral premix: 0.20%  
Mono calcium phosphate: 0.80%  
Potassium chloride: 0.76%  
Sugar: 10%

#### **Vitamin/Mineral Premix:**

Vitamin A palmitate: 1,664 IU  
Thiamine mononitrate: 0.128 mg  
Riboflavin: 0.448 mg  
Niacin (Nicotinamide): 4.8 mg  
Pantothenic acid (Calcium d-pantothenate): 6.7 mg  
Vitamin B6 (Pyridoxine hydrochloride): 1.7 mg  
Folic acid: 60 mcg  
Vitamin B12: 2 mcg  
Vitamin C (Ascorbic acid): 100 mg  
Vitamin D: 4 mcg  
Vitamin E: 8.3 mg  
Vitamin K: 100 mcg  
Iron (ferrous fumarate): 4 mg  
Iron-sodium EDTA: 2.5 mg  
Zinc oxide: 5 mg  
Potassium iodate (KIO<sub>3</sub>): 40 mcg  
Carrier -> Malto dextrin

#### **Other minerals:**

Potassium chloride (KCL): 400 mg  
Phosphorus (mono calcium phosphate): 200 mg  
Calcium: 130 mg

#### **Standards and recommendations**

Supercereal (CSB+) with 10% sugar 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.

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

As well as with Code of Hygienic Practice for Foods for Infants and Children CAC/RCP 66 - 2008. 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".

## **Raw Materials**

### Main ingredients

Supercereal (CSB+) with 10% sugar 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.

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).

Be obtained from non-genetically modified varieties.

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.

## **Vitamins and minerals**

Complete premixes must be purchased from a UNICEF approved supplier and used at the following rate per metric ton of finished product:

- 2 kg of vitamin premix.
- 8 kg of [Ca(H<sub>2</sub>PO<sub>4</sub>)<sub>2</sub>. H<sub>2</sub>O (Mono Calcium Phosphate)].
- And 7.6 kg of KCl (Potassium chloride).

Requirements KCl and Ca(H<sub>2</sub>PO<sub>4</sub>)<sub>2</sub>. H<sub>2</sub>O are:

Must meet at least food chemical codex (FCC).

Particle size for KCl min 60% < 250 µm (microns).

Particle size for Ca(H<sub>2</sub>PO<sub>4</sub>)<sub>2</sub>. H<sub>2</sub>O min 95% <250 µm (microns).

Suppliers of UNICEF's micronutrient premixes are DSM, Fortitech, Piramal Healthcare and Hexagon Nutrition. Supercereal (CSB+) with 10% sugar suppliers can also contact Premix Facility of The Global Alliance for Improved Nutrition (GAIN) to order micronutrient premixes (Visit [www.gainhealth.org/gpf](http://www.gainhealth.org/gpf) or contact: [premixfacility@gainhealth.org](mailto:premixfacility@gainhealth.org)).

Micronutrient premixes must be delivered to the processor of Supercereal (CSB+) with 10% sugar with a complete Certificate of Analysis as well as with a Proof of purchase of premixes. The two documents must be presented with other documents for payment.

Micronutrient premixes must be stored in a dry, cool and clean place where the temperature is a maximum of 25 Celsius degree.

**Processing instructions:**

Supercereal (CSB+) with 10% sugar 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 for Foods for Infants and Children' and 'Code of Sound Manufacturing Practices' of the Codex Alimentarius (Volume 4, Second Edition, FAO Rome 1994).

Supercereal (CSB+) with 10% sugar 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.

**Additional Product Specifications:**

Supercereal (CSB+) with 10% sugar shall be suitable as a dietary supplement for children (from 2 years) and adults, as well as other vulnerable groups for serving as porridge, gruel or extender to other foods.

**The following requirements to be met:**

Taste:

It shall have a pleasant smell and palatable taste, which young children will like and enjoy. The manufacturer shall replace batches of CSB+ which, within the shelf-life, are found by the contracting organization to have taste deviations such as an off taste or a bitter taste making the product unsuitable for or unusable by the final consumer for whom the product is intended.

Shelf-life:

12 months.

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.

Peroxide value: max 10 meq/kg fat.

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 55 / max 110 mm per 30 sec at 45C and at the proposed preparation dosage (i.e. 20g of product plus 150g water after cooking at simmering point for five minutes).

Anti-nutrients:

The urease index of Supercereal (CSB+) with 10% sugar should

be between 0.01 and 0.2 pH units.

