

Phoenix

Sample Type: Activated Carbon

Summary:

This method describes the determination of ash content in activated carbon using a Microwave Muffle Furnace, PHOENIX OR MAS-7000.

Required Equipment:

PHOENIX OR MAS-7000, quartz fiber ashing crucibles, quartz fiber crucible liners (disks), tongs, gloves, brush, balance capable of weighing to ± 0.1 mg.

Method:

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 lined with 1 disk to the nearest ± 0.1 mg. Record the weight as Figure A. See notes 1 and 2 below.
3. Weigh 2.0 gram(s) of sample to the nearest ± 0.1 mg. into the crucible and spread evenly on the disk. Record the weight as Figure B.
4. Place the crucible with sample in the furnace. Replace the furnace door allowing a 1/8 to 1/4 inch gap to allow for ventilation and ash for 5-25 minutes. 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:

$$\% \text{ Ash} = \frac{C - A}{B} \times 100$$

A=Weight of crucible and disk

B=Weight of sample

C=Weight of ashed sample; crucible and disk

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 $\pm 0.001\%$.

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.

MICROWAVE APPLICATION DATA

Sample: Activated Carbon

Standard Ashing Procedure

<u>Time</u> (mins)	<u>Temperature</u> (°C)	<u>Ash</u> (%)
60	600	14.0
60	600	97.0

Microwave Ashing Procedure

<u>Time</u> (mins)	<u>Temperature</u> (°C)	<u>Ash</u> (%)
20	925	13.87 14.02 13.89
5	925	96.54 96.66 96.62