

# DETERMINATION OF ASH

NG MUI CHNG

## INTRODUCTION

The principle of ashing is to burn off the organic matter and to determine the inorganic matter which remains. This method is applicable to all food materials, and heating temperature is 525-600°C. Fish and fishery products are ashed at 550°C. Heating is carried out in two stages: firstly to remove the water present and to char the sample thoroughly; and finally ashing at high temperature in a muffle furnace.

A phosphorus rich sample which contains acidic ash usually loses some chlorine ions during ashing. On the other hand, alkaline ash from cation rich elements normally absorbs some carbon dioxide during ashing.

## APPARATUS

Muffle furnace with temperature display (0-1200°C)

Crucibles and lids (15-20 ml volume)

Tongs

Thick gloves

## SAMPLE PREPARATION

Randomly collect meat sample ( $\leq 100\text{g}$ ) and pass through a manual mincer twice or chop very finely and mix thoroughly.

Place minced meat in a small plastic bag.

## PROCEDURE

1. The crucible and lid is first placed in the furnace at 550°C overnight to ensure that impurities on the surface of crucible are burnt off. Cool the crucible in the desiccator (30 mins).
2. Weigh the crucible and lid to 3 decimal places ( $W_0$ ).
3. Weigh about 5g meat sample prepared into the crucible ( $W_1$ ). Sometimes high moisture content samples and fatty samples are dried in an oven. Heat over a low bunsen flame with lid half covered. When fumes are no longer produced, place crucible and lid in furnace.

4. Heat at 550°C overnight. During heating, do not cover with the lid. Place the lid on after complete heating to prevent loss of fluffy ash. Cool down in the desiccator.
5. Ash must be white or light grey. If not, return the crucible and lid to the furnace for further ashing.
6. Weigh the ash with crucible and lid to 3 decimal places ( $W_2$ ).

#### **CALCULATION**

$$\text{Ash Content (\%)} = \frac{W_2 - W_0}{W_1 - W_0} \times 100$$

#### **REFERENCE**

Official methods of analysis of the Association of Official Analytical Chemists 13th Ed., 1980: 289, 508. See 18.025, 31.012.