



Technical Specifications for **WHOLE LENTIL**

Specification reference: **Whole Lentil**

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1. SCOPE

This specification applies to **Whole Lentil** purchased by WFP.

2. DEFINITION

Damaged lentils may be peeled, split, broken, sprouted, distinctly green, frost damaged, distinctly deteriorated or discoloured by weather or disease, insect damaged, heat damaged or otherwise damaged in a way which materially affects quality.

Peeled, split and broken includes lentils which are otherwise sound but which are less than three-quarters of whole seeds or where less than one-half of the seed coat is intact. Lentils with cracked or clipped seed coats are considered sound when the cotyledons are firmly held together.

Insect damaged are any lentil grains which has been damaged by insects or pests.

Heated 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.

Frost damaged is normally indicated by a combination of wrinkling and close adherence of the seed coat to the cotyledon. The seed coat may be translucent in appearance, and the cotyledons are brittle in texture. Frost damage is included in the tolerance for *Damage*.

Sprouted: Lentils are considered sprouted when the seed coat splits and the primary root emerges from between the cotyledons.

Foreign material includes anything that is not a lentil or part of a lentil.

Total foreign material includes inorganic material and all other foreign materials.

3. REFERENCE

Codex Standard for certain pulses grains (Codex Stan 171-1989, rev. 1-1995).

Canada Grain Commission: Official grain grading guide- Lentil
(<http://www.grainscanada.gc.ca>).

Turkish Standard for Lentil (TS 143).

4. PRODUCT SPECIFICATION

4.1 General requirements

- Moisture: **14.0% max**
- Peeled, split and broken: **3.5 % max**

- Insect damaged: **1.0% max**
- Total damage: **3.5% max**
- Inorganic material: **0.2% max**
- Total foreign material: **0.5% max**
- Minimum Size: **3mm diameter**
- Organoleptic: **Clean and bright appearance, Natural smell**
- Live insect: **Nil**
- Color: **As per contractual agreement**

Whole Lentil shall not contain contaminants and toxins in amounts which may represent a hazard to human health. Specific limit of some contaminants and toxins is presented in table 1.

Table 1: Limit of contaminants and toxins

No	Contaminant and toxin	Limit
Heavy metal		
1	Arsenic (As)	0.10 ppm max.
2	Copper (Cu)	2.0 ppm max.
3	Lead (Pb)	0.10 ppm max.
4	Cadmium (Cd)	0.02 ppm max.
5	Mercury (Hg)	0.01 ppm max.
Pesticide residues		
6	Carbamate	< 10 ppb
7	Organochlorine	< 10 ppb
8	Organophosphorus	< 10 ppb
9	Pyrethroid	< 10 ppb
Toxic or noxious seeds		
10	Crotalaria (Crotalaria spp.)	Free
11	Corn cockle (Agrostemma githago L.)	Free
12	Castor bean (Ricinus communis L.)	Free
13	Jimson weed (Datura spp.)	Free
Radiation		
14	Radiation	10 Bq/Kg max.
Mycotoxins		
15	Aflatoxin (total B1+B2+G1+G2)	20 ppb max.
16	Fumosin	5 ppb max.
17	Zearalenone	100 ppb max.
18	Ochratoxin A	5 ppb max.

5. PACKAGING AND MARKING

As per contractual agreement.

6. STORING

Whole Lentil must be stored under dry, ventilated and hygienic conditions.

7. SAMPLING REQUIREMENTS

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

For packed units, sampling frequency and reference method are showed in *table 2*. One laboratory samples of about 3 kg is required by lot or sub-lot of 500MT maximum.

For the bulk (static and flowing), the sampling must follow the rules described in paragraphs 5.2 of ISO 24333-2009.

Table 2: Sampling rules

Lot or sub-lot size (MT)	Number of increment	Place of sampling	Reference
≤100	3 % of bags and minimum 50 bags (e.g. 60 increments for a lot of 100 MT, packed in 50 kg bag)	Warehouse or during production	GAFTA 124-2
101-200	3 % of bags (e.g. 120 increments for a lot of 200 MT, packed in 50 kg bag)		
201-300	3 % of bags (e.g. 180 increments for a lot of 300 MT, packed in 50 kg bag)		
301-400	3 % of bags (e.g. 240 increments for a lot of 400 MT, packed in 50 kg bag)		
401-500	3 % of bags (e.g. 300 increments for a lot of 500 MT, packed in 50 kg bag)		

7. ANALYTICAL REQUIREMENTS

The principal tests in table 3 must be performed in order to check if the quality of the **Whole Lentil** meets above requirements. Additional analyses shall be defined in case of further quality assessment.

Table 3: List of compulsory tests and reference methods

No	Parameters	Recommended level	Reference methods (or equivalent)
1	Moisture	14.0% max	ISO 712-2009
2	Peeled, split and broken	3.5 % max	ISO 605
3	Insect damaged	1.0% max	Visual inspection
4	Total damage	3.5% max	Visual inspection
5	Inorganic material	0.2% max	Visual inspection
6	Total foreign material	0.5% max	Visual inspection
7	Minimum Size	3mm diameter	ISO 605
8	Organoleptic	Clean and bright appearance, Natural smell	ISO 605
9	Live insect	Nil	Visual inspection
10	Color	As per contractual agreement	Visual inspection

A guide for grading is presented in annex 1.

