EAST AFRICAN COMMUNITY

EDICT OF GOVERNMENT

In order to promote public education and public safety, equal justice for all, a better informed citizenry, the rule of law, world trade and world peace, this legal document is hereby made available on a noncommercial basis, as it is the right of all humans to know and speak the laws that govern them.

EAS 130 (1999) (English): Green coffee beans – Specification

BLANK PAGE

EAS 130:1999
ICS 67.140.20
HS 0901.11.00

EAST AFRICAN STANDARD

Green coffee beans – Specification

EAST AFRICAN COMMUNITY

First Edition 1999

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

In order to achieve this objective, the Community established an East African Standards Committee mandated to develop and issue East African Standards.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

East African Community
AICC Building
Kilimanjaro Wing, 5th Floor
P.O. Box 1096
Arusha
Tanzania
Tel: 255 27 2504253/8
Fax: 255 27 2504255
E-mail: eac@eachq.org
Web: www.eachq.org

ISBN

Green coffee beans – Specification

1 Scope

This East African Standard specifies requirements for green coffee beans. It applies to the following categories of coffee:

a) Arabica coffee

- Wet processed
- Dry processed

b) Robusta coffee

- Wet processed
- Dry processed

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EAS 106, *Coffee and its products — Vocabulary*

KS 05-174, *Methods of analysis of green coffee*

3 Terms and definitions

For the purposes of this East African Standard, the definitions referred to in EAS 106, *Coffee and its products — Vocabulary* shall apply.

4 Requirements

4.1 General requirements

Green coffee beans shall be clean and reasonably free from extraneous matter and shall not be contaminated.

4.2 Chemical and physical requirements

Green coffee beans offered for sale shall comply with the requirements specified below:

4.2.1 Moisture content

The moisture content shall be maximum 10,5 (m/m), and the green coffee stored in storage conditions of 20 °C/60 % r.h. (see Annex A).

4.2.2 Pesticide residues and contaminants

Green coffee shall not contain levels of contaminants, pesticide residues, trace metals, heavy metals and any other harmful material in excess of Codex Recommended Limits. It shall be free from excessive dirt, stones, glass and metallic pieces.

Limits for some pesticide residues are as follows:

COMMON OR TRADE NAME	CHEMICAL NAME	TOLERANCE (ppm)
Dichlorvos (DDVP)	2-2 dichloro-vinyl dimethyl phosphate	0,5
Disulfeton (disyston)	Diethyl S(2-(ethyl thio) ethyl) phosphorothiolothonate	0,3
Fenitrothion (sumithion, felithion, demathin)	Dimethyl 3-methyl-4-nitropheny phosphorethinate	0,1
Aluminium phosphide	Phosphin	0,1
Dalapan	-	2
Paraquat	-	0,05
Mirex	-	0,01
Menocrotophos	-	0,1
Fenimiphos	-	0,1
Aldicarb	-	0,1

4.2.3 Infestation

Coffee beans of Classes 1 to 6 shall be free from damage and infestation due to insects, fungi and rodents.

Class 7 No infestation but damage tolerable up to 5 % of the beans

Class 8 Infestation tolerable to 0.05 % and damage to 15 %t

Class 9 Infestation tolerable to 0.08 % and damage to 25 %

Class 10 Infestation tolerable up to 0.09 % and damage to 60 %

4.2.4 Odour

Coffee beans shall be free from foreign odour.

5 Grading

5.1 Grading by size and shape

Coffee beans are mechanically screened and divided into various size categories for sale. Screens with round perforations shall be used for size grading of the flat coffee beans. Slotted perforations shall be used for size grading of the peaberries (see Table 1).

Table 1 — Coffee grades by size

GRADE	SCREEN NUMBER ON WHICH BEANS ARE RETAINED, SIZES AS PER ISO 4150*
E (elephant) Two beans joined together, it is a genetic defect. And includes very large (bold) AA.	Retained on 21 (size diameter 8,3 mm)
PB Peaberries One ovule develops instead of the usual two	Through 17 retained on 12 (4,76 mm)
AA Flat beans	Through 21 retained on 18 (7,2 mm)
AB Flat beans	Through 18 retained on 16 (6,35 mm)
C Smaller beans	Through 16 retained on 10 (3,96 mm)
TT Light density beans, from AA, AB and E grades by air extraction.	
T Smallest, consists of brokens and small C	Through screen No.7 (2,9 mm)
ISO 4150, Green coffee — Size analysis — Manual sieving	

When a coffee grade is specified, a minimum 95 % of the beans shall fall in that grade category.

