

DRAFT ZANZIBAR NATIONAL STANDARD

Methods for evaluation of quality of fresh poultry eggs

ZANZIBAR BUREAU OF STANDARDS

National Foreword

This Draft Zanzibar National Standard has been prepared by the Meat, Poultry, Eggs and related products Technical Committee. In accordance with the Zanzibar Bureau of Standards general procedures, this draft is here by presented to the public in order to receive any technical comment concerns.

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Methods for evaluating the quality of fresh poultry eggs



DRAFT FOR STAKEHOLDER'S COMMENT

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Methods for evaluation of quality of fresh poultry eggs

1 Scope

This African Standard specifies methods of sampling and test for evaluating the quality of fresh poultry eggs

2 Normative references

There are no normative references in his document.

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1 Description of shell condition and its cleanliness

3.1.1

lot

consignment of eggs with the same best before date

3.1.2

haugh unit

measure of egg protein quality based on the height of its egg white

3.1.3

albumen index

measure of the quality or freshness of an egg as determined by the height: width ratio of the albumin when the egg is broken on to a flat surface

3.1.4

yolk index

ratio of yolk height over yolk diameter

3.1.5

smashed

egg in which the shell is crushed or scattered thereby allowing the contents to come out

3.2 Description of air cell

3.2.1

practically regular

air cell which maintains practically a fixed position inside the egg and presents an even outline with not more than 6 mm movement in any direction when it is turned

3.2.2

free air cell

air cell that moves freely towards the uppermost point inside the egg as it is rotated slowly. The shell membranes are intact allowing the air cell to move freely in any direction between them.

3.2.3

bubbly air cell

ruptured air cell consisting of one or more small separate air bubbles floating beneath the main air cell

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3.3 Description of yolk shadow outline

3.3.1

outline slightly defined

yolk outline which is distinctly visible and blends into the surrounding white as the egg is rotated in front of the candler

3.3.2

outline fairly well defined

yolk outline which is discernible but cannot be outlined clearly when twirled in front of a candler

3.3.3

outline well defined

outline of the yolk clearly visible as it casts a dark shadow when twirled in front of a candler

3.4 Description of yolk defects

3.4.1

practically free from defects

yolk that shows no germ development, meat or blood spots

3.4.2

definite but not serious defects

yolk may show definite meat or blood spots on the surface with slight indications of germ development but without any pronounced or serious defects

3.4.3

definite and serious defects

yolk showing development of germ spot on the yolk, visible as a definite area with no blood ring

3.5 Description of egg white

3.5.1

clear

egg white which is free from discolouration and presence of any free-floating foreign bodies on it

3.5.2

firm

egg white which is sufficiently thick or viscous and thus makes the outline of yolk slightly or indistinctly visible when twirled in front of a candle

3.5.3

reasonably firm

egg white which is reasonably thick or viscous but enough to allow casting of the outline of the yolk when twirled and candled

3.5.4

weak and watery

egg white which is thin and lacks in viscosity. It permits the yolk to approach the shell closely on candling, making yolk outline clearly visible on twirling

4 Sampling and testing

4.1 Sampling

Twenty eggs should be drawn from a lot at random for estimating the breakout quality of eggs.

4.2 Testing

The following test shall be carried out to determine the egg quality.

4.2.1 External quality

Determine the external quality of egg for the parameters given in 3.1 and 3.2.

4.2.2 Internal quality

Determine the external quality of egg for the parameters given in 3.1.5 to 3.1.7 through visual assessments.

4.3 Candling

4.3.1 Hold the egg before a beam of 60-watt light in such a way that the light rays penetrate and illuminate the interior of the egg for inspection. Note any internal defects.

4.3.2 Measure the air cell height by means of air cell gauge while candling prior to breaking.

4.4 Shell thickness

After breaking the egg, boil the shell in 2.5 % sodium hydroxide solution for 5 min. Wash and dry in a thermostatically controlled oven at 100 °C to 105°C for 24 h. Determine the thickness of the shell by screw gauge at three different longitudinal points and take the average of the readings.

4.5 Haugh Unit (HU)

4.5.1 Haugh unit can be measured by using the interior egg quality calculator. The following precautions should be followed while estimating the same:

- a) The internal temperature of eggs should not be lower than 7 °C or higher than 15 °C at the time of performing the breakout test.
- b) Care should be exercised to see that the thick white is not punctured while breaking.
- c) One egg at a time should be broken since it is important to measure the albumen height immediately after breaking.
- d) Measurement of height of thick albumen should be made with the help of a spherometer or Haugh meter or micrometre as shown in Figure A.1.
- e) Care should be taken to avoid measuring the albumen height in an area where there is a chalaza or air bubble.

