



Technical Specifications for WHEAT – Sudan – Service Provision

Version: 1

Date of issue: 15/3/2021

1. SCOPE

This specification applies to **Wheat** grains purchased by WFP on behalf of the Sudanese Government for making flour intended for bread baking.

2. DEFINITIONS

Table 1: Definitions

Terms	Definition
Broken kernel	pieces of wheat that are less than three-quarters of a whole kernel and includes grains of wheat in which part of the endosperm is exposed or wheat without a germ. If the piece is more than three-quarters of a kernel, it is considered whole.
Shrunken/shriveled and broken kernels	All matter that passes through a 1.7 mm x 20 oblong-holed metal sieve.
Insect damaged kernels	Kernels which have been visibly bored or tunneled by insects.
Ergot	Sclerotium of the fungus <i>Claviceps Purpurea</i>
Sprouted kernels/grains	Sprouted grains are kernels showing visible signs of sprouting such as cracked coats through which a sprout has been emerged or is just beginning to emerge.
Total damaged kernels	Damaged kernels (including pieces of kernels that show visible deterioration due to moisture, weather, disease, mould, heating, fermentation, sprouting, or other causes. This includes broken kernel.
Organic matter	Organic matter are all organic components (e.g fragments of stems, leaves, ears, awns, chaff, fragments of pests, seeds of weeds and other cultivated plants, edible grains other than wheat etc), other than filth.
Inorganic matter	Inorganic matter is defined as any inorganic component (e.g stones, dust, plastic)
Filth	Filth are impurities of animal origin, including dead insect.
Heat damaged kernels/Bin Burnt	Kernels that have become discoloured due to exposure to severe heat during storage or an incorrect artificial drying technique. Affected grains appear reddish/golden brown, or in severe cases, blackened.
Grains attacked by pests	Wheat grain which show visible damage owing to attack by pests, kernel which obvious weevil- bored holes or which have evidence of boring or tunneling indicating the presence of insects refused chewed in one or more than one part of the kernel.
Unsound grains	Include mould-damaged kernels, heat-damaged/bin burnt kernels, frost-damaged, fusarium-damaged, rotted kernels, sprouted wheat grain, wheat grain attacked by pest, and stained grains.
Contrasting class	Grain of other classes in the class of other wheat (e.g. hard wheat in soft wheat)

3. REFERENCE

The product shall comply, with latest versions of recognized international standards and best practices and/or guidelines, such as the following:

- Codex Standard for Wheat grains CODEX STAN 199-1995.
- Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1-1969).
- SDS 036:2016 Sudanese Standard for Wheat Grains
- SDS 2842-1:2014 Grains Contaminants (Mycotoxins, heavy metals and Pesticides Residues)
- SDS 4139-1 Microbiological Limits for Foods

Additionally, the supplier shall comply with relevant local regulations/standards of the food originating and recipient countries.

4. PRODUCT SPECIFICATION

4.1 General requirements

The commodity shall meet following quality characteristic requirements;

- Shall be safe and suitable for human consumption.
- Shall be free from abnormal flavours, odours, and living insects.
- Shall be free from filth (impurities of animal origin, including dead insects) in amounts which may represent a hazard to human health.
- Shall be stored under dry, ventilated and hygienic conditions. Only authorized insecticides (e.g. phosphine) may be used for fumigation control. Where needed, fumigation shall be performed by certified operators and as specified in the GAFTA Standard for Fumigation.
- Shall comply with other requirements specified in table 3

4.2 Requirements for flour obtained from wheat grains

Supplier has to guarantee that the flour obtained from wheat grains covered by this specification is suitable to make bread.

If required by recipient country, Wheat needs to be obtained from non-genetically modified varieties.

Wheat flour must also comply with other requirements specified in table 3.

4.3 Contaminants

The product shall be free from contaminants in amounts which may represent a hazard to health. The product shall comply with those maximum contaminant limits established by the Codex Alimentarius for this commodity. This includes compliance with Codex General Standard for Contaminants and Toxins in Food and Feed (CXS 193-1995) and Codex Maximum Residue Limits for pesticide residues. Additionally, the product shall meet the requirements stated in Table 2 and 3.

Table 2: Microbiological requirements

	n	c	m	M
Yeast & Mould	5	2	10 ²	10 ⁴

4.4 Toxic or noxious seeds

The products covered by the provisions of this Standard shall be free from the following toxic or noxious seeds in amounts which may represent a hazard to human health. – Crotalaria (Crotalaria spp.), Corn cockle (Agrostemma githago L.), Castor bean (Ricinus communis L.), Jimson weed (Datura spp.), and other seeds that are commonly recognized as harmful to health. An non-exhaustive list of these seeds can be found in ISO 7970.

