

12/10/12

DEPARTMENT OF CIVIL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI – 620 015.
CE704 - Environmental Quality Measurements Laboratory
Experiment 11 (a): Determination of Total Solids

AIM

To determine the total solids present in the given sample.

PRINCIPLE

Total solids are determined as the residue left after evaporation and drying of the unfiltered sample.

APPARATUS REQUIRED

1. Evaporating dishes
2. Water bath / Oven
3. Desiccators
4. Weighing balance

PROCEDURE

1. Wash & wipe the evaporating dish (Porcelain dish) and dry it in a hot air oven for dryness.
2. Measure the initial weights of dishes by using electronic balance (W_1).
3. Take 10 ml of *unfiltered sample* in a china dish and evaporate in a water bath / oven at 103°C to 105°C .
4. Cool the container to dryness in a dessicator and weigh the dishes again.
5. Note the increase in weight (W_2).

CALCULATION

Initial weight of the container W_1
 Final weight of the container W_2
 Weight of residue

$$\begin{aligned}
 & 28430.2 \text{ mg} \\
 & = \dots\dots\dots \text{g} \\
 & = \dots\dots\dots \text{g} \quad 28579.5 \text{ mg} \\
 & = W_2 - W_1 \text{ g} = 1493 \text{ mg} = 0.1493 \text{ g}
 \end{aligned}$$

$$\begin{aligned}
 \text{Amount of total solids present in the sample} &= \frac{(W_2 - W_1) \times 1000}{\text{Volume of sample taken (mL)}} \times 1000 \\
 &= \dots\dots\dots \text{mg/lit} \quad \frac{0.1493 \times 1000 \times 1000}{10} = \\
 & \quad 14930
 \end{aligned}$$

APPLICATION OF TOTAL SOLIDS DATA IN ENVIRONMENTAL ENGINEERING PRACTICE

1. Total solids determination is used to assess the suitability of potential supply of water for various uses. In cases, in which waster softening is needed, the type of softening procedure used may be dictated by the total solid content.

Environment Civil Engineering Laboratory Manual

M. A. Karim



Environment Civil Engineering Laboratory Manual:

Lab Manual for Environmental Engineering Baranitharan B, 2016-08-12 This manual introduces the application of basic chemistry and chemical calculations to measure physical chemical and bacteriological parameters like turbidity and colour dissolved oxygen hardness pH alkalinity organic content Sulphates Fluorides Iron Total Settle able solids chloride Suspended and Dissolved Solids Ammonical Nitrogen Bacteriological Analysis chemical and biochemical oxygen demand of water and wastewater Laboratory methods and interpretation of results with regard to environmental engineering applications such as design and operation of water and wastewater treatment processes and to the control of the quality of natural waters are also explored As a result of these tests various remedies can be suggested to reduce the environmental pollution The purpose of this laboratory manual is to make the people aware of the dangerous effects of environmental pollution *Environmental and Hydraulic Engineering Laboratory Manual* Gang Chen, Simeng Youneng, 2017-08 This laboratory manual is comprised of 14 laboratory experiments covering topics of water quality water treatment groundwater hydrology liquid static force pipe flow and open channel flow These experiments are organized with a very logical flow to cover the related topics of environmental and hydraulics engineering within university level courses This state of the art manual is divided into two sections environmental engineering experiments and hydraulic engineering experiments with seven experiments for each section It provides the basic hands on training for junior year civil and environmental engineering students In each experiment fundamental theories in the topic area are revisited and mathematic equations are presented to guide practical applications of these theories Tables figures graphs and schematic illustrations are incorporated into the context to give a better understanding of concept development experimental design and data collection and recording Each experiment ends with discussion topics and questions to help students better understand the content of the experiment This manual mainly serves as a textbook for an environmental and hydraulics engineering laboratory course Professionals and water wastewater treatment plant managers may also find this manual of value for their daily jobs In addition students in related areas can use this manual as a reference and the general public may use it to educate themselves on water quality testing and water flow