Moisture and crude fiber:

It shall contain a moisture content not exceeding 10% and a fiber 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 380 kcal minimum

- Protein 14.0 % (N x 6.25) minimum
- Fat 6.0 % minimum
- Crude fibre 5.0 % maximum

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:

Super cereal with 10% sugar shall be free from objectionable matter. It shall not contain any substances originating from microorganisms, or any other poisonous or deleterious substances like heavy metals or pesticide residues, in amounts which may represent a hazard to health.

- Heavy metals: below levels specified in Codex Stan 193-1995, in particular Pb max 20 ppb and Cd max 100 ppb.

Microbiological and mycotoxin safety limits:

Mesophyllic aerobic bacteria: 100,000 cfu per g

Coliforms: 100 cfu per g

Salmonella: 0 cfu per 25g

Escherichia Coli: <10 cfu per g

Staphylococcus aureus: <10 cfu per g

Bacillus cereus: 50 cfu per g

Yeasts and moulds: 1,000 cfu per g

Aflatoxin (Total): 20 ppb ,maximum (total ob B1, B2, G1, G2).

Deoxynivalenol (DON): 1,0 mg/kg (=1.000ppb)maximum.

**Packaging:**

Preferably in new uniform strong polypropylene bags of a net content of 25 kg, fit for export and multiple handing. All bags have separate plastic inner lining of 75 microns.

Polypropylene bags, the outer bag must have a heat cut mouth to prevent fibrillation and have sewn single folder bottom.

Bag specification: size 50 cm x 75 cm in dimensions, tare

about 110g each. Bags made of woven PP are to be given special food grade "ultraviolet" treatment. Construction of fabric must be solid to sustain harsh handling. The inner liner should be heat sealed and outer bags double stitched.

**Labeling:**

The label of the product should contain the following information:

Name of the product;  
List of ingredients;  
Quantities of ingredients;  
Batch number / lot number;  
Expiry date;  
Storage conditions;  
Directions for use;  
Manufacturer name and address.

**Storing:**

Supercereal (CSB+) with 10% sugar must be stored under dry (<30°C), ventilated and hygienic conditions.

## **Item 20**

### **General Description**

Supercereal Plus (CSB++)/BAG-1,5 KG is a formulated supplementary food for young children between 6-24 months of age, packed in 1,5 kg bags. Supercereal Plus (CSB++)/BAG-1,5 KG is to be used as a complement to breastfeeding and not a breast-milk substitute.

### **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 in order 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 negative in 1 g.)

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

### **Standards and recommendations**

Supercereal Plus (CSB++)/BAG-1,5 KG 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.

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).

Be obtained from non-genetically modified varieties.

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.

**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.

**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.

**Vitamins and minerals**

Complete mineral and vitamin premix can not be produced by the Supercereal manufacturer itself and shall be supplied only from a restricted list of authorized suppliers of premix ( List of authorised sources of premix established and updated by the World Food Programme (WFP), available at: [http://documents.wfp.org/stellent/groups/public/documents/manual\\_guide\\_proced/wfp251174.pdf](http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp251174.pdf)).

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 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

Supercereal (CSB+) with 10% sugar suppliers can also contact Premix Facility of The Global Alliance for Improved Nutrition (GAIN) to order micronutrient premixes.

Visit [www.gainhealth.org/gp](http://www.gainhealth.org/gp)

Or contact: [premixfacility@gainhealth.org](mailto:premixfacility@gainhealth.org).

Micronutrient premixes must be delivered to the finished

product with a complete Certificate of Analysis as well as a Proof of purchase of premix/s. The two documents must be presented with other documents for payment.

Micronutrient premixes must be stored in a dry, cool and clean place where the temperature is a maximum of 25 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.

### **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 for Foods for Infants and Children' and 'Code of Sound Manufacturing Practices' of the Codex Alimentarius (Volume 4, Second Edition, FAO Rome 1994).

Supercereal Plus (CSB++)/BAG-1,5 KG 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 to be met**

Taste:

It shall have a pleasant smell and palatable taste, which young children will like and enjoy. The manufacturer shall replace batches of CSB++ which, within the shelf-life, are found by the contracting organization to have taste deviations such as an off taste or a bitter taste making the product unsuitable for or unusable by the final consumer for whom the product is intended.

Shelf-life:

12 months.

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.

Peroxide value: max 10 meq/kg fat.

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 55 / max 110 mm per 30 sec at 45C and at the proposed preparation dosage (i.e. 20g of product plus 150g water after cooking at simmering point for five minutes).

