Ash Analysis of Bone (Mammalian)

A078.0

**Method Parameters**

Dwell Time: 2 hours

Temperature: 800°C

**Recommended Systems**

PHOENIX

Sample Size:

**Equipment**

PHOENIX OR MAS-7000, quartz fiber ashing crucibles, tongs, gloves, brush, desiccator, balance capable of weighing to + 0.1 mg.

**Sample Preparation**

**Procedure**

1. Program the PHOENIX OR MAS-7000 for 5-20 minutes and 925 °C. Allow the ashing furnace to reach the set temperature.

2. Weigh a crucible to the nearest + 0.1 mg. Record the weight as Figure A. See notes 1 and 2 below.

3. Weigh a bone sample to the nearest + 0.1 mg. into the crucible. Record the weight as Figure B.

4. Place the crucible with sample in the furnace and ash for 2 hours. Remove the crucible and allow it to cool in a desiccator for 1 minute.

5. Reweigh the crucible containing the ash to the nearest + 0.1 mg. Record weight as Figure C.

6. Calculate the percent ash using the following equation:

% Ash = C - A x 100

B

A=Weight of crucible

B=Weight of sample

C=Weight of ashed sample; crucible

**Results**

Standard Ashing Procedure

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Time (hrs)** | **Temp. °C** | **% Ash** |
|  | 1080 | 800 | ˜25 |

Microwave Ashing Procedure

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Time**  **(hrs)** | **Temp. °C** | **%Ash** |
|  |  |  | 29.81 |
|  |  |  | 39.09 |
|  |  |  | 38.95 |
|  |  |  | 28.04 |
|  |  |  | 29.13 |
|  |  |  | 32.59 |
| **Average** |  |  | **32.94** |
| **Std.Dev.** |  |  | **4.95** |

**Note 1**:Quartz fiber ashing crucibles and disks should be pre-ashed for 10 minutes before they are used for sample ashing to insure results are accurate to + 0.001%.

**Note 2**: Quartz fiber ashing crucibles may be reused until small holes or cracks begin to appear. The crucibles should then be discarded. Used quartz fiber ashing crucibles should be cleaned before reusing by brushing out all ash particles with a soft, bristle brush. Quartz fiber ashing disks are not reusable.

**Note 3:** Tests were performed ashing the samples up to 22 hours with no changes in ash values after the first two hours. Sample sizes ranged from 0.0724 to 0.1078 g.