4.7 Yolk index

Yolk index can be determined by measuring the height or width of the yolk after it has been separated from the albumen or of the yolk in its natural position when the egg is broken out on a flat surface.

$$\text{Yolk index} = \frac{\text{Height of yolk in mm}}{\text{Average diameter of yolk in mm}}$$

Annex A (informative)

A.1 Determination of Haugh Unit (HU)

Haugh unit can be measured by using the interior egg quality calculator. The following precautions should be followed while estimating the same:

- i) The internal temperature of eggs should not be lower than 7 °C or higher than 15 °C at the time of performing the breakout test.
- ii) Care should be exercised to see that the thick white is not punctured while breaking.
- iii) One egg at a time should be broken since It is Important to measure the albumen height immediately after breaking.
- iv) Measurement of height of thick albumen should be made with the help of a spherometer or Haugh meter or micrometre as given in Fig. 1.
- v) Care should be taken to avoid measuring the albumen height in an area where there is a chalaza for air bubble.

A.1.1 Eggs removed from the refrigerator should be kept for 3 h at ambient temperature of $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$. Determine the Haugh unit reading of the eggs by the following procedure:

- a) Check the zero reading by placing the instrument on a flat surface and lowering the plung until the point touches the surface. The pointer should be at zero. If not, slacken the clamp and turn the bezel so that the zero mark coincides with the pointer. Retract the point upwards to its full extent.
- b) Open the egg on to a flat glass plate of sufficient size to contain it, place the instrument over the egg, and lower the point until "it" just touches the albumen. The height is then indicated on the dial.

