



## Technical Specifications for

# AUSTRALIAN FAVA BEANS (or BROAD BEANS)

Specification reference: **Australian Dry Fava Beans (or Broad Beans)**

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## 1. SCOPE

This specification applies to dry **Australian Dry Fava Beans (or Broad Beans)** purchased by WFP.

## 2. DEFINITIONS

**Purity:** The amount of material of the particular pulse in question in the sample. Purity includes the seed coat and kernel whether intact or defective. It excludes all other plant material of the pulse in question. Purity is generally the opposite of Foreign Material.

**Moisture Content:** The amount of water measured in a sample of beans.

**Defective** refers to beans that have been damaged to some degree due to a range of factors including but not limited to disease, environment, handling, harvest, stress and a weather event.

Generally includes beans not of the specified variety and seed coats or kernels that are:

- |                                        |                             |
|----------------------------------------|-----------------------------|
| - Ascochyta affected                   | - Mouldy & Caked            |
| - Bin Burnt & Heat Damaged             |                             |
| - Broken/Chipped/Loose Seed Coat/Split | - Poor Colour               |
| - Diseased                             | - Sappy                     |
| - Frost Damaged, Shrivelled & Wrinkled | - Sprouted                  |
| - Insect Damaged                       | - Stained & Weather Damaged |

**Ascochyta** is a fungal disease that attacks plant foliage and seed pods. Lesions are generally visible to the naked eye. The lesion generally appears intense dark brown to black and often fluoresces. It is commonly oval to circular and localised in nature, but may vary in shape.

**Bin Burnt & Heat Damaged:** Exposure to severe heat during storage. Heating occurs via mould damage or incorrect drying of high moisture grain. The seed coat or kernel appears

reddish-dark brown and blackened or burnt in severe cases. These grains may be similar in appearance to Poor Colour brown seeds.

**Broken/Chipped/Loose Seed Coat/Split:** Damage due to poor harvesting and/or handling techniques. Late harvesting may exacerbate this defect. Breakage, cracking, peeling or splitting of the seed coat or chipping and splitting of the kernel in various forms. Damage to the seed coat may be referred to as loose seed coat or skin damage. Damage to the kernel may be referred to as chipped or scratched.

**Frost Damaged, Shrivelled & Wrinkled:** Damage has occurred during the maturation phase due to some form of environmental or agronomic stress such as frost. Visible damage to the seed coat or size and shape of grain whereby the grains are severely distorted and/or shrunk. Seed coats may tightly adhere to the kernel or be brittle. Seed coats may show a level of discolouration depending on the extent of damage. Grains are often smaller than the majority in the sample.

**Insect Damaged:** Damage due to any insect such as Pea Weevil, Etiella grub and Heliothis eating the seed coat or more commonly, the kernel. The seed coat and kernel have a chewed appearance. Kernels may contain holes as a result of insects boring through the kernel. Mechanical damage resulting in Broken or Split grains is not included in this definition.

**Mouldy & Caked:** Exposure to bacteria or fungi in the field or in storage. Heat, subsequent mould attack and high moisture conditions may lead to adherence of foreign material or joining of mouldy grains. **Mould** is usually indicated by blackening, discolouration of all or part of the seed coat or kernel. Grains may be soft but may also appear hard after drying out. Fungal growth may be visibly apparent on the seed coat or kernel as a fungus of various colours. Foreign material may adhere to the seed coat and visually detract from the appearance. An Objectionable Odour must not be detected. This definition does not include Ascochyta lesions. Seed coats or kernels may be similar in appearance to Poor Colour or Bin Burnt & Heat Damaged.

**Sappy** are those grains that have been harvested before maturity. Grains are generally soft when pressed.

**Sprouted:** Damage due to wet weather conditions during maturation. Also occurs through moisture ingress when in storage. The seed coat has split and the primary root has emerged. This includes early and any further advanced stage of growth of the primary root. Includes grains where the primary root has been knocked off during the harvesting or handling process.

**Stained & Weather Damaged:** Damage has occurred during the maturation phase due to some form of disease, weather event or stress prior to harvest. A general term used to describe visible damage to the seed coat or kernel that may or may not otherwise be defined or be distinguishable from other defects in these Standards. Seed coats and kernels may be discoloured or altered in size or shape. Weather damage may also lead to Poor Colour, a Loose Seed Coat, Shrivelled and Wrinkled.