5.2 Defects

A list of defects found in coffee is tabulated in Annex B, Table B1.

5.3 Grading by cup quality

Grading by size and shape is only a fair estimate of coffee quality. Experienced coffee liquorers shall assess the actual quality of coffee after roasting and brewing a sample of the coffee already graded by size.

Liquoring shall be done according to KS 01 …*[1)].

Six cup qualities are defined as follows:

–Fine

–Good

–Fair to good (fully FAQ)

---

1) Method of liquoring coffee for classification. (To be formulated).

–FAQ (fair average quality)

–Fair

–Poor to fair

5.4 Final quality classes (standards)

These shall be based on raw bean quality (colour and size as to the grade specified), roast quality (colour and size as to the grade specified), roast quality (general appearance and centre cuts), and liquor (a combination of acidity and body to give a flavour and aroma). See Table 2.

Table 2. Quality classes of coffee

CLASS (STANDARD)	SIZE AND OTHER QUALITY ASSESSMENT VALUES				
	AA/PB/E	'AB'	'TT'	'C'	'T'
1	Fine				
2	Good	Good			
3	Fair to good	Fair to good	Fair to good		
4	FAQ	FAQ	FAQ	Fair to good	
5	Fair	Fair	Fair	Fair	Fair
6	Poor to fair	Poor to fair	Poor to fair	Poor to fair	Poor to fair

Additional classes of poorer quality coffees and unwashed coffee (MBUNI) are described in Annex C (Classes 7 to 10). This includes electronic sorted defects.

6 Methods for describing a lot/consignment of green coffee

The seller shall declare the following information in respect of each lot/consignment of green coffee:

a) country of origin;

b) category of green coffee;

c) number of bags in the lot and the average net weight of each bag;

d) bean size in terms of grade.

7 Packaging and marking

7.1 Packaging

Packing of green coffee shall be in suitable packaging materials capable of protecting the products from damage and deterioration, and which do not impart any foreign odours or harmful effects to the products.

7.2 Marking

The marking of green coffee bags and packages shall be in accordance with the International Coffee Organization (ICO) requirements.

Annex A
(informative)

Determination of moisture content of green coffee (Routine method)

Introduction

The routine method for the determination of the moisture content of green coffee is based on the principle of the compensation of errors leading to a low result (moisture not completely removed, oxidation of products) and errors leading to a high result (removal of substances other than water).

It is observed, indeed, that the loss in mass after the first period in the oven is less than the moisture content determined by the basic reference method (ISO 1446[2)]) and that the total loss in mass after the second period of drying is greater than this moisture content. The loss in mass after the first period in the oven may, therefore, be considered as an underestimate of the moisture content.

The compensation between these two errors is made by means of an empirical correction determined experimentally.

Definition

moisture of green coffee
the loss in mass determined under the operating conditions specified below. The moisture content is expressed as a percentage by mass.

Principle

Drying of a test portion at a temperature of 130 °C ± 2 °C, at atmospheric pressure, in two stages with an intermediate rest period, in order to redistribute uniformly the moisture in the bean.

The result thus obtained, after a correction has been applied, is regarded as agreeing with that provided by the basic reference method (ISO 1446).

A1 Apparatus

A1.1 Electrically heated constant-temperature oven, having effective ventilation and capable of being regulated in such a way that the temperature of the air and of the shelves carrying the test portions is 130 °C ± 2 °C in the vicinity of the test portions.

The oven shall have a heating capacity such that having been set at a temperature of 130 °C, it is able to regain this temperature in less than 45 min (preferably in less than 30 min) after the insertion or the maximum number of test portions that can be dried simultaneously.

A1.2 Dish with lid, of corrosion-resistant metal or of glass, with an effective surface area of at least 18 cm^2 (for example 50 mm minimum diameter and 25 mm to 30 mm deep).

---

2) Green coffee — Determination of moisture content (Basic reference method).

A1.3 Desiccator, containing reagent grade phosphorus (V) oxide ($P_2 0_5$) or any other effective dehydrating agent.

A1.4 Analytical balance.

