

RESIDUE AND ORGANIC RESIDUE IN WASTE WATERS

UOP Method 515-68T

SCOPE

This method is for the determination of bacterial mud and other residues in waste waters.

OUTLINE OF METHOD

The sample is filtered, the precipitate dried at 105 C and weighed. The dried precipitate is then ignited at 600 C and weighed. The difference between the tare and the weight after drying is the bacterial mud dry substance. The difference between the tare and the weight after ignition is the residue on ignition. Finally, the difference between the bacterial mud dry substance and the residue on ignition is the organic residue.

APPARATUS

Cylinder, graduated, 50-ml, glass-stoppered

Crucibles, Coors No. 250, size 0

Drying oven, 105 C

Filters, "Millipore" Type RA, white, plain, 47-mm diameter, 1.20-millimicron pore size. Obtainable from Millipore Filter Corp., Bedford, Mass.

Filter flask, 500-ml

Filter holder, "Millipore", borosilicate glass, No. XX10-047-00. Obtainable from Millipore Filter Corp.

Furnace, ignition, capable of maintaining 600 C

Vacuum source

REAGENTS

Water, deionized or distilled

IT IS THE USER'S RESPONSIBILITY TO ESTABLISH APPROPRIATE PRECAUTIONARY PRACTICES AND TO DETERMINE THE APPLICABILITY OF REGULATORY LIMITATIONS PRIOR TO USE. EFFECTIVE HEALTH AND SAFETY PRACTICES ARE TO BE FOLLOWED WHEN UTILIZING THIS PROCEDURE. FAILURE TO UTILIZE THIS PROCEDURE IN THE MANNER PRESCRIBED HEREIN CAN BE HAZARDOUS. MATERIAL SAFETY DATA SHEETS (MSDS) OR EXPERIMENTAL MATERIAL SAFETY DATA SHEETS (EMSDS) FOR ALL OF THE MATERIALS USED IN THIS PROCEDURE SHOULD BE REVIEWED FOR SELECTION OF THE APPROPRIATE PERSONAL PROTECTION EQUIPMENT (PPE).

PROCEDURE

Place a filter in a weighed crucible previously ignited at 600 C and obtain the combined weight after drying at 105 C for one hour.

Place approximately 25 ml of sample in the cylinder and read the volume to the nearest 0.1 ml. Pour the sample into the filter holder and rinse the remaining solids with water from the walls of the cylinder into the holder. Suck dry under a strong vacuum.

Place the filter in the crucible, dry at 105 C for one hour, cool and weigh. Ignite the crucible and filter at 600 C for 20 minutes; cool and weigh.

CALCULATIONS

$$\text{Bacterial mud dry substance, g/l} = \frac{1000 (C - B)}{E}$$

$$\text{Residue on ignition, g/l} = \frac{1000 (D - A)}{E}$$

$$\text{Organic residue, g/l} = \frac{1000 [(C - D) - (B - A)]}{E}$$

where:

- A** = tare weight of crucible, g
- B** = tare weight of crucible and filter, g
- C** = weight of crucible, filter and bacterial mud after drying, g
- D** = weight of crucible, filter and residue after ignition, g
- E** = sample size, ml

PRECISION AND ACCURACY

Organic matter which is occluded by large amounts of inorganic residue may result in erroneously high values for residue on ignition. Standards are not available to determine true accuracy for such samples.

Limited experience with this analysis indicates that duplicate samples should vary by no more than 5% from their average. The official German Government Method recommends results be reported as ± 0.1 g per liter of sample.

TIME FOR ANALYSIS

Elapsed time is about 5 hours for a single determination or 6 hours for 4 analyses. The labor requirement is about one man-hour per sample.

REFERENCE

Ordinance on the Decomposition of Active Detergent Substances in Washing and Cleansing Agents, Federal Law Gazette Part II, p. 698 (1962) (Germany)