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**Mutton and goat meat canned in brine —  
Specification**

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**ICS: 67.120.10**

**Descriptors:** agricultural products, food products, processed food canned, mutton, goat  
brine, requirements, chemical, microbiological, packing labeling,

## **Foreword**

This Ethiopian Standard has been prepared under the direction of Agricultural and Food Technology Technical Committee and published by the Quality and Standards Authority of Ethiopia (QSAE)

In the preparation this Ethiopian Standard references have been made to the following:

- Codex Alimentarius vol. C Recommended international code of hygienic practice for fresh meat.

- Indian Standard 1743-1973 specification for mutton and goat meat canned in brine. Indian Standard Institution

Acknowledgement is made for the use of information from the above publications.

# Mutton and goat meat canned in brine — Specification

## 1 Scope

This Ethiopian Standard prescribes the requirements and method of sampling and test for mutton and goat meat canned in brine.

## 2 Normative reference

The following Ethiopian Standard contains provisions, which through reference to this text, constitute provisions of this Ethiopian Standard. At the time of publication the editions indicated were valid. All standards are subject to revision, and possibility of applying the most recent editions of the Ethiopian Standard indicated below. Registers of currently valid standards are maintained in the Quality and Standards Authority of Ethiopia.

ES 359:2001 ES 359:2001, General standard for the labelling of pre-packaged food.

ES ISO 2918, 2003, Meat and meat products-Determination of nitrite content (Reference method)

ES ISO 3091:2003 Meat and meat products-Determination of nitrate content (Reference method)

ES ISO 1841-1:2003, Meat and meat products- Determination of chloride content- Part 1: Volhard method.

ES ISO 1841-2:2003, Meat and meat products- Determination of chloride content- Part 2: potentiometric method.

ES ISO 1443:2003, Meat and meat products- Determination of total fat content

ES ISO 1444:2003 Meat and meat products- Determination of free fat content

ES 988:2004, Arsenic in Food - Silver Diethyldithio carbamate method

ES 989:200 4, Lead in food- Atomic absorption spectrometric method

ES 1114:2005 Code of practice for ante-mortem and post mortem judgement of slaughter animals and meat

ES 1116: Code of practice for ante-mortem and post mortem judgement of slaughter animals and meat

ES ISO 4833:2001 Microbiology – General guidance for the enumeration of microorganisms.

ES ISO 7937:2002, Microbiology of food and animal feeding stuffs- Horizontal method for the enumeration of *Clostridium perfringens*- colony count technique

ES ISO 4831:2004, Microbiology- General guidance for the enumeration of coliforms- Most probable number technique.

ES ISO 4832:2002, Microbiology- General guidance for the enumeration of coliforms- colony count technique.

ES ISO 6888-1:2002, Microbiology of food and animal feeding stuffs- Horizontal method for the enumeration of coagulase-positive *Staphylococci* (*Staphylococcus aureus* and other species) part 1; Technique using Baird-Parker agar medium.

ES ISO 6888-2:2002, Microbiology of food and animal feeding stuffs- Horizontal method for the enumeration of coagulase-positive Staphylococci (Staphylococcus aureus and other species)- part 2; Technique using rabbit plasma fibrinogen agar medium.

ES ISO 6391:2005, Meat and meat products- enumeration of Escherchia coli colony count technique at 44 °C using mebranes

ES ISO 6579:2002, Microbiology- General guidance on methods for the detection of salmonella

### **3 Requirements**

3.1 The meat used for canning shall be of good quality obtained from the carcasses of only healthy animals slaughtered in hygienic condition and subjected to proper ante-mortem and post-mortem inspection as prescribed in ES 1116

3.2 Head meat scrap meat, shank meat flanks and skirts and navel end of plates shall not be canned.

3.3 The meat shall be freed from bones blood cloth bruised material all skin, hair, stringy and fibrous tissue tendons and excessive fat. Viscera shall not be canned.

3.4 The meat shall be minced or cut in to chunks or cuboids of 2.5 to 4 cm dimensions. The chunks shall be dry-cured by sprinkling with a mixture of sodium nitrate and sodium nitrite or ascorbic acid of such concentration as to ensure a desirable colour to the meat.

3.5 The meat shall be free from artificial colouring matter and firming agents

3.6 Preservatives other than sodium chloride nitrite or nitrate of sodium and potassium shall not be used

3.7 Tenderizing materials, either natural or artificial, to soften meat before processing, shall not be used.

3.8 The meat shall be of a good flavour and shall have the characteristic flavour, typical of good canned meat. It shall be free from any objectionable odour.

#### **3.9 Hygienic requirements**

3.9.1 Canned meat shall be done in accordance with ES 1114:2005 code of hygienic practice for processed meat produce and more over shall comply the following requirements.

3.9.1.1 All the processing system shall be thoroughly cleaned with chlorinated water (at least 50 ppm available chlorine) after every processing run and followed by washing with potable water to remove the residual chlorine in the system.

3.9.1.2 All the containers and lids shall be cleaned thoroughly with sodium carbonate or sodium bicarbonate or any suitable detergent solution and sanitized with at least 50 ppm chlorine solution prior to their use. The residual chlorine may be recovered by flushing the equipment with potable water before use.

3.9.1.3 Stainless steel or marble work benches used for cutting and packing mutton and goat meat shall have on one side at least hard wood thick plank about 25 cm wide so as to prevent damage to the knives and other cutting equipment.

3.9.1.4 Water required for mutton and goat meat processing shall be potable conforming to ES 261:2001 and free from contamination. The water shall not be alkaline or very hard water and shall be free from organic mater. Presence of iron and sulphur compounds in it render it unsuitable for making brine. The water shall be clear and free from odour and colour.