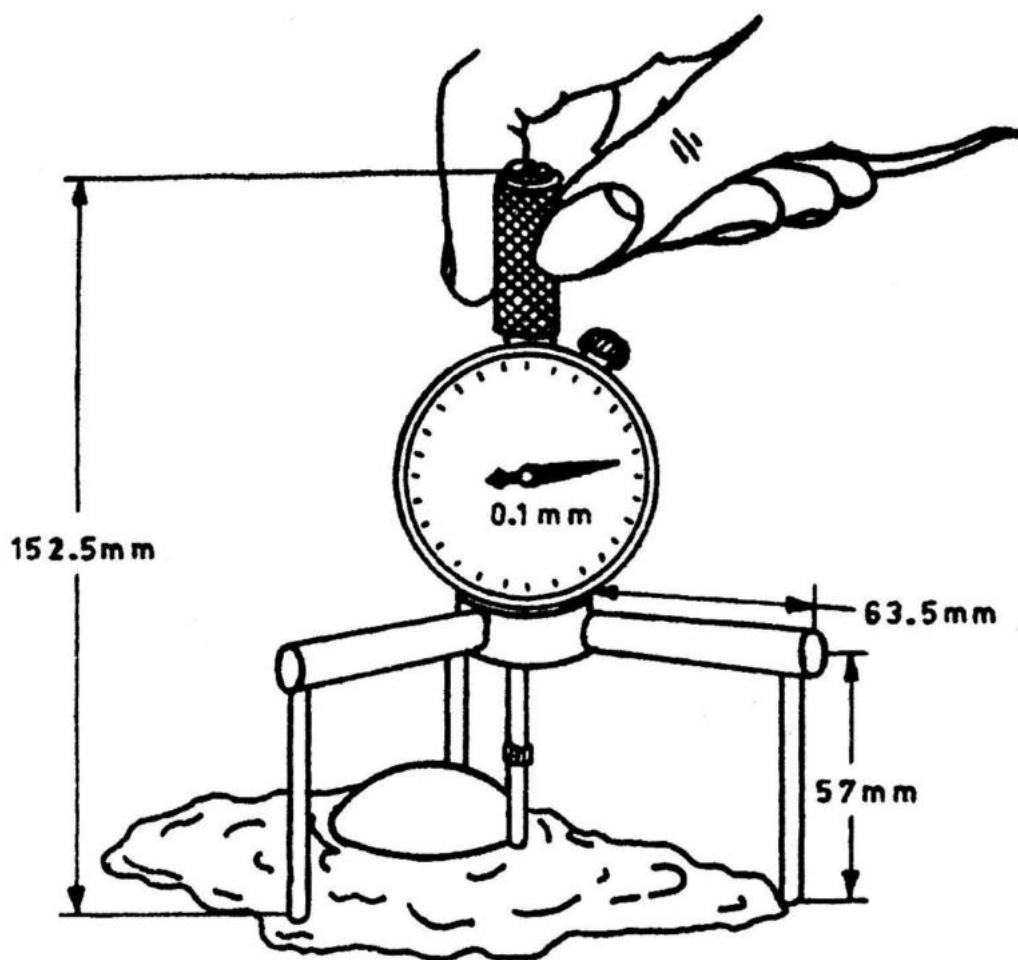


Figure A.1— Gauge for egg quality

The HU can then be calculated from the following equation:

$$HU = 100\log_{10}H + 7.57 - 1.7 M$$

where

HU is the haugh units of interior quality whose numerical value equals the quality value of the egg;

H is the height, in mm; and

M is the mass, in g.

NOTE An alignment chart for finding Haugh units without having to make calculation from the above formula is given in Figure A.2.

A.2 Albumen index

Albumen index can be determined by measuring the height of the thick albumen by spherometer or micro meter and average width of the thick albumen by using vernier calipers:

$$\text{Albumen index} = \frac{\text{Height of thick albumen in mm}}{\text{Average width of thick albumen in mm}}$$

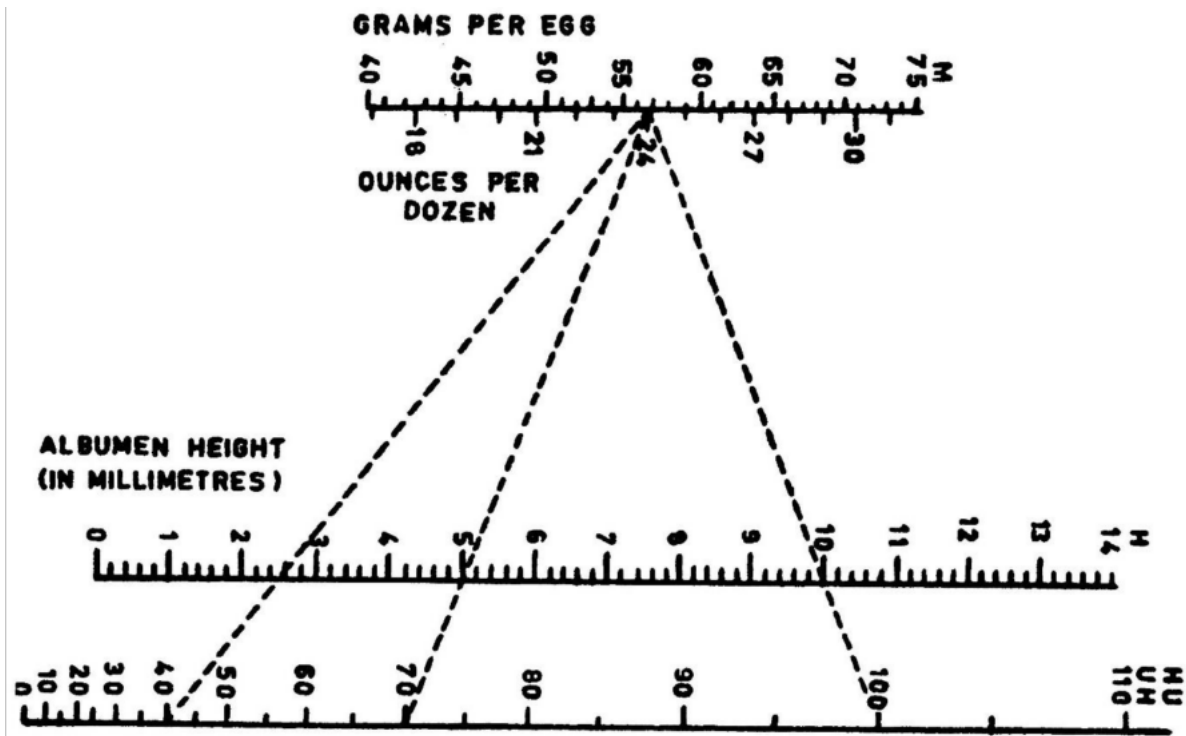


Figure A.2— Alignment chart

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