A2 Procedure

A2.1 Test portion

Weigh the dried dish (see A1.2) with its lid, to the nearest 0,002 g. Introduce approximately 5 g of green coffee taken from the laboratory sample. Spread this test portion over the bottom of the dish in a single layer or bean. If the test portion contains a heavy impurity (nail, stone, piece or wood, etc.), discard the test portion and take a new portion from the laboratory sample. Cover the dish with its lid and weigh the dish plus lid plus test portion to the nearest 0,002 g (see A4.1).

A2.2 Determination

A2.2.1 *First Period in the Oven* — Place the lid of the dish in the oven (see A1.1), controlled at 130 °C ± 2 °C, and place on the lid the dish containing the test portion (see A2.1). Remove the dish after a period of 6 h ± 15 min, cover it with the lid and place it in the desiccator (see A1.3). After cooling to ambient temperature (from 30 min to 40 min after placing it in the desiccator), weigh it, still closed, to the nearest 0,002 g. After weighing, replace the dish in the desiccator for at least 15 h.

A2.2.2 *Second Period in the Oven* — Under the same conditions as in A2.2.1, replace the dish in the oven at 130 °C ± 2 °C and let it remain there for 4 h ± 15 min. Remove it, allow it to cool to ambient temperature in the desiccator and weigh again.

A2.3 Number of determinations

Carry out at least two determinations on the same sample.

A3 Expression of results

A3.1 Methods of calculation and formulas

A3.1.1 *First Period in the oven* — The loss in mass, P_1, during the first drying in the oven, expressed in grams per 100 g of initial sample, is given by the following formula:

$$P_1 = (m_0 - m_1) \times \frac{100}{m_0}$$

where

m_0 is the initial mass, in grams, of the test portion (see A2.1)

m_1 is the mass, in grams, of the test portion after the first (6 h) period in the oven (A2.2.1).

A3.1.2 *Second Period in the oven* — The loss in mass, P_2, during the two periods (6 h + 4 h = 10 h) in the oven, expressed in grams per 100 g of initial sample, is given by the following formula:

$$P_2 = (m_0 - m_2) \times \frac{100}{m_0}$$

where

m_0 is the initial mass, in grams, of the test portion (see A2.1)

m_2 is the mass, in grams, of the test portion after the second (4 h) period in the oven (A2.2.2).

A3.1.3 *Moisture Content (see A4.2)* The moisture content of the sample, *P,* expressed as a percentage by mass, is equal to the loss mass observed after the first period in the oven, plus half the additional loss in mass observed after the second period in the oven.

$$P = P_1 + \frac{P_2 - P_1}{2}$$

Take as the result the arithmetic mean of the two determinations, provided that the requirement concerning repeatability (see A3.2) is complied with.

A3.2 Repeatability

The difference between the results of two determinations carried out simultaneously or in rapid succession by the same analyst should be not greater than 0.3 g of moisture per 100 g of sample.

The individual results generally differ from the moisture content obtained by the basic reference method (ISO 1446) by less than 0.3 g of moisture per 100 g of sample.

NOTE 1 After the test portion has been weighed, the dish may be left standing, for example, in the case of a series of weighings.

NOTE 2 The difference between the losses in mass observed after 6 h (see A3.1.1) and 6 h + 4 h = 10 h (see A3.1.2) in the oven at 130 °C, that is, the difference between P_1 and P_2, should normally be less than 1,0 g per 100 g of sample. If this is not the case, the test should be repeated or the basic reference method (ISO 1446) should be used.

Annex B
(informative)

Table B1 Chart of coffee defects and equivalent (black bean) rating of one count of the described imperfect character

CHARACTER	DESCRIPTION AND CAUSE	OTHER DEFECT	DEFECT VALUE	
			ARABICA	ROBUSTA
(1) Black bean	Dark brown and is shrunken, A result of inadequate supply of carbohydrate during development of beans in the farm, or due to disease such as CBD. More than half of the external surface and interior of bean is black.	Down grades liquor flavour, gives heavy and commonish flavour or tasteless liquor.	1	1
(2) Partly black	Less than half of bean surface is black.		1/2	1/2
(3) Amber bean	Yellow semi-transparent bean. Formed in field due to iron deficiency.	Liquor lacks acidity and is commonish.	1/10	-
(4) Brown	Brown black bean due to attack by Antestia bug or brown patches due to blight in the field. Insect damaged.		1/5	-
(5) Bean with holes	Holes and tunnels in bean due to effect of coffee berry borer beetle in the field or store Insect infested	Liquor has grassy flavour, leaf taste.	1/2	1/5
(6) Immature	Unripe small bean with wrinkled or withered surface.		1/5	1/5
(7) Foxy silverskin	Beans with brownish skin (seed coat) from over-ripened cherries due to delayed picking or pulping.	Liquor has sour or fruity taste.	1/8	-
(8) Over-fermented	Deteriorated due to excess fermentation.	Geil. Gives a sour or bitter, potato green or onion flavour.	4	-
(9) Stinker bean	Over fermented to a certain extent. Brownish yellow bean whose embryo has been destroyed during processing and affected by fungal action. Have occasionally a waxy appearance.	Gives off foul odour similar to that of rotten coffee pulp.	5	2
(10) Broken or crushed bean	Pulper nip. Beans mechanically damaged during pulping due to wrong machine adjustment or under-ripeness of cherry.	Crushed.	1/5	1/5