4.5 Hygiene

It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1-1969), and other Codes of Practice recommended by the Codex Alimentarius Commission which are relevant to these products. To the extent possible in good manufacturing practice, the products shall be free from objectionable matter. When tested by appropriate methods of sampling and examination, the product:

- shall be free from micro-organisms in amounts which may represent a hazard to health;
- shall be free from parasites which may represent a hazard to health; and
- shall not contain any substance originating from micro-organisms in amounts which may represent a hazard to health.

4.6 Fit for human consumption guarantee

Suppliers shall have to check the quality of their products and guarantee that the product is 'fit for human consumption', in line with International Federation of Inspection Agencies requirements.

5. Packaging and marking

Wheat shall be packed in a suitable container complying with the packaging and marking requirements separately available under "4.5 to 90 kg PP woven bag specification with or without PE inner liner" on <http://foodqualityandsafety.wfp.org/specifications>.

Weight and quantity tolerance must meet The International Organization of Legal Metrology International Recommendation OIML R 87¹.

6. STORING

The product must be stored under cool, dry, ventilated, hygienic conditions and free from insect infestation and all other sources of contaminations.

7. ANALYTICAL REQUIREMENTS

As per contractual agreement, WFP can appoint an inspection company that will check that the commodity matches requirements specified in Table 3. Additional analyses shall be defined in case of further quality assessment is required. WFP may reserve the right to change the testing plan when required.

¹ OIML R 87 Quantity of commodity in prepackages https://www.oiml.org/en/files/pdf_r/r087-e04.pdf, latest edition to be followed

Table 3: List of mandatory tests and reference methods

No	Parameter	Limits	Referenced method (or equivalent)
1	Moisture	Max 13%	ISO 712
2	Organoleptic	Bright, characteristic appearance, natural smell, taste, and color	Visual inspection
3	Contrasting class	Max. 1.50%	Visual inspection
4	Test weight	Min. 76 kg/hl	ISO 7971
5	Weight of 1000grain (as received, including moisture content)	Min. 30g	ISO 520
6	Broken kernel	Max 2%	ISO 5223
7	Shrunken/shriveled and broken kernels	Max. 4% by weight	ISO 5223
8	Insect damaged kernels	Max. 30 kernels / 100grams	Visual inspection
9	Sprouted kernels	Max. 2%	Visual inspection
10	Heat damaged kernels	Max. 0.2%	Visual inspection
11	Total damaged kernels	Max. 6.0% by weight	ISO 7970
12	Organic matter	Max.1.5 % by weight	Visual inspection
13	Inorganic matter	Max. 0.05% by weight	Visual inspection
14	Unsound grains	Max. 1%	Visual inspection
15	Ergot	Max. 0.05% by weight	Visual inspection
16	Grains infected by diseases and fungus	Max. 4%	Visual inspection
17	Grains attacked by pests	Max. 1.50%	Visual inspection
18	Filth & Dead insect	Max. 0.1%	Visual inspection
19	Toxic or noxious seeds - Crotonia (Crotonia spp.) - Jimson weed (Datura spp.) - Castor bean (Ricinus communis L.) - Corn cockle (Agrostemma githago L.)	Max. 1 seed per 1kg (for each seeds)	Visual examination on one kg sample (size of sample as per GAFTA sampling rules)5
20	Toxic or noxious seeds - Mexican Poppy (Argemone mexicana) - Cocklebur* (Xanthium species) - Field bindweed (Convolvulus spp.) - Darnel Ryegrass (Lolium temulentum) - Morning glory (Ipomoea purpurea)	Max. 7 seeds per 1kg (for each seeds)	
21	Stone/Glass/ Live insect/ Parasites and remains of rodents and birds	Nil	Visual inspection
On flour sample (100% extraction rate)			
22	Protein content	Min. 12.5% by weight	ICC No. 105
23	Wet gluten	Min. 25%	ISO 21415-1
24	Hagberg falling number	Min. 250	ISO 3093
25	Fat acidity	Max. 45 mg KOH/100g	ISO 7305 AOAC 939.05
26	Radiation	Cesium-137, radionuclides less than 10 Bq/kg	WEAC.RN.METHOD3.0 (Cs and other)
27	GMO	Negative	LOQ/LOD 0.01% or lower
28	Total Aflatoxin (B1,B2,G1,G2)	Max. 4 ppb	ISO 16050
29	Aflatoxin B1	Max. 2ppb	ISO 16050
30	Ochratoxin A	Max. 5 ppb	ISO 15141-2
31	Deoxynivalenol	Max. 2ppb	AOAC 986.17
32	Zearalenone	Max. 200ppb	AOAC 994.01
33	Cadmium	Max. 0.2 ppm	AOAC 945.58
34	Lead	Max. 0.2ppm	AOAC 934.07
35	Pesticide	http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/	EU 15662