

## Acid Insoluble Ash (AIA) Analysis

### Materials:

600 ml Berzelius beakers  
Fiber reflux apparatus  
Glass funnels  
Whatman #41 filter paper, 12.5 cm

### Reagents:

**2 N Hydrochloric acid** (1 part concentrated 12 M Hydrochloric acid (EMD Cat #HX0603-3, FW 36.46, CAS # 7647-01-0) to 5 parts 18 MOhm water by volume)

### Procedure:

1. Ash sample according to the ash procedure, using a 5 gram sample (2 gram sample for feces and forages).
2. Quantitatively transfer ash sample to 600 ml Berzelius beaker using a small brush.
3. Add 100 ml 2 N HCl. Heat to boiling on the fiber reflux apparatus and reflux gently for 5 minutes.
4. Fold filter paper and place in glass funnel. Wet with hot water to stick paper to funnel.
5. Pour acid with sample slowly into filter paper lined funnel. Filter by gravity.
6. Rinse beaker with hot water until all of the ash is on the filter paper. Rinse the filter paper with hot distilled water at least 3 times.
7. Remove paper and place back into aluminum pan. Ash overnight.
8. Cool in desiccator and weigh back pan with remaining ash residue.

### Calculations:

$$\% AIA = \frac{(Pan + Remaining Ash Wt.) - (Pan Wt.)}{Sample Wt. \times dmf} \times 100$$

### **Reference**

Van Keulin, J. and B. A. Young. 1977. Evaluation of acid-insoluble ash as a natural marker in ruminant digestion studies. J. Anim. Sci. 44:282.