

## **Corn Soya Blend – Supplementary Feeding**

### **World Food Program**

**Product specifications** for partially pre-cooked fortified blended food, particularly intended for older infants, young children, pregnant women and nursing mothers.

CORN SOYA BLEND is manufactured according to the following recipe:

- Corn (maize white or yellow): 75% - 80% by weight
- whole soya beans: 20% - 25% by weight
- vitamin/mineral premix: see below

A percent mixture of 75-80 percent maize and 20-25 percent soy beans will normally meet the nutritional specifications. However, with stocks of soya where the oil content is high, the protein level will correspondingly be lower. To ensure that the nutritional targets for protein and fat are met, the processor should check the oil and protein content of soya and if necessary make adjustments to the ratio of maize to soya in the formulation.

### **Method of pre-cooking**

The corn and soya blend may be partially pre-cooked using any thermal treatments that result in the required level of re-activation of trypsin inhibitors as indicated by the urease test (see specification below). Preferable heat treatments include extrusion and micronisation.

Nutritional value: it shall contain the following nutritional value per 100 g dry product:

- Energy 380 kcal (min)
- Moisture 10% max
- Protein 14% (N x 6.25) on dry matter
- Fat 6% on dry matter
- Crude Fiber 5% on dry matter
- vitamin and mineral supplement: see below

### **Variation in nutrient specification**

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

## **Micronutrient supplement**

CORN SOYA BLEND must be fortified to provide the following net micro nutrient supplement per 100g of finished product:

- Vitamin A: 1414 -1914 IU
- Thiamine: 0.108-0.147 mg
- Riboflavin: 0.380-0.515 mg
- Niacin: 4.1-5.5 mg
- Folate: 51-69 mcg
- Vitamin C: 41- 55 mg
- Vitamin B12: 1.0-1.4 mcg
- Iron: 7-9 mg
- Calcium: 85-115 mg
- Zinc: 4.25-5.75 mg

The added vitamins and minerals should have the following chemical form:

- Vitamin A: palmitate 250 CWS
- Thiamine: thiamine mononitrate
- Riboflavin: riboflavin
- Niacin: nicotinamide
- Folate: folic acid
- Vitamin C: ascorbic acid coated
- Vitamin B12: vitamin B12 - 1% in manitol
- Iron: ferrous fumarate
- Calcium: calcium carbonate
- Zinc: zinc sulfate

Fortification premixes must be obtained from DSM, Fortitech, Hexagon Nutrition, BASF or Nicholas Piramal or their authorized dealers. A Certificate of Analysis as well as a proof of purchase will be required for payment. The required fortification can be achieved by adding to each MT of finished product one kg of Vitamin Premix and three kg Mineral Premix. The premixes must be stored in a dry, cool and clean place where the temperature is maximum 25 degrees Celsius.

## **Recommended efficiency of mixing system**

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% of occasions provided that all conditions of mixing are rigorously applied. To conduct this calculation see the WFP handbook: Fortified Blended Food: Good Manufacturing Practice and HACCP Principles. A handbook for processors in partnership with the UN World Food Programme.