Environmental Engineering Laboratory Manual Robert L. Sanks, Montana State University (Bozeman, Mont.). Department of Civil Engineering and Engineering Mechanics, 1974 *Environmental Science and Engineering Laboratory Manual* Daniel Meeroff, 2013-04-16 *Environmental Engineering Laboratory Manual for First Year Engineering Students (common to All Branches)* R. C. Gaur, 2008 *A Guide to Undergraduate Science Course and Laboratory Improvements* National Science Foundation (U.S.). Directorate for Science Education, 1979 Solid Waste Engineering Laboratory Manual P. Aarne Vesilind, 1974 ENVIRONMENTAL AND ECOLOGICAL CHEMISTRY - Volume II Aleksandar Sabljic, 2009-02-04 Environmental and Ecological Chemistry is a component of Encyclopedia of Chemical Sciences Engineering and Technology Resources in the global Encyclopedia of Life Support Systems EOLSS which is an integrated compendium of twenty one

Encyclopedias The Theme on Environmental and Ecological Chemistry presents the essential aspects such as Fundamental Environmental Chemistry Atmospheric Chemistry Soil Chemistry Aquatic Chemistry Ecological Chemistry Chemistry of Organic Pollutants Including Agrochemicals These volumes are aimed at the following five major target audiences University and College students Educators Professional practitioners Research personnel and Policy analysts managers and decision makers and NGOs

Laboratory Manual for Groundwater, Wells, and Pumps Rohitashw Kumar, Vijay P. Singh, Munjid Maryam, 2023-05-23 The over exploitation of groundwater and marked changes in climate over recent decades has led to unacceptable declines in groundwater resources Under the likely scarcity of available water resources in the near future it is critical to quantify and manage the available water resources With increasing demand for potable water for human consumption agriculture and industrial uses the need to evaluate the groundwater development management and productivity of aquifers also increases *Laboratory Manual for Groundwater Wells and Pumps* serves as a valuable resource and provides a multi disciplinary overview for academics administrators scientists policymakers and professionals involved in managing sustainable groundwater development programs It includes practical guidance on the measurement of groundwater flow soil properties aquifer properties wells and their design as well as the latest state of the art information on pumps and their testing and groundwater modeling Features Covers basics of groundwater engineering advanced methodologies and their applications and groundwater modeling Examines groundwater exploration planning and designing and methods for formulating strategies for sustainable management and development Serves as a reference for practitioners on practical applications and frequently occurring issues of groundwater investigations development and management

Water and Wastewater Engineering I State University of New York at Buffalo. Department of Civil Engineering, 1982

Introduction To Environmental Engineering Taha Marhaba, 2008-01-30 **Water and Wastewater Engineering II**

State University of New York at Buffalo. Department of Civil Engineering, 1979 [An Introductory Guide to EC Competition](#)

[Law and Practice](#) Valentine Korah, 1994 **Environmental Engineering Laboratory Manual** M. A. Karim, 2025-03-26

[College Science Improvement Programs; COSIP A & B Report](#) National Science Foundation (U.S.). Office of Experimental Programs, 1974 **Resources in Education**, 1979 [Ce 371 Environmental Engineering Laboratory Manual](#) North Dakota

State University, 2008-12-30 **Guide to U.S. Government Publications** Donna Batten, 2002 **Printed Wiring Board**

Pollution Prevention and Control Technology, 1998 **Environmental Engineering Laboratory Manual** B Barani

Tharan Balamurali S, Barani Balamurali, 2016-08-04 This manual introduces the application of basic chemistry and chemical calculations to measure physical chemical and bacteriological parameters like turbidity and colour dissolved oxygen hardness pH alkalinity organic content Sulphates Fluorides Iron Total Settle able solids chloride Suspended and Dissolved Solids Ammonical Nitrogen Bacteriological Analysis chemical and biochemical oxygen demand of water and wastewater Laboratory methods and interpretation of results with regard to environmental engineering applications such as design and operation of

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