

CES 70

Compulsory Ethiopian Standard

Second Edition
2017

Iodized edible salt Specification



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CES 70

Foreword

This Ethiopian Standard has been prepared under the direction of the Technical Committee for Food Additives and Contaminants (TC 21) and published by the Ethiopian Standards Agency (ESA).

This Compulsory Ethiopian Standard cancels and replaces CES 70:2013. Application of this standard is COMPULSORY with respect to clauses 4,5 ,6,7,8 and 9. A Compulsory Ethiopian Standard shall have the same meaning, interpretation and application of a "Technical Regulation" as implied in the WTO-TBT Agreement.

Implementation of this standard shall be effective as of 01 January 2017.

Iodized edible salt Specification

1. Scope

This Ethiopian Standard specifies the requirements for iodized salt used as an ingredient of food, both for direct sale to the consumer and for food manufacture. It applies also to iodized salt used as a carrier of food additives and/or nutrients. It does not apply to salt from origins other than those mentioned in clause 4.2, notably the salt that is a by-product of chemical industries.

2. Normative references

The following referenced documents are indispensable for the application of this Ethiopian standard. Only the latest edition of the documents (including any amendments) shall be applicable.

CES 73: General standard for prepackaged foods--- labeling

ES 299: Edible salt - sampling

ES 308: Edible salt Determination of alkalinity.

ES 309: Edible salt Determination of lead content Spectrophotometric method.

ES 310: Edible salt Determination of iron content 1, 10 phenanthroline spectrophotometric method.

ES 312: Edible salt Determination of copper content Zinc dibenzylthiocarbamate photometric method.

ES 313: Edible salt Determination of iodine.

ES 391: Edible salt Determination of lead content Visual colorimetric methods.

ES 393: Edible salt Determination of arsenic content.

ES ISO 2479: Sodium chloride for industrial use Determination of matter in soluble in water or in acid & preparation of principal solution for other determinations.

ES ISO 2480: Sodium chloride for industrial use Determination of sulphate content Barium sulphate gravimetric method.

ES ISO 2481: Sodium chloride for industrial use Determination of halogens, expressed as chlorine in sodium chloridemercurimetric method.

ES ISO 2482: Sodium chloride for industrial use – Determination of calcium & magnesium content EDTA complexometric methods.

ES ISO 2483: Sodium chloride for industrial use Determination of the loss of mass at 110 C. °

ES ISO 2590: General method for the determination of arsenic Silver diethylthiocarbamate photometric method Wfp.228072-1

ES 3394: Analysis of sodium chloride for industrial use – Method for determination of cadmium content.

ES 3395: Analysis of sodium chloride for industrial use –Method for determination of mercury content.

3. Definitions

For the purpose of this Ethiopian standard, the following definitions shall apply.

3.1. Iodized edible salt

Crystalline product consisting predominantly of sodium chloride which is obtained either from the sea, underground rock salt deposits or from natural brine, free from contamination with clay and other extraneous adulterants and impurities fortified by sodium and potassium iodides or iodate used as ingredient of food both for direct sale for the consumer or for food manufacturer

3.2.

Iodized common salt

Edible salt in the form of crystalline solid or granular, white or pale, pink or light gray in colour, and is fortified with iodine as specified in table 1 and it is used as an ingredient for food manufacturer.

3.3.

Iodized table salt

Edible salt produced in to fine grain and is fortified with iodine as specified in table 1, suitably coated with small quantities of free flowing agents, as specified in table 2 and is used for direct human Consumption

3.4.

Anticaking agents-

Food grade additives that comply with the National Food Additive Standard or Codex General Standard for Food Additives (CODEX STAN 192-1995) in Food Category 12.1.1 (Salt) used to retard moisture absorption, caking and to impart the free flowing property to the salt.

4. Chemical composition and quality factors

4.1. The required chemical composition and quality parameters for iodized edible salt are presented in Table 1.

4.2. Naturally present secondary products and contaminants

Natural contaminants may also be present in amounts varying with the origin and the method of production of the iodized edible salt. The remainder comprises natural secondary products, which are present in varying amounts depending on the origin and the method of production of iodized edible salt, the product shall contain calcium, potassium, magnesium and sodium sulfates, carbonates, bromides and magnesium chlorides.

