



## Technical Specifications for **BULGUR WHEAT**

Specification reference: **Bulgur Wheat grain**

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### **1. SCOPE**

This specification applies to **Bulgur wheat** purchased by WFP.

### **2. DEFINITIONS**

**Impurities:** all other material than processed wheat kernels which includes but not only, wheat kernels, other plan seeds, dirt, others).

**Purity** includes only bulgur wheat and excludes all other material.

**Ungelatinized kernels:** Kernels with its cross section are semi-transparent and show spots of starchy appearance (inside section is in white color and not well cooked).

**Scorched Kernels:** Kernels exposed to excessive processing conditions that lead to colour modification and loss in nutritional value. Kernels which are red and crimson colored (except brown bulgur wheat).

**Brown bulgur wheat:** Bulgur obtained from red bread wheat.

### **3. REFERENCE**

**Bulgur wheat** shall comply, in terms of raw materials, composition or manufacture, except when specified otherwise in the contract, with the following the 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”.

### **4. RAW MATERIALS**

**Bulgur wheat** shall be manufactured from fresh wheat 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.

Wheat shall conform to Codex STAN 152-1985 and *if required by the contract*, be obtained from non-genetically modified varieties.

### **5. PROCESSING**

**Bulgur wheat** is obtained by cleaning, cooking, drying and cracked by removing the husk of wheat grains.

For compliance with Codex standards the processor must be able to demonstrate by principle and practice the adoption, implementation and recording of:

- Good Manufacturing Practice
- Hazard Analysis Critical Control Point program

In this context an appointed WFP Inspector / Quality Surveyor is entitled to visit the factory without prior notice during any period when WFP product is being manufactured to check that the GMP and HACCP systems are in place. The Inspector / Quality Surveyor may request to see:

- **Records** (i.e. names of people in charge of the process and quality control, temperatures of the process, cleaning schedules, etc).
- **Procedures** (e.g. cleaning, personnel hygiene, HACCP, sampling and analysis).
- **Instructions** (e.g. process instructions, cleaning instructions).
- The **quality manual** for the process or factory.

The manufacturer must be *registered under national food law* as a processor of foods for human consumption.

## 6. PRODUCT SPECIFICATION

### 6.1 General requirements

- |                                      |  |
|--------------------------------------|--|
| ▪ Moisture:                          | <b>13.0 % max.</b> ( <i>by weight</i> )              |
| ▪ Organoleptic:                      | <b>Natural smell, taste and color</b>                |
| ▪ Kernel Size:                       |  |
| - Over 2.5mm:                        | <b>1.0% max.</b> ( <i>by weight</i> )                |
| - Between 1.5mm-2.5mm:               | <b>98.5% max.</b> ( <i>by weight</i> )               |
| - Under 1.5mm:                       | <b>0.5% max.</b> ( <i>by weight</i> )                |
| ▪ Purity:                            | <b>99.9% min.</b> ( <i>by weight</i> )               |
| ▪ Impurities:                        | <b>0.1% max.</b> ( <i>by weight</i> )                |
| ▪ Scorched kernel (whole, or parts): | <b>0.2% max.</b> ( <i>by weight</i> )                |
| ▪ Ungelatinized kernels:             | <b>1.0% max.</b> ( <i>by weight</i> )                |
| ▪ Total ash:                         | <b>1.75% max.</b> ( <i>by weight, on dry basis</i> ) |
| ▪ Ash insoluble in acid:             | <b>0.3% max.</b> ( <i>by weight, on dry basis</i> )  |
| ▪ Protein:                           | <b>9.3% min.</b> ( <i>by weight, on dry basis</i> )  |
| ▪ Crude fibres:                      | <b>2.3% max.</b> ( <i>by weight, on dry basis</i> )  |

### 6.2 Microbiology

**Bulgur wheat** shall not exceed the following levels of microbiological contamination:

*Table 1: Limit of microorganisms in **Bulgur wheat***

| <b>Microorganisms</b>        | <b>Maximum levels</b> |
|------------------------------|-----------------------|
| Mesophyllic aerobic bacteria | 10,000 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       |

### **6.3 Contaminants**

**Bulgur wheat** shall be free from objectionable matter; not contain any substances originating from micro-organisms or any other poisonous or deleterious substances such as anti-nutritional factors, 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).
- Heavy metals: below levels specified in Codex Stan 193-1995, in particular Pb max 20 ppb and Cd max 100 ppb.

### **6.4 Fit for human consumption guarantee**

Suppliers shall have to check the quality of their products and guarantee that they are '**fit for human consumption**'.

## **7. PACKAGING AND MARKING**

As per contractual agreement.

## **8. STORING**

**Bulgur wheat** must be stored under dry, ventilated and hygienic conditions.

## **9. SAMPLING REQUIREMENTS**

Representative samples can be drawn according to international sampling method standards at the bagging section or in the warehouse.

## **10. ANALYTICAL REQUIREMENTS**

The principal tests in table 2 must be performed in order to check if the quality of the **Bulgur wheat** meets above requirements. Additional analyses shall be defined in case of further quality assessment.

Table 2: List of compulsory tests and reference methods

| No | Analyses/tests                    | Limit                                       | Reference method (or equivalent) |
|----|-----------------------------------|---|----------------------------------|
| 1  | Moisture                          | <b>13.0 % max.</b> (by weight)              | ISO 712: 2009                    |
| 2  | Organoleptic                      | <b>Natural smell, taste and color</b>       | Organoleptic examination         |
|    | <i>Kernel Size</i>                |   |                                  |
| 3  | - Over 2.5mm                      | <b>1.0% max.</b> (by weight)                |                                  |
| 4  | - Between 1.5mm- 2.5mm            | <b>98.5% max.</b> (by weight)               |                                  |
| 5  | - Under 1.5mm                     | <b>0.5% max.</b> (by weight)                |                                  |
| 6  | Purity                            | <b>99.9% min.</b> (by weight)               | Visual examination               |
| 7  | Impurities                        | <b>0.1% max.</b> (by weight)                | Visual examination               |
| 8  | Scorched kernel (whole, or parts) | <b>0.2% max.</b> (by weight)                | Visual examination               |
| 9  | Ungelatinized kernels             | <b>1.0% max.</b> (by weight)                | Visual examination               |
| 10 | Total ash                         | <b>1.75% max.</b> (by weight, on dry basis) | ISO 2171:2007                    |
| 11 | Ash insoluble in acid             | <b>0.3% max.</b> (by weight, on dry basis)  | ISO 5985:2002                    |
| 12 | Protein                           | <b>9.3% min.</b> (by weight, on dry basis)  | AOAC 981.10<br>ISO 20483:2006    |
| 13 | Crude fibres                      | <b>2.3% max.</b> (by weight, on dry basis)  | AOAC 962.09                      |
| 14 | Mesophyllic aerobic bacteria      | <b>10,000 cfu per g max.</b>                | ICC No 125                       |
| 15 | Coliforms                         | <b>100 cfu per g max.</b>                   | AACC 42-11                       |
| 16 | Salmonella                        | <b>0 cfu per 25g max.</b>                   | AOAC 2005.03                     |
| 17 | Escherichia Coli                  | <b>&lt;10 cfu per g max.</b>                | AACC 42-25B                      |
| 18 | Yeasts and moulds                 | <b>1,000 cfu per g max.</b>                 | ICC No 146<br>AACC 42-50         |
| 19 | GMO (only if required)            | <b>Negative</b> (< 0.9% of GMO material)    |                                  |