Chloride content in meat and meat products

ISO 1841-1:1996

The method utilise the extraction of a test portion with hot water and precipitation of proteins. After filtration and acidification, excess of silver nitrate solution is added to the extract, and titration is carried out of the excess with potassium thiocyanate solution.

Reagents (*only use recognized analytical grades, unless otherwise specified. Water should comply with at least grade 3 in accordance with ISO 3696)*

Water, distilled and halogen free (for chromatography; LiChrosolv® (1.15333)
Nitrobenzene, ACS reagent, ≥99.0% (8.06770)
Nitric acid; Suprapur® c(HNO3) = 4 mol/L (1.00441)

Carrez Clarification Kit reagent kit for sample prep in food analysis, 5-fold concentrate (1.10537)
(Ready-to-use Carrez clarification kit can accelerate the analyses)

Silver nitrate solution; Reag. Ph Eur,Reag. USP; c($AgNO_3$) = 0.1 mol/L (0.1 N) Titripur® (1.09081)
Potassium thiocyanate, EMPLURA® (1.05124)
Ammonium iron(III) sulfate , EMSURE® ACS,ISO,Reag. Ph Eur (1.03776)

Dissolve in water about 9.7 g of potassium thiocyanate.
Transfer quantitatively to a 1000 mL one-mark volumetric flask and dilute to the mark with water.
Standardize the solution to the nearest 0.0001 mol/L against the silver nitrate solution using the ammonium iron(III) sulfate solution as indicator.

Apparatus:
Analytical balance
Homogenizing equipment
One-mark volumetric flask, of capacity of 200mL
Conical flask of capacity 250 mL
Burette of capacity 50 mL
Boiling water bath

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Procedure:
Weigh about 10 g of the sample (to the nearest 0.001 g) and transfer it quantitatively to a conical flask (referred to as test portion)

Deproteination (elimination of protein from the sample)

1. Add 100 ml of hot water to the test portion.
2. Heat the flask and its contents for 15 minutes in the boiling water bath.
3. Every 3-5 minutes shake the contents of the flask.
4. Allow the flask and its contents to cool to room temperature and add 2 mL of Carrez I and 2 mL of Carrez II solution. Mix thoroughly after each addition.

Allow the flask to stand for 30 minutes at room temperature.
Transfer the contents quantitatively to a 200 mL volumetric flask and dilute to the mark with water. Mix contents and filter through a fluted filter paper.

Determination:
Transfer 20 ml of the filtrate to a conical flask and add 5 mL of the diluted nitric acid and 1 mL of ammonium iron(III) sulfate solution as indicator. Transfer 20 mL of the silver nitrate solution to the conical flask, then add 3 mL of the nitrobenzene and mix thoroughly. Shake vigorously to coagulate the precipitate. Titrate the content of the conical flask with potassium thiocyanate until the appearance of a persistent pink coloration. Record the volume of the potassium thiocyanate solution required, to the nearest 0.05 mL.

Blank test: Carry out a blank test using the same volume of silver nitrate solution.

Calculation: Chloride content=58.44 x (V2-V1)/m x C

V1:is the volume, in milliliters of the potassium thiocyanate solution used in the determination
V2: is the volume, in milliliters of the potassium thiocyanate solution used in the blank test
m: is the mass, in grams of the test portion
C: is the concentration of the potassium thiocyanate solution in moles per liters

Calculation in case of analyzed sample (2015/34018)
V1= 16.75, V2= 19.90. m= 10.112 and c=0.1

Chloride content=1.82 %

(Tips: To calculate the salt content: chloride x 1.65) Salt Content = 3.00%