**Screening.** All material passing through a 6 mm slotted screen is part of Screenings or Foreign Material. Use “Forty Shakes” Sieving Method

**Poor Colour:** Seed coats or kernels are not considered good colour. Seed coats and kernels vary from white to dark brown/black depending on the pulse type. Refer to each Standard and Visual Quality Chart for further information. Seed coats and kernels may be similar in appearance to various other defects such as Bin Burnt & Heat Damaged, Mouldy or Stained & Weather Damaged. Does not include Contrasting Colour.

**Foreign Material** refers to Unmillable Material and all vegetable material other than seed material (seed coats or kernels) of the bean in question being sampled and assessed according to these Standards. This includes:

- Foreign Seeds (Weed seeds), including Small Foreign seeds
- Empty seed pods or pieces of seed pods of the pulse being assessed
- Empty seed pods, pieces of seed pods or seed pods containing seeds of all other weed seeds
- Seed attachments of the pulse being assessed
- Unmillable Material (Soil, sand, sticks etc)
- Field Insects
- Grasshoppers and Locusts
- Ryegrass Ergot
- Snails
- Stored grain Insects (dead and pieces).

**Foreign Material** excludes pods containing seeds of the pulse being assessed as these are classified as Defective. Note there may be separate tolerances for parameters listed within Foreign Material.

**Unmillable Material** includes soil, sand stones, pieces of snail, pieces of Stored Grain Insects, pieces of Field Insects (except Grasshoppers and Locusts) and other non-vegetable matter.

**Snails** refers to whole or substantially whole (more than half) empty snail shells, bodies or bodies with shells, irrespective of species. Tolerances generally apply to live and dead snails. Pieces of material not defined as a Snail (i.e., smashed snail shells that remain in the sample after cleaning) are classified as Unmillable Material.

**Objectionable Material** refers to any objectionable foreign material that may or may not be otherwise stated in these specifications. Objectionable Material has the ability to degrade the hygiene of the beans. It may become a food safety issue or may have a commercially unacceptable odour.

**Ryegrass Ergot** is a contaminant resulting from the infection of ryegrass kernels by the fungus *Claviceps purpurea*.

### 3. REFERENCE

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

Australian Pulse standards 2013/2014

(<http://www.pulseaus.com.au/pdf/Standards/Pulse%20Standards.pdf>)

## 4. PRODUCT SPECIFICATION

### 4.1 General requirements

|                                    |                                                                           |
|------------------------------------|---------------------------------------------------------------------------|
| • Physical Characteristics:        | <b>sound, dry, fresh and colour typical for the variety of the season</b> |
| • Purity:                          | <b>99.5% max. by weight</b>                                               |
| • Moisture content:                | <b>14.0% max. by weight</b>                                               |
| • Defective:<br>Of which           | <b>7.0% max. by weight</b>                                                |
| • Mould:                           | <b>1.0% max. by weight</b>                                                |
| • Screening:                       | <b>1.0% max. by weight</b>                                                |
| • Mechanical damaged:              | <b>6.0% max. by weight</b>                                                |
| + Kernel damage:                   | <b>3.0% max. by weight</b>                                                |
| + Seed coat damage:                | <b>5.0% max. by weight</b>                                                |
| • Poor colour:                     | <b>3.0% max. by weight</b>                                                |
| • Ascochyta                        | <b>3.0% max. by weight</b>                                                |
| • Foreign material:                | <b>0.5% max. by weight</b>                                                |
| • Unmillable Material:             | <b>0.1% max. by weight</b>                                                |
| • Snails:                          | <b>Nil</b>                                                                |
| • Objectionable Material:          | <b>Nil</b>                                                                |
| • Ryegrass Ergot:                  | <b>4.0cm max.</b>                                                         |
| • Dead insect:                     | <b>10/kg max.</b>                                                         |
| • Live insects:                    | <b>Nil</b>                                                                |
| • Crop year:                       | <b>As per contractual agreement</b>                                       |
| • GMO ( <i>only if required</i> ): | <b>Negative (&lt; 0.9% of GMO material)</b>                               |

### 4.2 Toxic or noxious seeds

The product covered by the provisions of this specification 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.

