



Technical Specifications for

WHOLE LENTIL

Version: 1
Replacing Version: V15
Date of issue: 25th June 2021

The key adjustments are:

- Definition and testing parameters
- Packaging

1. Introduction

This specification applies to **Whole Lentil** (hereafter called the product) purchased internationally by WFP.

2. Definition

Table 1: Definition of terms

Terms	Definition
Total damaged	Damaged lentils may be peeled, split, sprouted, distinctly green, frost damaged, distinctly deteriorated or discoloured by weather or disease, insect damaged (excluding those grains decayed with holes), heat damaged or otherwise damaged in a way which materially affects quality. Broken lentil is not included as damaged grains.
Seeds with serious defects	Seeds in which the cotyledons have been affected or attached by pests; seeds with very slight traces of mould or decay; or slight cotyledon staining.
Insect damaged (decayed)	Any whole lentil grains which has been damaged by insects and pests and consequently got decayed and shows holes.
Broken	Any lentil grains which are broken (including split) in any size above 1/3 of one cotyledon.
Filth	Impurities of animal origin, including dead insects.
Toxic-noxious seeds	Any seeds which if present in quantities in amount which may have damaging or dangerous effect on health, organoleptic properties or technological performance such as Jimson weed —Datura (D. fastuosa Linn and D. stramonium Linn.) corn cokle (Agrostemma githago L., Machai Lallium remulenum Linn.) Akra (Vicia species), Argemone mexicana, Khesari, Crotonaria (Crotonaria spp.) , Castor bean (Ricinus communis L.) ,Bellardia spp. (except Bellardia Trixago), Coronopus Didymus, Solanum Carolinense, Solanum Heterodoxum, Solanum Rostratum, Striga spp., and other seeds that are commonly recognized as harmful to health.
Inorganic matter	Includes metallic pieces, shale, glass, dust, sand, gravel, stones, dirt, pebbles, lumps or earth, clay, mud.
Foreign matter	Mineral or organic matter (dust, twigs, seedcoats, seeds of other species, dead insects, fragments, or remains of insects, other impurities of animal origin) other than lentil or part of lentil.
Mouldy and sprouting grains	Lentils are considered sprouted when the seed coat splits, and the primary root emerges from between the cotyledons. Lentils are considered mouldy when visible mycelial growth is seen on their surface and have bad smell.
Other edible grains (Foreign grains)	Edible grains from other plants (wheat, barley, corn, chickpeas, peas, etc.).
Immature grains (Wrinkled/shrunk)	Lentils that are immature which are hard and have wrinkled surface and low water absorbance.

Discoloured	Includes lentils which are distinctly blemished and / or off colour from the characteristic colour of the predominating class.
Other coloured grains	All lentil grains whose colour is different than colour of the designated lentil.
Heat-damaged	Heated-damaged lentils are usually dark tan to black in appearance. If the sample contains lentils with tan-coloured cotyledons and a distinct heated odour, then the grading factors is heated.

3. Standards and references

Except when specified otherwise in the contract, the product shall comply with latest versions of recognized international standards and best practices and/or guidelines such as:

- CODEX GENERAL PRINCIPLES OF FOOD HYGIENE INCLUDING ANNEX "HAZARD ANALYSIS AND CRITICAL CONTROL POINT (HACCP) SYSTEM AND GUIDELINES FOR ITS APPLICATION" (CXC 1-1969)
- CODEX GENERAL STANDARD FOR CONTAMINANTS AND TOXINS IN FOOD AND FEED (CXS 193- 1995)
- CODEX STANDARD FOR CERTAIN PULSES GRAINS (CXS 171-1989)

Additionally, the supplier shall comply with relevant local regulations/standards of the food originating and recipient countries. Foods destined for Syria shall comply with the national Decree # 158 dated 25/4/2017 by Syrian Ministry of Agriculture, including the annexes (e.g. requirements for quarantine and nonquarantine pests and weed seeds).

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 free of sprouted and mouldy grains.
- 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 this document.
- Unless otherwise specified in the contract, unhusked lentil is required for Syria, husked lentil is required for Yemen, and as per contract for other destinations.

4.2 Contaminants and Toxins

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. For foods destined to Sudan, the product shall also meet SDS 4843-2-2015 Legumes Contaminant (Pesticides Residues).

Table 2: Microbiological requirements

	n	c	m	M	Reference methods (latest versions) ¹
--	---	---	---	---	--

¹ or equivalent validated methods

Yeast & Mould	5	2	10 ³	10 ⁴	ISO 21527-2
---------------	---	---	-----------------	-----------------	-------------

4.3 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 (CXC 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.

4.4 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.

4.5 Shelf life

As per contract.

5. Packaging and Marking

Unless otherwise stated in the contract, the product shall be packed in a suitable PP woven bag 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 87².

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 to check that the food matches requirements of this specification. Analytical tests in Table 3 are usually utilized, and additional tests might be performed. Suppliers should follow its own food safety and quality management plan. WFP reserves the rights to change the testing plan at any time.

² OIML R 87 Quantity of commodity in prepackages https://www.oiml.org/en/files/pdf_r/r087-e04.pdf (latest edition)

Table 3: List of compulsory tests and reference methods

No	Tests	Requirements	Reference methods (latest versions) ³
1	Moisture	14 % max	ISO 24557
2	Organoleptic	Bright and clear appearance, Normal smell and colour	Organoleptic examination
3	Protein	20% min	ISO 20483
4	Size	80% min (over 3.5mm sieve) or as per contract	ISO 605
5	Color	As per contract	
6	Other edible grains	0.5% max	
7	Grains from other kinds of lentils	0.5% max	
8	Total damaged	2% max	
9	Seeds with serious defects	1% max	
10	Insect damaged	0.5 % max	
11	Broken	3% max	
12	Filth	0.1% max	
13	Dead insects (whole or fragment)	0.02% max	
14	Inorganic matter	0.2% max	
15	Foreign matter	0.5% max	
16	Mouldy and sprouting grains; Toxic-noxious seeds ⁴ ; Live insect	Free/Nil	
17	Discoloured	1% max	
18	Other coloured (other than discoloured seeds)	2% max	
19	Immature Grains (wrinkled/shrunk)	2 % max	
20	Aflatoxin (B1+B2+G1+G2)	4 ppb max	ISO 16050; EN 12955
21	Aflatoxin B1	2 ppb max	ISO 16050; EN 12955
22	Lead	0.1 ppm max	AOAC 2013.06
23	Cadmium	0.1 ppm max	AOAC 2013.06
24	Radiation (Only for foods originated from Ukraine & Russia or as per contract)	10 Bq/kg max (Cs137&Cs134)	WEAC.RN.METHOD3.0 (Cs and other)
25	GMO (only if required)	As per contract	ISO 21570

³ or equivalent validated methods

⁴ All nonquarantine weed seeds listed in Syrian Decree # 158 shall be reported (e.g. *Hordeum vulgare*, *Brassica ssp.* and *Polygonum convolvulus*)