4.3 Use as a carrier

Iodized edible salt shall be used when salt is used as a carrier for food additives or nutrients for technological or public health reasons. Examples of such preparations are mixtures of salt with nitrate and/or nitrite (curing salt) and salt mixed with small amounts of fluoride, iodide or iodate, iron, vitamins, etc., and additives used to carry or stabilize such additions.

4.4 Iodine compounds

For the fortification of iodized edible salt with iodine, use shall be made of sodium and potassium iodides or iodates. If iodides are used food grade stabilizers as stated in Table 2 shall be used to ensure there is no significant loss in iodine.

Table 1: Iodized edible salt chemical compositions and quality factors

Characteristics	Iodized common salt	Iodized table salt		Test method
Sodium chloride (NaCl), % min on a dry matter basis and exclusive of additives	97	98		ES ISO 2481
Particle size	Min 93 % pass 4 mm sieve Max 20% pass 1 mm sieve	Min 99% pass 1 mm sieve Max 20 % pass 0.212 mm sieve		
Alkalinity (as Na ₂ CO ₃), % (m/m), max	0.2	0.2		ES 308
Iodine content as iodine mg/kg salt	Point of production	Point of production	Retail level	ES 313
	20-40	30-40	20-40	
Iron (as Fe), mg/kg, max	10	10		ES 310
Matter insoluble in water % (m/m), max	0.2	0.05		ES ISO 2479
Sulphate (as SO ₄), % (m/m), max	0.5	0.2		ES ISO 2480
++Calcium (water soluble), as Ca, % (m/m), max	0.5	0.1		ES ISO 2482
++Magnesium (water soluble), as Mg, % (m/m), max	0.5	0.1		ES ISO 2482
Moisture at 110°C, % (m/m), max	3	0.5		ES ISO 2483
Organoleptic	Normal smell	Normal smell		Sensory
	10g of salt in 100ml water shall give a colourless solution having a neutral reaction	10g of salt in 100ml water shall give a colourless solution having a neutral reaction		

5. Food additives

5.1. Quality

The quality of additive used shall be food grade and complying with the national food additive standard or Codex General Standard for Food Additives (CODEX STAN 192-1995) in Food Category 12.1.1 (Salt) so as to retard moisture absorption, caking and to impart the free flowing property to the salt.

5.2. Anti-caking agents

The maximum level of anti-caking agent shall be in accordance with Table 2.

Table 2: Maximum level of anti-caking in finished product

Anti-caking agent	Maximum level
Tricalcium orthophosphate	20 g/kg
Calcium carbonate	20 g/kg
Magnesium carbonate	20 g/kg
Magnesium oxide	20 g/kg
Silicon dioxide, amorphous	20 g/kg
Calcium silicate	20 g/kg
Magnesium silicate	GMP
Sodium aluminosilicate	GMP
Calcium aluminium silicate	GMP
Salts of myristic, palmitic or stearic acids (calcium, potassium, sodium)	GMP
Calcium ferrocyanide	GMP
Potassium ferrocyanide	10 mg/kg, singly or in combinations, as Fe (CN) ₆
Sodium ferrocyanide 2 } combination, as Fe (CN) ₆	10 mg/kg, singly or in combination, as Fe (CN) ₆

5.3. Emulsifiers

Use maximum of 10 mg/kg of polyxyethylene (20) sorbitanmonooleate.

5.4 Processing aid

Use maximum of 10 mg residue/kg of 900a Polydimethylsiloxane.

6. Contaminants

Food grade salt shall not contain contaminants in amounts and in such form that is harmful to the health of the consumer. In particular the maximum limits specified in table 3 shall not be exceeded:

Table 3: Maximum level of contaminants

Contaminants	Maximum limits	Test method
Lead, mg/kg expressed as Pb, max	2	ES 309
Copper, mg/kg expressed as Cu, max	2	ES 312
Arsenic, mg/kg expressed as As, max	0.5	ES 393
Cadmium, mg/kg expressed as Cd, max	0.5	ES 3394 (BS 7319-6.)
Mercury, mg/kg expressed as Hg, max	0.1	ES 3395 (BS 7319-9:1990)

7. Hygiene

In order to ensure that proper standards of food hygiene are maintained until the product reaches the consumer, the method of production, packaging, storage and transportation of iodized common salt and iodized table salt shall be such as to avoid any risk of contamination.