### 4.3 Contaminants

#### 4.3.1 Heavy metals

Beans shall be free from heavy metals in amounts which may represent a hazard to health.

#### 4.3.2 Pesticide residues

Beans shall comply with those maximum residue limits established by the Codex Alimentarius Commission for this commodity.

#### 4.3.3 Mycotoxins

Beans shall comply with those maximum mycotoxin limits established by the Codex Alimentarius Commission for this commodity.

### 4.4 Hygiene

4.4.1 It is recommended that the product 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.

4.4.2 To the extent possible in good manufacturing practice, the products shall be free from objectionable matter.

4.4.3 When tested by appropriate methods of sampling and examination, the products:

- 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.

## 5. PACKAGING AND MARKING

As per contractual agreement.

## 6. STORING

**Beans** 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 1*. 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 1: Sampling rules*

| Lot or sub-lot size (MT) | Number of increment                                                                                                                                                                                                                                                                 | Place of sampling              | Reference (or equivalent) |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------|
| ≤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               |
| 101-500                  | 3 % of bags<br><u>Examples:</u><br>- 120 increments for a lot of 200 MT, packed in 50 kg bag)<br>- 180 increments for a lot of 300 MT, packed in 50 kg bag<br>-240 increments for a lot of 400 MT, packed in 50 kg bag<br>- 300 increments for a lot of 500 MT, packed in 50 kg bag |                                |                           |

## 7. ANALYTICAL REQUIREMENTS

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

*Table 2: List of compulsory analyses/tests and reference method*

| No | Analyses/tests           | Limit                                                                     | Reference method<br>(or equivalent) |
|----|--------------------------|---------------------------------------------------------------------------|-------------------------------------|
| 1  | Physical Characteristics | <b>sound, dry, fresh and colour typical for the variety of the season</b> | <i>Organoleptic examination</i>     |
| 2  | Purity                   | <b>99.5%</b> max. by weight                                               | <i>Visual examination</i>           |
| 3  | Moisture content         | <b>14.0%</b> max. by weight                                               | <i>ISO 712 2009</i>                 |
| 4  | Defective                | <b>7.0%</b> max. by weight                                                | <i>Visual examination</i>           |
|    | <i>Of which</i>          |                                                                           |                                     |
| 5  | Mould                    | <b>1.0%</b> max. by weight                                                | <i>Visual examination</i>           |
| 6  | Screening                | <b>1.0%</b> max. by weight                                                | <i>Visual examination</i>           |
| 7  | Mechanical damaged       | <b>6.0%</b> max. by weight                                                | <i>Sieving</i>                      |
| 8  | + Kernel damage          | <b>3.0%</b> max. by weight                                                | <i>Visual examination</i>           |
| 9  | + Seed coat damage       | <b>5.0%</b> max. by weight                                                | <i>Visual examination</i>           |
| 10 | Poor colour              | <b>3.0%</b> max. by weight                                                | <i>Visual examination</i>           |
| 11 | Ascochyta                | <b>3.0%</b> max. by weight                                                | <i>Visual examination</i>           |
| 12 | Foreign material         | <b>0.5%</b> max. by weight                                                | <i>Visual examination</i>           |
| 13 | Unmillable Material      | <b>0.1%</b> max. by weight                                                | <i>Visual examination</i>           |
| 14 | Snails                   | <b>Nil</b>                                                                | <i>Visual examination</i>           |
| 15 | Objectionable Material   | <b>Nil</b>                                                                | <i>Visual examination</i>           |
| 16 | Ryegrass Ergot           | <b>4.0cm</b> max.                                                         | <i>Visual examination</i>           |
| 17 | Dead insect              | <b>10/kg</b> max.                                                         | <i>Visual examination</i>           |
| 18 | Live insects             | <b>Nil</b>                                                                | <i>Visual examination</i>           |
| 19 | Crop year                | <b>As per contractual agreement</b>                                       |                                     |
| 20 | GMO (only if required)   | <b>Negative</b> (< 0.9% of GMO material)                                  |                                     |