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Poultry egg candler (fertility tester) — Specification

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This African Standard was prepared by ARSO Technical Committee ARSO/TC 23, *Live animals.*

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Introduction

Egg candling/testing is done to check if embryos are developing correctly, thus saving a lot of time and money. It helps to prevent diseases by facilitating removal of rotten and infertile eggs early. This will save farmer's electricity and time as only fertile eggs will be incubated.

In addition, tracking of flock's fertility becomes easy. Selecting the best egg candler that suits your budget and offers value for money is not easy. There are many egg candler brands and models on the market. With this guide, choosing the best egg Candler that will meet your needs is made easy.

Poultry egg candler (fertility tester) — Specification

1 Scope

This Committee Draft African Standard specifies minimum safety requirements and performance tests for poultry fertility tester.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

3.1
blastodisc
unfertilized nucleus of an egg. No chicken can develop from a blastodisc

3.2
blastoderm
fertilized nucleus of the egg from which the chicken develops

3.3
egg
reproductive body in shells obtained from any avian species

3.4
embryo
developing chicken in the egg

3.5
fertile egg
egg in which fertilization of the blastodisc has occurred to create the blastoderm

3.6
infertile egg
egg in which fertilization of the blastodisc has not occurred

3.7
candling
method used to observe the growth and development of an embryo inside an egg using a bright light source behind the egg to show details through the shell

3.8
candler
device or instrument used to check the fertility of an egg. It is also used to determine the stage or level of embryonic development

3.9
clear egg
infertile eggs (containing no embryos) usually removed from the incubator during incubation

3.10
germinal disc
fertilization site on the egg yolk. Alternative names include blastodisc and blastoderm

4 Requirements

4.1 The tester shall consist of two unit parts, a transformer unit and projector unit (Figure 1).

4.2 Transformer unit shall be fitted with leg and 3 pin plug into electric supply point at one end, with a 2 pin outlet to connect the projector at the other end.

4.3 The projector shall contain aluminum casing. A white light reflector shall be mounted to reflect an arrow, high powered beam of light from the lamp. A convenient handle with a long flexible length with 2 pin plug is attached to the projector.

4.4 Electrical transformer adaptor to adapt the volt of electricity. A flexible leg sufficiently long shall be provided.

4.5 A rubber ring shall be provided at the attaching end of the tester, which shall avoid damage to the egg.

5 Material

5.1 The body of the egg tester shall be made of aluminum sheet and handle shall be of seasoned thick wood or any hard wood.

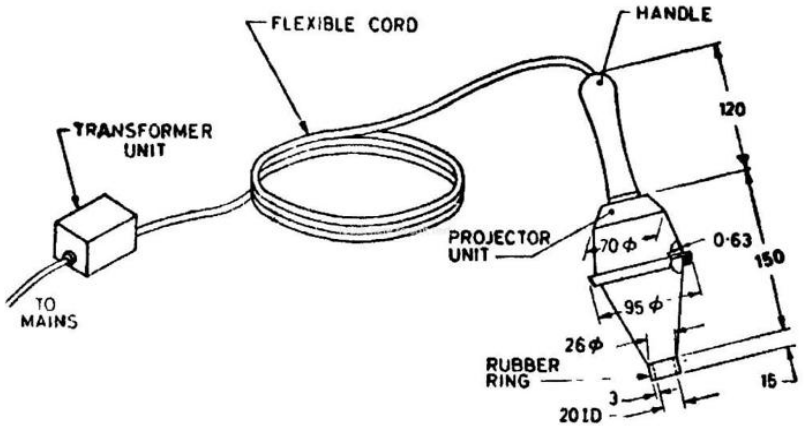
5.2 All materials used in the construction shall be of such quality and type that they shall withstand the effect of weather condition, excessive dampness, corrosive fumes or any other deleterious influences to which they are exposed under the conditions of use.

6 Light

All egg candlers work by illuminating the eggs. However, there are two kinds of light sources. Some bulbs emit too much heat that could damage the eggs and some bulbs emit little or no heat and are safe for eggs. When choosing egg candlers, it is recommended to choose one that comes with LED bulbs that wouldn't heat your eggs.

7 Size

There are many egg candlers of different sizes. There are small (handheld) egg candlers, table-top egg candlers and big egg candlers. Ones choice of egg candler is determined by the size or the number of eggs to be examined. Therefore, if one wants to candle large or jumbo eggs, it is better to buy medium or large egg candlers.



All dimensions in millimetres.

Figure 1 — The basic design of the poultry egg fertility tester

8 Designs and sizes of egg fertility testers

Poultry egg fertility testers come in different models and capacities. Examples and details of egg candlers are given in Table 1.

Table 1 — Examples of egg fertility testers (candlers)

S/N	Description	Mode of operation	Capacity
1	The egg is placed over the LED lamp of tester, and it is powered by electricity. 	Manual	Small-scale
2	The egg balances on the LED lamp, and there's a rubber bung that fits over the lamp so it blocks all light from outside and concentrates it on the egg. 	Manual	Small-scale
3	Basically, the candling machine is a table for manual egg candling. It is ideal for small hatchery operations or as a backup in large hatchery operations. It is mounted on two swivel wheels with brakes that make transportation easier within the hatchery. The powerful light source is efficient to check the eggs. 	Manual	Medium-scale

S/N	Description	Mode of operation	Capacity
4	By using a -special light on the developing hen's egg during incubation, the transmission rate and the movement of the heartbeat and embryo within the egg (vital signs) can be detected and used to distinguish between viable eggs, eggs that stopped developing (rotten eggs) and unfertile eggs. 	Automatic	Large-scale

9 Labelling

Each candler shall be labelled with following information:

a) manufacturer name or trademark;

b) manufacturer model;

c) Watts of electricity;

d) nature of supply;

e) year of manufacture; and

f) country of manufacture.

10 Packing

The egg fertility tester shall be packed as agreed to between the seller and receiver.

11 Sampling

Unless otherwise agreed between receiver and supplier, the sampling plan and criteria for conformity shall be applied.

12 Heating test

The fertility tester shall not get heated when tested after 6 h of test operations.

Annex A
(informative or normative)

Title of Annex?

To understand what you are looking for while candling eggs:

a) If the inside of the egg is clear - that is, free from visible structures or dark areas - the egg is infertile, or the embryo died very early. Remove this egg from the incubator.
b) If a ring of red is visible within the egg, there was an embryo at some point, but it has died. Remove this egg from the incubator.
c) If you can see blood vessels (‘spider web-like’) within the egg, there is a live embryo inside. Blood vessels in chicken eggs are normally observable within 7 to 10 days of an egg's incubation. By 18 days of incubation, the embryo takes up most of the egg and appears as a dark area within the egg. the embryo is clearly visible with a distinct dividing line between the embryo and the air cell. You can sometimes see movement inside the egg.
d) In large commercial incubators, candling is not normally undertaken and there is a high reliance on fertility and egg hygiene to maintain viable embryos.

Figure A.1 — Chick Embryo Development