Table (continued).

CHARACTER	DESCRIPTION AND CAUSE	OTHER DEFECT	DEFECT VALUE	
			ARABICA	ROBUSTA
(11) Faded bean	Very soft or spongy bean faded to white, caused by faulty drying or moisture reabsorption by green bean during storage.	Gives thin commonish and woody flavours	1/5	1/5
(12) Bean in parchment	Parchment not hulled out. Beans wrapped in the endocarp (parchment)		1/10	1/10
(13) Pod	Dried/cherry (MBUNI). Dried fruit of the coffee tree comprising its external envelopes and one or more beans.	Revolting tastes	1	1
(14) Large husk	MBUNI husk. Unwashed coffee husk/skin. Husk fragment is fragment of dried external envelope (pericarp) .		1	1
(15) Small husk fragment	Parchment husk.		1/3	1/3
(16) Large twig	Twig or stick approximately 0,5 cm in length. Usually less than 1 cm.		2	2
(17) Large stone	Stone retained by a screen having round holes of 8,00 mm diameter		2	-
(18) Medium stone	Stone passing through 8.00 mm but retained on 4. 75 mm diameter holes.		1	-
(19) Small stone	Stone passing through a screen having round holes of 4.75 mm diameter.		1/2	-

Table (completed).

Annex C
(normative)

Descriptions of coffee classes

CLASS/STANDARD 1 Good solid bean, free from defectives, good colour and style, well prepared, good to fine roast, free from pales and softs, fairly white centre cuts. Must be a minimum of genuine to fine cup and of good flavour.

CLASS/STANDARD 2 Good heavy bean, good colour, very few defectives such as slightly disease-marked, well prepared. Good even roast, but odd semi-pales and a few softs allowed. Good well balanced cup.

CLASS/STANDARD 3 Well prepared solid bean coffee, but some coated and ragged beans allowed, fair to good colour, occasional slightly defected beans permitted but completely free from stinkers, semi-stinkers or ambers. Slight foxiness permitted provided that the liquor is not adversely affected thereby. Roast fair to good, but occasional semi-pales and some softs allowed.

Fully fair cup, slight onion flavour permitted provided that otherwise fully fair.

Under-dried or unevenly dried coffees shall not be permitted in the above three standards.

CLASS/STANDARD 4 Generally sound bean, fair appearance and colour although ragged and rather coated coffees are permitted, may include odd major defectives, but not blacks and stinkers, occasional minor defectives and insect-damaged beans allowed. Slight foxiness permitted provided that the liquor is not adversely affected thereby.

CLASS/STANDARD 5 Coffee not falling in the above four standards but rather better than Standard 6 would qualify, to include coffee of poorish colour, coated and ragged, light coffee of good appearance, and may contain several defectives, occasional stinkers or blacks. Liquor fair but occasionally tainted and unclean but no foul or potato flavour permitted.

CLASS/STANDARD 6 General poor appearance, may include a number of major defectives and stinkers, light and flaky coffee may be included. Roast generally poor and dull containing pales and softs. Liquor generally poor and some unclean, but no foul cups permitted.

Any coffee not falling into Standards 1 to 5 but which is reasonably merchantable provided that it is not foul smelling or tasting or which has not been ruined by bad preparation, or any other causes, would normally fall into this standard.

When damage such as Antestia is bad, such parcels will be relegated to lower classes but will still be accepted.

POOR QUALITY COFFEE CLASSES WHICH INCLUDE DEFECTS (CLASSES 7 TO 10)

Below are Standards 7 to 10 which include defects sorted out from higher Standards 1 to 6. Major defects include

1. Stinkers and semi-stinkers.