The mutton and goat meat shall conform to the requirements prescribed in Table 1 and 2

Table 1 Requirements for mutton and goat canned on brine.

	Characteristics	Requirements	Test method
1	Sodium chloride, % by mass a) In the drained meat b) In the brine, min	1.0 to 2.5 1.5	ES ISO 1841-1 ES ISO 1841-2
2	Nitrate (as $\text{NaNO}_3$ ) in drained meat, % by mass max.	0.05	ES ISO 3091
3	Nitrite as ( $\text{NaNO}_2$ ) in drained meat, % by mass max.	0.02	ES ISO 2918
4	Total fat, % by mass max	1.5	ES ISO 1443
5	Free fat, % by mass max	0.5	ES ISO 1444
6	Arsenic, ppm max	1.0	ES 988
7	Lead ppm max	0.50	ES 989
8	Tin ppm max	200	ES1117

### 3.9.1.5 Incubation test

#### General

The test consists of the incubation of the cans at 37°C and 55°C for not less than 14 days and their examination at the end of this period for evidence of microbiological activity. To satisfy the requirements of this test the cans shall not show evidence of microbial growth. The incubated cans shall be considered to have undergone microbiological spoilage if any can:

- a) Shows a positive pressure
- b) Bulges when being incubated or remains bulged after incubation
- c) Shows Leak
- d) Whether having a positive pressure or not, shows evidence of bacterial proliferation as judged by:
  - 1) Significant change on PH
  - 2) Microscopic examination of direct smears and
  - 3) Culture methods as prescribed under for the presence of pathogenic bacteria.

**Table 2 Microbiological requirements for mutton and goat meat canned**

	Type of organism	Requirements	
1	Plate count / gram of sample	$2 \times 10^3$	ES ISO 4833
2	Clostridium preferengence / gram of sample	Nil	ES ISO 7937
3	Coliforms / gram of sample	Nil	ES ISO 4831,4832
4	Staphylococcus / gram of sample	Nil	ES ISO 6888:
5	E.coli / gram of sample	Nil	ES ISO 6391
6	Salmonellae / gram of sample	Nil	ES ISO 6579

There shall be adequate supply of potable water conforming to ES 261:2001 Drinking water specification and free from contamination. Running water under pressure shall be available in plenty of in all rooms and areas in which meat is handled and equipment are washed.

3.9.1.6 Hot water and cold water ample supply shall be provided for plant clean up needs where necessary.

3.9.1.7 The storage tanks for water shall unless completely sealed be kept covered with tight-fitting lids, examined regularly and cleaned out at least once every six months. The date of last cleaning and next cleaning shall be prominently displayed on the storage tanks.

3.9.1.8 The water shall be periodically examined for chemical or bacteriological conformance.

3.9.2 Employee hygiene The persons handling the material shall observe strict hygienic conditions as laid down in ES 1114 code of Hygienic practice for processed meat products.

3.10 The contents of the can on opening shall not display disintegration. Excessive separation of muscle fibres resulting in a fluffy suspension shall be considered as disintegration.

3.11 The material shall be free from pieces of bristle, hair, skin and particles of bone. It shall be free from dirt, insect or rodent contamination or any other extraneous matter.

3.12 Poisonous and deleterious substances of any type including those of microbiological origin shall not be present.

## **4 Packing and labelling**

### **4.1 Packing**

4.1.1 Mutton and goat meat shall be packed in suitable, open to cans. The cans shall be coated on the inside with lacquer suitable for canned meat.

#### **4.1.2 Labelling**

4.1.2.1 Labelling of mutton and goat meat shall be done in accordance with ES 359:2001 prepackaged food and the label shall additionally give the following information

- i. Type of the product
- ii. Address of the manufacturer
- iii. Net mass of the content
- iv. Date of manufacture
- v. Batch or code number
- vi. Type of the preservatives used and ingredients
- vii. Expiry date

## 5 Sampling of meat canned in brine

### 5.1 General requirements

5.1.1 Sampling shall be done by a qualified person

5.1.2 Samples shall be stored in such a manner that the temperature of the material does not vary underlay from the normal temperature.

### 5.2 Scale of sampling

5.2.1 Lot. In any consignment, all the cases containing cans of the same size and from the same batch of manufactures shall be grouped together to constitute a lot. .

5.2.2 The number of cans to be selected from the lot for testing the physical and chemical requirements shall depend upon the size of the Lot. Additionally 2 cans shall be selected for testing free fat and 8 cans shall be selected for microbiological examination.

**Table - Selection of cans for testing**

Number of cans in the lot (N)	Number of cans to be selected (n)
Up to 200	4
201 to 500	5
501 to 800	6
801 to 1300	7
1301 to 3200	8
3201 to 8000	9
8001 and above	10

5.2.3 Cans shall be selected at random from a number of packing cases.

5.2.4 A representative sample drawn from the cans selected for physical and chemical requirements shall be tasted for vacuum, head space, sodium chloride nitrate nitrite, Heavy metals and total fat and 2 samples shall be selected for free fat test.

### 5.2.5 Incubation test

#### 5.2.5.1 General

The test consists of the incubation of the cans at 37°C and 55°C for not less than 14 days and their examination at the end of this period for evidence of microbiological activity. To satisfy the requirements of this test the cans shall not show evidence of microbial growth. The incubated cans shall be considered to have under gone microbiological spoilage if any can:

### 5.3 Criterion for conformity

5.3.1 A lot shall be considered conforming to the requirements of this Ethiopian Standard if all the samples tested satisfy the corresponding requirements for the characteristics.