

# CODEX ALIMENTARIUS COMMISSION



Food and Agriculture  
Organization of the  
United Nations



World Health  
Organization

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Agenda Item 3

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## JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON METHODS OF ANALYSIS AND SAMPLING

Forty-fifth Session  
Budapest, Hungary  
9-13 March 2026

### COMMENTS OF NORWAY

#### Regarding CODEX ALIMENTARIUS COMMISSION (CAC48) Method for salt saturation in salted fish and dried salted fish of the Gadidae family of fishes

CCMAS is invited to consider whether the method of analysis for salt saturation in salted fish and dried salted fish of the Gadidae family of fishes together with Appendix VIII Part 1 of CXS 234-1999 (Appendix I, Part A), should be retained in CXS 234-1999 or revoked (see also CX/MAS 26/45/2 paragraph 12).

Norway is of the opinion that the method for determining salt saturation should be retained in CXS 234-1999. However, we consider it preferable to include a reference to Appendix VIII for all three related provisions—moisture, salt saturation, and water content in whole fish.

This recommendation is based on the following considerations:

- **Additional sample pre-treatment is required beyond what is described in AOAC 937.07**, and these necessary steps are described in Appendix VIII.
- **Moisture determination is performed solely for the calculation of salt saturation** and should therefore be referenced together with the salt saturation procedure for clarity. (Moisture could be removed from the table).
- **Relying on an equation placed in a footnote is impractical**, and integrating the full procedure and calculation into a single appendix enhances usability and reduces the risk of misinterpretation.

Fish and fishery products				
Commodity	Provision	Method	Principle	Type
Salted fish and dried salted fish of the Gadidae family of fishes	Moisture	AOAC 937.07 and AOAC 950.46B (air-drying (a))	Gravimetry	I
Salted fish and dried salted fish of the Gadidae family of fishes	Salt saturation	See equation in footnote <sup>iii</sup>	Calculation	I
Salted fish and dried salted fish of the Gadidae family of fishes	Water content in the whole fish	See Appendix VIII	Gravimetry	I

We have proposed some amendments to Appendix VII, which includes:

- **changing the title to explicitly include salt saturation**, based on the combined determination of salt and moisture;
- **adding the determination of salt**, with a reference to the table containing method performance criteria;
- **replacing water content with moisture** in provisions where moisture is the parameter determined;
- **including the calculation of salt saturation**; and
- **deleting salted Atlantic herring and salted sprat**, as the relevant commodity standard does not provide the necessary preparation steps and the provision is already covered in the main table.

Additions in the Appendix VIII are indicated using bold and underlined text, while the elements we propose for deletion are shown with strikethrough.

## Appendix VIII

### **PREPARATION OF FISH SAMPLES AND DETERMINATION OF SALT SATURATION, BASED ON SALT AND MOISTURE CONTENT, AND WATER CONTENT IN FISH AND FISHERY PRODUCTS IN SALTED FISH AND DRIED FISH OF THE *GADIDAE* FAMILY OF FISHES**

#### **PART 1: PREPARATION OF FISH SAMPLES**

##### **~~Salted fish and dried salted fish of the *Gadidae* family of fishes~~**

1. Before preparing of a sub-sample adhering salt crystals should be removed by brushing from the surface of the sample without using water.
2. The preparation of fish samples for the determination of salt content, and ~~water content~~ **moisture** in order to calculate the % salt saturation of the fish should be carried out according to AOAC 937.07. The analysis should be on the edible portion of the fish.
3. Determination should be performed at least in duplicate.

#### **PART 2: DETERMINATION OF SALT CONTENT**

**For determination of salt content, see Table 5. "Method performance criteria for sodium chloride and for salt determined as chloride expressed as sodium chloride".**

#### **PART 23: DETERMINATION OF **MOISTURE AND WATER CONTENT****

##### **~~Salted fish and dried salted fish of the *Gadidae* family of fishes~~**

- i. Determination of % salt saturation as required by the standard, should be in accordance to AOAC 950.46.B (Airdrying (a))
- ii. Determination of water content in the whole fish, when needed in the commercial trade of klippfish and wet salted fish, the method of sampling the fish should be carried out according to the "Determination of Water Content in Whole Fish by Cross Section Method" defined in the Annex to this Appendix.

##### **~~Salted Atlantic herring and salted sprat~~**

~~Determination of water content is performed according to AOAC 950.46B (air drying).~~

#### **PART 4: DETERMINATION OF SALT SATURATION**

**Salt saturation is determined by calculation, using the mean values of the replicates, according to the following formula:**

**1.  $\% \text{ salt in water} = (\% \text{ salt content} / (\% \text{ salt content} + \% \text{ moisture})) \times 100\%$**

**2.  $\% \text{ salt saturation} = (\% \text{ salt in water} / 26.4 \%) \times 100\%$**

**\*The solubility of sodium chloride in water is 36 g per 100 g water, and the constant is calculated as follows:  $36 \text{ g sodium chloride} / (100 \text{ g water} + 36 \text{ g sodium chloride}) \times 100\% = 26.4\%$**