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Poultry farming equipment, brooders — Specification

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

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Introduction

Brooders are required for the first critical period of chick lives from one day old until they have developed sufficient size and feather coverage. During this period, special care and attention shall be given to chicks to ensure their health, survival, proper growth, improve performance, behaviour and welfare.

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Poultry farming equipment, brooders — Specification

1 Scope

This Committee Draft African Standard specifies minimum requirements and test methods for brooders used to ensure optimum temperature, light and safe environment for the newly hatched chicks.

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
brooder equipment
artificial heating system that plays the role of mother hen after hatching

3.2
brooder guard/chick guard
temporary fence outside the hover area used to prevent chicks from straying too far away from the heat supply

3.3
brood temperature
suitable heat level used to keep the chicks warm during their critical periods of growth. From one-day old to about one week, the temperature shall be between 30 to 33 degrees centigrade at a relative humidity between 40% to 60%. After the chick is one week of age, the temperature can be reduced by 2 degrees, continue reducing the temperature until housing temperature of 21 degrees is reached as shown in Table 1

Table 1 — Recommended temperature for chicks

Age	Cage brooding, ºC	Floor brooding, ºC
Day 1-3	33- 34	35
Day 4 - 7	32 - 34	33
Day 8 - 14	29 - 31	31
Day 15 - 21	26 - 26	29
Day 22 - 28	24 - 26	26
Day 29 - 35	21- 23	23
Day 36+	21	21

3.4
thermostat
device, which is normally used keep the temperature of the brooder environment between certain limits by automatically on and off the circuit or by varying the current

3.5
brood light
lamp that can be used as a source of light and warmth during brooding

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4 Brooder

The brooder shall consist of:

a) **Heating source**: Charcoal, wood, kerosene, gas or electric.
b) **Reflector/hover:**
   i. Looks more or less like an umbrella to reflect and distribute heat and light through the brooding environment (chicks, floor and letter or bedding, food and water sources) to keep the chicks warm during the first critical period of life, and
   ii. The reflector shall be made from galvanized metal or aluminum sheets that can resist corrosion.
c) **Thermostat:** Shall comply with relevant standard.
d) **Thermometer:** The thermometer shall not be located near the heat source to avoid faulty reading.
e) **Brooder guard**
   i. The broader guard shall be constructed from such materials as cardboard sheets, GI sheets (galvanized sheets) or mat etc; and
   ii. Shall be with a diameter of 1.5 m.

5 Types of the brooders (floor/ battery or cage)

5.1 Infrared electric heating lamp

5.1.1 It's the most popular brooder. It is the ideal for brooding 200 chicks or less,

5.1.2 It shall have a lamp guard.

5.1.3 One 250 W lamp shall be adequate for 50 to 75 chicks when placed 1 to 1.5 feet above the chicks.

5.1.4 The bulbs shall be self-reflecting with a unique red light to attract birds and they gather beneath it to experience the heat and promote the growth of chicks.

5.2 Electrical brooder

5.2.1 It is a thermostatically controlled heating system that spread require amount of heat uniformly above large area, this avoid crowding of chicks under brooder directly, one electrical brooder can be used for 300 to 400 chicks.

5.2.2 The electric wires shall be insulated with proper rubber and shall be hidden to avoid electric shocks or fire risks.

5.3 Electrical heater (heating rods or coils)

This type is provided with heating elements or pilot lamps and in some cases thermometer is provided to record the temperature.

5.4 Gas brooder heater

The gas brooder heater has the following characteristics:

a) these heaters are environmentally friendly and they save energy, because of this they are popular, it may be manual or automatic;
b) one gas heater can supply sufficient heat for 25 m^2 and about 400 chicks;
c) gas heater installation height from ground should be about 1 to 1.5 m;

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d) it shall be used with a low pressure regulator, all parts in stainless steel, no filter required, with safety valve;
e) gas brooder is useful in areas where electricity supply is irregular.

5.5 Charcoal heater

Where there is no electricity the charcoal heater may be used in the brooder to supply heat to the poultry. Charcoal stove shall be covered with a lid to protect the chicks while enjoying the heat. These stoves are covered with plates or pans to sustain heat in the brooding area. They come in different forms and sizes.

6 Marking and labelling

Each brooder shall be marked indelibly and clearly in its outer surface or on a name plate firmly attached on it with the following information:

a) name or trade mark and its origin;
b) rated voltage or voltage range in volts;
c) nature of heat or power supply;
d) rated input in watts.
e) heating elements shall also bear the Manufacturer's name or trade marks and origin;
f) the marking shall also show the minimum ambient temperature at which the brooder is suitable for operation; and
g) each brooder shall also be marked with certification mark.

7 Method of testing

The testing shall be classified into two categories i.e. routine and type testing.

7.1 Routine test

7.1.1 Loading test

The total input of the brooder with all heating elements in circuit and all auxiliary components functioning shall be measured after steady operating conditions have been obtained, the brooder being operated at the maximum rated voltage. The measured value shall not vary from that marked on the nameplate by more than 7.5 %.

7.1.2 Temperature control test

7.1.2.1 Temperature variation test

The Temperature difference shall be read with reference to sensing element located at the centre of the working space, the maximum temperature variation between any two points tested shall not exceed 1.5 °C.

7.1.2.2 Temperature differential test

With the Temperature sensing element located at different points, the temperature at each point shall be recorded continuously at interval of not more than 5 min during the 3 h test period. The temperature differential measured at any point shall not exceed 1 °C.

7.1.2.3 Temperature overshoot test

The amount by which the maximum temperature obtained during heating up exceed the average temperature conditions. It shall not be more than 1 °C.

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7.1.3 Heating up test

The brooder temperature shall be reached to the maximum temperature at the end of 45 min when switched on.

7.2 Type test

7.2.1 Visual examination and inspection for general construction and marking requirements specified in this standard.

7.2.2 Temperature drift test: The temperature drift so measured shall not more than 1.5°C for the continuous period of 72 h.

7.2.3 Leakage current test: The test with the switch in the off position is carried out to verify that capacitors connected behind a single pole switch do not cause an excessive leakage of the current.

7.2.4 Earthing continuity resistance test: Brooder shall be checked by inspecting all parts of the earthing terminal. The connection of external conductors shall be such that there is no risk of corrosion resulting from contact between these parts and the copper of the earthing conductor or any other metal in contact with these parts.

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Bibliography

Working Group to identify and acknowledge useful literature used in the preparation of this standard.

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