

## **DRY WEIGHT DETERMINATION OF SEDIMENTS**

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### **ABSTRACT**

Sediment contaminant levels are reported per unit of dry weight. Aliquots of field collected wet sediments are oven dried in the laboratory to a constant weight. The following method describes the procedure by which percent moisture in sediments is determined.

### **1.0 INTRODUCTION**

An aliquot of approximately 1 to 2 g of homogenized wet sediment is dried at 105°C to a constant weight. The weight of the dried aliquot is the dry weight of the sample. Percent moisture is determined by calculating the amount of weight lost during the drying procedure.

### **2.0 APPARATUS AND MATERIALS**

#### **2.1 EQUIPMENT**

- Balance, top loading, tare capacity to 300 g, capable of weighing to 1 mg
- Calibrated weights, certified
- Oven, electric convection, capable of maintaining stable temperatures of at least 200°C
- Desiccator, cabinet style
- Spatulas, stainless steel
- Beakers, glass 10 mL

#### **2.2 REAGENTS**

- Water, deionized and activated-carbon filtered, organic free
- Acetone, pesticide grade or equivalent purity
- Methanol, pesticide grade or equivalent purity
- Dichloromethane, pesticide grade or equivalent

### **3.0 PROCEDURE**

Frozen samples are thawed to room temperature. Large-sized extraneous material (i.e., leaves, twigs, rocks, shells) is removed prior to homogenization. Sediment samples are homogenized in their certified pre-cleaned collection jars by stirring vigorously with stainless steel spatulas. All equipment used to process sediments is cleaned with Micro® soap and solvent rinsed to remove all traces of organics.

Dry weights are determined by placing sample aliquots in 10 mL, pre-weighted, clean, dry beakers. Beakers are pre-dried in an oven at 105°C and cooled in a desiccator. Once the beakers have cooled for a minimum of 30 minutes, the weight of the empty beaker is recorded to the nearest 1 mg. Approximately 1 to 2 g of thoroughly homogenized sample is placed into a labeled beaker using a solvent rinsed stainless steel spatula. The weight of the beaker plus wet sample is recorded to 1 mg. Sediment samples are dried in a 105°C oven for at least 24 hours followed by cooling in a desiccator for at least 30 minutes prior to weighing. Samples and beakers are weighed to the nearest 1 mg. Samples are placed back into the oven and dried for another 24 hours at 105°C, cooled in a desiccator and weighed. This cycle is repeated until successive weight differences are less than 4%.

### **4.0 QUALITY CONTROL (QC)**

All reagents are verified to be contaminant free. All equipment and glassware used are thoroughly cleaned by solvent rinsing or combustion at 400°C. The calibration and accuracy of balances, weights, and thermometers are checked daily. The calibration and accuracy of balances, weights are verified yearly by an independent source. All samples are shipped and received under chain-of-custody. A sample is analyzed in duplicate with each batch of 20 samples or fewer.

### **5.0 CALCULATIONS**

#### **5.1 PERCENT DRY WEIGHT**

$$\text{Dry Wt. \%} = \frac{(\text{Beaker Wt.} + \text{Dry Wt.}_{\text{sample}}) - (\text{Beaker Wt.})}{(\text{Beaker Wt.} + \text{Wet Wt.}_{\text{sample}}) - (\text{Beaker Wt.})} \times 100$$

**5.2 DUPLICATE SAMPLE ANALYSES**

$$\text{RPD} = \frac{|\text{Dry Wt.}_{\text{sample1}} - \text{Dry Wt.}_{\text{sample2}}|}{\left( \frac{\text{Dry Wt.}_{\text{sample1}} + \text{Dry Wt.}_{\text{sample2}}}{2} \right)} \times 100$$