Anti-nutrients:

The urease index of Supercereal Plus (CSB++)/BAG-1,5 KG should be between 0.01 and 0.2 pH units.

Moisture and crude fiber:

It shall contain a moisture content not exceeding 10% and a fiber 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 380- 410 kcal minimum

- Protein 14.0 - 16.0 % (N x 6.25) minimum

- Fat 6.0 - 9.0 % minimum

- Crude fibre 5.0 % maximum

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:

It shall be free from objectionable matter.

It shall not contain any substances originating from microorganisms, or any other poisonous or deleterious substances like heavy metals or pesticide residues, in amounts which may represent a hazard to health.

- Permitted level of total aflatoxin: 20 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.

Microbiology:

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

Mesophyllic 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

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 (nitrogen or carbon dioxide) to prolong shelf life.

Labeling:

The label of the product should contain the following information:

Name of the product;  
List of ingredients;  
Quantities of ingredients;  
Batch number / lot number;  
Expiry date;  
Storage conditions;  
Directions for use;

Manufacturer name and address.

Storing:

Supercereal Plus (CSB++)/BAG-1,5 KG 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 above 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. 380kcal/100g (Reference method: by calculation)  
Protein: min 14% total energy (Reference method: IS 7219: 1973 (Reaff:2005))  
Lipids: min 6% total energy (Reference method: AOAC 18th ed.2006)  
Sugar: 9.00% by weight  
Fibre: <3.8%  
Ash (total): Max 4.1% (Reference method: AOAC 18th ed.2006)  
Moisture content: Max 10 % (Reference method: AOAC 18th ed.2006)

Vitamin A: 3460 IU/100g

Iron (as ferrous fumarate) 4mg/100g  
Potassium 140mg/100g  
Calcium 362mg/100g

Mesophilic aerobic bacteria 10.000 cfu/g  
Coliform 10cfu/g  
Salmonella neg/ 25g  
St. aureus neg/g  
Bacillus cereus 50cfu/g  
E-coli 0cfu/g  
Yeast/Mould <100cfu/g  
Total aflatoxin <20ppb

## **Item 30**

### **General Description**

Supercereal Plus (WSB++)/BAG-1,5 KG is a formulated supplementary food for young children between 6-24 months of age, packed in 1,5kg bags. Supercereal Plus (WSB++)/BAG-1,5 KG is to be used as a complement to breastfeeding and not a breast-milk substitute.

### **Technical Specifications**

#### **Formula (percentage by weight)**

Wheat: 52.30%  
De-hulled soya beans: 25.00%  
Refined soya bean oil: 4.00%  
Dried skim milk powder: 8.00%  
Sugar: 9.00%  
Vitamin and Mineral premix: 0.20%  
Dicalcium phosphate anhydrous: 1.23%  
Potassium chloride: 0.27%

#### **Vitamin/Mineral Premix**

Vitamin A (dry Vitamin A palmitate 250 cold water dispersible Stabilized): 3460 IU  
Thiamine mononitrate: 0.2mg  
Vitamin B2: 1.4mg  
Niacin (Niacinamide): 8mg  
Pantothenic acid (Calcium d-pantothenate): 1.6mg  
Vitamin B6 (Pyridoxine hydrochloride): 1.0mg  
Folate, DFE (Folic Acid): 110 mcg  
Vitamin B12 (Vitamin B12 0.1% or 1% spray dried): 2 mcg  
Biotin (Biotin 1%): 8.2 mcg  
Vitamin C (Ascorbic acid): 90mg  
Vitamin D3 (dry vitamin D3 100% water dispersible stabilized): 441.6 IU  
Vitamin E TE (dry vitamin E Acetate 50% water dispersible): 8.3mg  
Vitamin K1 (dry vitamin K1 5% water dispersible): 30 mcg  
Iron (a: ferrous fumarate): 4mg  
Iron (b: Iron-sodium EDTA): 2.5mg  
Zinc (zinc sulphate monohydrate): 5mg  
Iodine (potassium Iodide: 40 mcg  
Carrier -> Corn Malto-dextrin

#### **Other minerals**

Potassium chloride (Potassium Chloride with 0.5% silicon dioxide as anticaking agent, compliant with food chemical codex, min 90% < 425 micron and min 60% < 250 micron): 140mg  
Phosphorus\*: 280mg  
Calcium\*: 362mg

\* 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 1g.

