TBS/ AFDC 29 (1731) DTZS

DRAFT TANZANIA STANDARD

Determination of Fat in Cocoa Products

.

TANZANIA BUREAU OF STANDARDS

0. Foreword

This draft Tanzania standard prescribes the method for determination of Fat in Cocoa Products

In the preparation of this draft Tanzania standard assistance was derived from AOAC 963.15, Fat in Cacao Products Soxhlet Extraction Method)

In reporting the result of a test or analysis made in accordance with this standard, if the final value observed or calculated, is to be rounded off, it shall be done in accordance with TZS 4

1. Scope

This method prescribes determination of Fat in Cocoa Products

2. Method of Application

Applicable to cocoa products with or without milk ingredients

3. Principle

The product is hydrolyzed with dilute hydrochloric acid and filtered. The dried mass containing the fat is extracted with petroleum ether, the solvent evaporated, and the residue weighed.

4. Apparatus

4.1. Soxhlet apparatus. With standard taper joints, siphon capacity ca I 00 mL (33 x 80 mm thimble), 250 mL Erlenmeyer, and heating mantle.
4.2. Beaker
4.3. Weigh balance
4.3. glass rod
4.4. water bath
4.5. watch glass
4.6. desiccator
4.7. flask
4.8. stoppered bottle

5. Reagents

5.1. Petroleum ether(Distilled in glass bp 30°-60°C).
5.2. antibumping agent

6. Procedure

6.1. Prepare test sample

6.1.1. Powdered products. Mix thoroughly and preserve in tightly stoppered bottles.

6.1.2. Chocolate products. -Chill 200 g sweet or bitter chocolate until hard, and grate or shave to fine granular condition. Mix thoroughly and preserve in tightly stoppered bottle in cool place. Alternatively,

6.1.3. Melt 200 g bitter, sweet, or milk chocolate by placing in suitable container and partly

immersing container in bath at 50°C. Stir frequently until test portion melts and reaches temperature of 45°-50°C. Remove from bath, stir thoroughly, and while still liquid, remove test portion for analysis, using glass or metal tube, 410 mm diameter, provided with close-fitting plunger to expel test portion from tube, or disposable plastic syringe.

6.2. Accurately weigh 3-4g chocolate liquor, 4-5g cocoa, 4-5g sweet chocolate, or 9-10g milk chocolate into 300-500 mL beaker. Add slowly, while stirring, 45 mL boiling water to give homogeneous suspension. Add 55 mL ca 8M HCI (2 + I) and few defatted Si chips or other antibumping agent, and stir.

6.3. Cover with watch glass, bring slowly to boil, and boil gently 15 min. Rinse watch glass with 100 mL Filter digest through 15 cm S&S 589 medium fluted paper, or equivalent, rinsing beaker 3 times with H_2O. Continue washing until last portion of filtrate is Cl-free as determined by addition of 0. IM $AgNO_3$. Transfer wet paper and residue to defatted extraction thimble and dry 6- I8 hours in small beaker at 100ºC. Place glass wool plug over paper.

6.4. Add few defatted antibumping chips to 250 mL Erlenmeyer and dry 1 hat 100°C. Cool to room temperature in desiccator and weigh. Place thimble containing dried residue in Soxhlet, supporting it with spiral or glass beads. Rinse digestion beaker, drying beaker, and watch glass with three 50 mL portions petroleum ether, and add washings to thimble. Reflux digested residue 4 hours adjusting heat so that extractor siphons >30 times/h or condensation rate of 5-6 drops/s.

6.5. Remove flask, and evaporate solvent on steam bath. Dry flask at 100°-101 °C to constant weight (1.5-2 h). Cool in desiccator to room temperature and weigh. Constant weight is attained when successive I hour drying periods show additional loss of <0.05% fat.

7. Calculation

% Fat =g fat x 100/g test sample

8. Repeatability

Duplicate determination of the percent fat should agree within 0.1% fat.