8. Packaging

In any salt iodization program, it is important to ensure that salt contains the specified amount of iodine at the time of consumption. The retention of iodine in salt depends on the iodine compound used, the type of packaging, the exposure of the package to prevailing climatic conditions and the period of time between iodization and consumption. To ensure that iodized salt ultimately reaches the consumer with the specified level of iodine, the following precautions may be taken into consideration by the responsible authorities where climatic and storage conditions could result in a large amount of iodine loss:

- 8.1. Iodized edible salt shall be packed in air tight bags of either high density polyethylene (HDPE) or polypropylene (PP) (laminated or non-laminated) or LDPE-lined jute bags (Grade 1803 DW jute bags lined with 150 gauge polyethylene sheet)
- 8.2 For iodized common salt packaging units shall not exceed 50 Kg to avoid the use of hooks for lifting the bags.
- 8.3 For iodized table salt the packaging unit shall not exceed 3 kg.
- 8.4 Bags that have already been used for packing other articles such as fertilizers, cement, chemicals, etc. shall not be reused for packing iodized salt.
- 8.5 The distribution network shall be streamlined so as to reduce the interval between iodization and consumption of salt.
- 8.6 Iodized salt shall not be exposed to rain, excessive humidity or direct sunlight at any stage of storage, transportation or sale.
- 8.7 Bags of iodized salt shall be stored only in covered rooms or warehouses that have adequate ventilation.
- 8.8 The consumer shall be similarly advised to store iodized salt in such a manner as to protect it from direct exposure to moisture, heat and sunlight.

9 Labeling

In addition to the requirements of the ES 359, the following specific provisions shall apply.

9.1 The name of the product

The name of the product, as declared on the label shall be "iodized salt".

9.1.1. The name "iodized salt" shall have in its close proximity a declaration of either "Common Salt" or "Table Salt".

9.1.2. Only when salt contains one or more ferrocyanide salts, added to the brine during the crystallization step, the term "dendritic" could be included accompanying the name.

9.1.3. Where salt is used as a carrier for one or more nutrients, and sold as such for public health reasons, the name of the product shall be declared properly on the label, for example "salt fluoridated", "salt iodated", "salt iodized", "salt fortified with iron", "salt fortified with vitamins" and so on, as appropriate.

NOTE: Polydimethylsiloxane is used as an antifoam agent, lubricant, release, and anti-stick agent and moulding aid (as Dimethylpolysiloxane) processing aids. Polydimethylsiloxane is used as an antifoaming agent, anticaking agent and emulsifier.

9.1.4 An indication of either the origin, according to the description on clause 4.2, or the method of production may be declared on the label, provided such indication does not mislead or deceive the consumer.

9.1.5 In addition to these information the following specific provisions shall be written in Amharic or English language

- a) Brand or trade name
- b) Name of the producer
- c) Country of Origin
- d) List of ingredients
- e) Address of the producer
- f) Month and year of production
- g) Lot/batch number
- h) Level of iodine (mg/kg salt)
- i) Expiry date
- j) Net content
- k) Certification mark
- l) Appropriate usage instruction
- m) Store in a cool dry place away from sunlight

9.2 Labelling of Iodized common salt

Information for non-retail containers shall either be given on the container or in accompanying documents, except that the name of the product, lot identification and name and address of the manufacturer or packer shall appear on the container. However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such mark is clearly identifiable with the accompanying documents.

10 Sampling

Samples shall be taken in accordance with ES 299.

Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010. ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1998.

ESA's objectives are:-

- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and services are in compliance with the required standards,
- ❖ Facilitate the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational Institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes.

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International Involvement

ESA, representing Ethiopia, is a member of the International Organization for Standardization (ISO), and Codex Alimentarius Commission (CODEX). It also maintains close working relations with the international Electro-technical Commission (IEC) and American Society for Testing and Materials (ASTM). It is a founding member of the African Regional Organization for Standardization (ARSO).

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