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

### **Standards and recommendations**

Supercereal Plus (WSB++)/BAG-1,5 KG 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 (WSB++)/BAG-1,5 KG shall be manufactured from fresh wheat 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:

#### **Wheat**

Conform to Codex STAN 199-1995

#### **Soya beans**

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

Be obtained from non-genetically modified varieties.

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.

**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.

**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.

**Vitamins and minerals**

Complete premixes must be purchased from a UNICEF approved supplier and used at the following rate per metric ton of finished product:

- 2kg of vitamin premix.
- 12.3kg of Dicalcium Phosphate Anhydrous
- And 2.7kg of Potassium chloride

Requirements for Potassium Chloride and Dicalcium Phosphate anhydrous are:

Must meet at least food chemical codex (FCC).

Particle size for Potassium Chloride min 60% < 250µm (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 1g.

The mineral and vitamin premix(es) shall not be produced by WSB Supercereal plus manufacturer itself. The supplier shall be chosen from the list of authorised sources of premix established and updated by the World Food Programme (WFP): [http://documents.wfp.org/stellent/groups/public/documents/manual\\_guide\\_proced/wfp251174.pdf](http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp251174.pdf)

Micronutrient premixes must be delivered to the processor of WSB ++ with a complete Certificate of Analysis as well as with a Proof of purchase of premixes. The two documents must be presented with other documents for payment.

Micronutrient premixes must be stored in a dry, cool and clean place where the temperature is a maximum of 25C.

**Processing instructions**

Supercereal Plus (WSB++)/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 for Foods for Infants and Children' and 'Code of Sound Manufacturing Practices' of the Codex Alimentarius (Volume 4, Second Edition, FAO Rome 1994).

Supercereal Plus (WSB++)/BAG-1,5 KG 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 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 minutes at 170°C).

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

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

#### **The following requirements to be met:**

##### Taste:

It shall have a pleasant smell and palatable taste, which young children will like and enjoy. The manufacturer shall replace batches of WSB++ which, within the shelf-life, are found by the contracting organization to have taste deviations such as an off taste or a bitter taste making the product unsuitable for or unusable by the final consumer for whom the product is intended.

##### Shelf-life:

12 months.

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.

Peroxide value: max 10 meq/kg fat.

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 55 / max 110 mm per 30 sec at 45C and at the proposed preparation dosage (i.e. 20g of product plus 150g water after cooking at simmering point for five minutes).

Anti-nutrients:

The urease index of Supercereal Plus (WSB++)/BAG-1,5 KG should be between 0.01 and 0.2 pH units.

Moisture and crude fiber:

It shall contain a moisture content not exceeding 10% and a fiber 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 380 - 410 kcal
- Protein 14.0 - 16.0% (N x 6.25)
- Fat 6.0 - 9.0%
- Crude fibre 2.9 - 5.0%

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:

It shall be free from objectionable matter.

It shall not contain any substances originating from microorganisms, or any other poisonous or deleterious substances like heavy metals or pesticide residues, in amounts which may represent a hazard to health.

- Permitted level of total aflatoxin: 20 ppb (B1, B2, G1, G2) maximum.
- Permitted level of Deoxynivalenol (DON): 0.2 mg/kg (=200ppb) maximum.
- Heavy metals: below levels specified in Codex Stan 193-1995, in particular Pb max 20 ppb and Cd max 100 ppb.

#### Microbiology:

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

Mesophyllic aerobic bacteria: 10,000 cfu per g (ICC N 125; AACC 42-11)  
Coliforms: 10 cfu per g (AOAC 2005.03)  
Salmonella: 0 per 25g (AACC 42-25B)  
Escherichia Coli: 0 cfu per g (AOAC 991.4)  
Staphylococcus: 0 cfu per g (AACC 42-30 B)  
Bacillus cereus: 50 cfu per g (AOAC 980.31)  
Yeasts and moulds: 100 cfu per g (ICC N 146; AACC 42-50)

#### **Packaging:**

Packed in airtight sachets of 1,5kg, sachet foil includes an aluminium layer to protect against UV light and humidity. The product should be packed under inert gas (nitrogen or carbon dioxide) to prolong shelf life.

#### **Labeling:**

The label of the product should contain the following information:

Name of the product;  
List of ingredients;  
Quantities of ingredients;  
Batch number / lot number;  
Expiry date;  
Storage conditions;  
Directions for use;  
Manufacturer name and address.

#### **Storing:**

Supercereal Plus (WSB++)/BAG-1,5 KG must be stored under dry (<30°C), ventilated and hygienic conditions.