Ash Analysis of Various Papers

A505.0

(Paper Bags, Liner Board, Corrugated Medium)

**Method Parameters**

Dwell Time: 1-30 minutes

Temperature: 100°C- 525 °C

**Recommended Systems**

PHOENIX

Sample Size: 1.5-3 grams

**Equipment**

PHOENIX OR MAS-7000, 50 ml quartz fiber ashing crucibles, crucible caps, tongs, gloves, brush, desiccator, balance capable of weighing to + 0.1 mg.

**Procedure**

1. Program the PHOENIX OR MAS-7000 for ramping program:
* 100°C for 1min. Dwell Time
* 225°C for 20min.Dwell Time
* 525°C for 30min.Ramp and Dwell Time

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

3. Weigh 1.5-3 grams of sample to the nearest + 0.1 mg. into the crucible. Record the weight as Figure B.

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

5. Reweigh the crucible and cap 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 and cap

B=Weight of sample

 C=Weight of ashed sample; crucible and cap

**Results**

Microwave Ashing Procedure

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample** | **Time (min)** | **Temp. °C** | **%Ash** |
| #1 | 81 | 525 | 3.75 |
|  |  |  | 4.03 |
| **Avg.** |  |  | **3.89** |
| **Std.Dev.** |  |  | **0.20** |
|  |  |  |  |
| #2 | 81 | 525 | 2.22 |
|  |  |  | 2.14 |
| **Avg.** |  |  | **2.18** |
| **Std.Dev.** |  |  | **0.06** |
|  |  |  |  |
| #3 | 81 | 525 | 5.38 |
|  |  |  | 5.57 |
| **Avg.** |  |  | **5.48** |
| **Std.Dev.** |  |  | **0.13** |
|  |  |  |  |
| #4 | 81 | 525 | 2.58 |
|  |  |  | 2.79 |
| **Avg.** |  |  | **2.69** |
| **Std.Dev.** |  |  | **0.15** |
|  |  |  |  |
| #5 | 81 | 525 | 4.31 |
|  |  |  | 4.30 |
| **Avg.** |  |  | **4.31** |
| **Std.Dev.** |  |  | **0.01** |

**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.