

UNCONTROLLED

WEST VALLEY NUCLEAR SERVICES CO., INC.

ANALYTICAL CHEMISTRY METHOD
ANALYTICAL AND PROCESS CHEMISTRY

ACM-TS/TDS-2501, Rev. 1
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>

TOTAL SOLIDS

Approved by:

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Analytical and Process Chemistry

Part I

1.0 PURPOSE

> This method establishes a method for the determination of total solids using a convection oven.

2.0 APPLICATION

> This method covers the determination of total solids. This method is good for most samples with high solids.

3.0 DISCUSSION

The sample is evaporated in an oven at 104°C to constant weight. The increase in weight over that of the empty dish represents the total solids.

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4.0 REFERENCES

Standard Methods for the Examination of Water and Waste Water,
16th Edition, 209A Total Solids, 209D Fixed Solids.

Part II

5.0 EQUIPMENT

> 5.1 Evaporating dishes capable of withstanding 200°C temperatures.

5.2 Assorted glassware and pipets.

5.3 Drying oven capable of temperatures up to 110°C.

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6.0 REAGENTS AND STANDARDS

Not Applicable

7.0 SAFETY PRECAUTIONS

Observe standard laboratory safety precautions.

8.0 RECORDS

8.1 All measurement data and sample identification shall be recorded on the work sheet attachment A. The final result shall be recorded on an analytical request sheet.

9.0 CALIBRATION AND CONTROL

9.1 Balances will be calibrated on a daily basis; according to manufacturers specifications. Verification of calibration will be recorded in a QA Control Book.

> 9.2 Temperature of oven will be checked for accuracy periodically, and recorded in a QA Control Book.

10.0 PROCEDURE

10.1 Weigh an empty evaporating dish on an analytical balance; record the weight.

10.2 Pipet an appropriate amount of sample into the evaporating dish and weigh with the analytical balance; record the weight.

10.3 Place evaporating dish with sample into a drying oven at 103 to 105°C.

10.4 Heat until sample is dry.

> 10.5 Cool evaporating dish with sample to room temperature in a desiccator and weigh on the analytical balance. Reheat and reweigh samples until a constant weight is obtained unless documentation is to the contrary; record the weight.

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11.0 CALCULATIONS

> 11.1 Total Solids (%/wt) =
$$\frac{W_D - W_0}{W_S - W_0} \times 100$$

A

Where W_0 = weight of empty evaporating dish,
 W_S = evaporating dish plus original sample, and
 W_D = evaporating dish plus dried sample.
> A = sample weight

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> Where: Deleted

All weights are in grams.

12.0 ATTACHMENTS

Attachment A - Total Solids Work Sheet

ATTACHMENT A

Page ____ of ____

TOTAL SOLIDS WORK SHEET

SAMPLE NAME _____ LOG NUMBER _____

SPECIAL INSTRUCTIONS _____

Balance (Model and S/N):

Oven used (S/N): _____

SAMPLE ID

SAMPLE WEIGHT [A] (g)

DRY DISH (g) - W_o

DISH + SAMPLE (g) - W_s

DRIED SAMPLE + DISH
(g) - W_D

WEIGHT SOLIDS
[B] (g) - $\frac{W_D - W_o}{W_s - W_o}$

TOTAL SOLIDS (%)
[(B/A) x 100%]

ANALYST _____

DATE _____

APPROVED _____

DATE _____

CALCULATIONS: Total Solids (%wt) = $\frac{W_D - W_o}{W_s - W_o} \times 100$