

CMP PROCEDURE
WEIGHT PERCENT DETERMINATION OF SULFURIC ACID
PROCEDURE # 460354

PURPOSE

**WEIGHT PERCENT DETERMINATION OF
SULFURIC ACID**

(C-202, C-650, and Railcars)

SCOPE

This procedure will instruct you how to titrate a sample using a Dosimat 665 Automatic titrator and also how to calculate for Wt% H₂SO₄ manually.

**RELATED
PROCEDURES**

None

DEFINITIONS

None

**SAFETY CONCERNS &
EQUIPMENT**

THERMAL: NONE

CHEMICAL: Remember you are working with chemicals that may cause skin and eye irritation. Monogoggles and an acid resistant apron should be worn along with rubber gloves.

MECHANICAL: Use caution when working with glass.

EQUIPMENT:

- 1) Freshly caught sample
- 2) Dosimat 665
- 3) 1.0 N NaOH
- 4) 250ml Erlenmeyer Flask
- 5) Phenolphthalein Indicator
- 6) Stirring bar and Stirring pad
- 7) 1ml pipet
- 8) 100ml Volumetric Flask
- 9) Analytical Balance

Revision 2

Dow Confidential

Revision Date: 2/7/95

This procedure is only valid for 24 hours of date viewed, March 14, 1995, 10:46 AM

DO A 032710
CONFIDENTIAL

WEIGHT PERCENT DETERMINATION OF SULFURIC ACID

**ENVIRONMENTAL
CONCERNS**

None

SPECIAL CONCERNS

None

WEIGHT PERCENT DETERMINATION OF SULFURIC ACID

PROCEDURE

Step	Action
1	Add approximately 90mls of distilled water to a 100ml volumetric flask.
2	Place flask with di water on balance and zero balance
3	With the balance at zero add 1ml of H ₂ SO ₄ to be analyzed to the flask; record the weight to the nearest .0001g.
4	Transfer contents of the flask to a 250ml Erlenmeyer flask, add 3 to 4 drops of Phenolphthalein Indicator to the sample and place on the stirring pad.
5	To set up the Dosimat for titrating sample press the CLEAR button on the key pad, then GO, then RECALL. Now select DOS 2 for this sample.
6	Now you must press the #9 key labeled SAMPLE, and enter the weight of the sample you recorded from the balance. Press enter after you have entered the correct weight.
7	Once the Dosimat has been set up, you may now press the GO button on the key pad to start titrating the sample with 1.0N NaOH until a pink end point is reached.
8	Once the end point has been reached stop titrating and press the FILL button on the key pad; the Dosimat will refill the plunger and calculate for WT% HCL.
9	For manual titration you would follow steps 1 - 4 and then titrate by adding the 1.0N NaOH manually with a pipet and record the amount of NaOH used to reach the pink end point. Then go to step 10.
10	Take the amount of NaOH used and do the following calculations: $\text{WT\% H}_2\text{SO}_4 = \frac{\text{ml of 1.0N NaOH} \times 9.8}{2 \times \text{Sample Weight}}$
11	Dispose of samples when finished.

**CMP IPT MODULES
LAB OPERATIONS LAB MODULE
MODULE #463106**

PURPOSE	<u>IPT Module for the Chlorinated Methanes Plant Lab Operations.</u>
SCOPE	<u>The following module will ask questions related to general information required to perform the duties of a lab operator.</u>
RESOURCES	<u>Lab procedures, Equipment Manuals, Fellow lab operators, and Lab Manager.</u>
RELATED MODULES	<u>CMP Basic Safety Module</u>
DEFINITIONS	<u></u>
ENVIRONMENTAL CONCERNS	<u>Most of the chemicals here at CMP fall under federal emissions regulations and extra precautions when handling or disposal may be required.</u>
HAZARDS	<u></u>

Training & Development IPT Modules
Chlorinated Methanes

LAB OPERATIONS MODULE

COMPUTER OPERATION

PURPOSE To familiarize you with the basic understanding and operation of the lab computer at CMP.

RESOURCES (CMP LAB COMPUTER MANUAL, LAB MANAGER)

**REQUIRED
LEVEL OF
PERFORMANCE** 100%

:

OBJECTIVES:

1	What is the function of the computer in our lab?
2	As an operator, what would your lab duties require you to use the computer for?
3	List all the different devices associated with the computer.
4	Who would you report equipment problems to ?
5	Who is responsible for making changes to the system ?

Training & Development IPT Modules
Chlorinated Methanes

LAB OPERATIONS MODULE
LAB ELECTRICAL EQUIPMENT

PURPOSE To familiarize you with the location of electrical breakers and power supply to the lab.

RESOURCES (CMP LAB MANUAL, LAB MANAGER and SHIFT SUPERVISOR)

**REQUIRED
LEVEL OF
PERFORMANCE:** 100%

OBJECTIVES:

1	Physically locate all the electrical breaker panels associated with the lab.
2	What is the procedure for working on electrical equipment?

Training & Development IPT Modules
Chlorinated Methanes

LAB OPERATIONS MODULE

LAB GC OPERATION

PURPOSE To familiarize you with the basic understanding and use of a GC,
"GAS CHROMATOGRAPH".

RESOURCES (CMP LAB GC MANUAL, EQUIPMENT MANUALS AND
LAB MANAGER)

**REQUIRED
LEVEL OF
PERFORMANCE:** 100%

OBJECTIVES:

1	What do we use a GC for?
2	Physically locate and identify a GC.
3	Give a simple explanation of how a sample is analyzed using a GC
4	Physically locate and identify analyzed on which GC.
5	Who would you report equipment problems to ?

Training & Development IPT Modules
Chlorinated Methanes

LAB OPERATIONS MODULE

LAB HOODS

PURPOSE To familiarize you with lab hood operations and uses.

RESOURCES (CMP LAB MANUAL, LAB MANAGER and
ENVIRONMENTAL CONTACT)

**REQUIRED
LEVEL OF
PERFORMANCE:** 100%

OBJECTIVES:

1	Explain the purpose of a lab hood.
2	How many hoods are in our lab and what are their differences.
3	Housekeeping !!!!!
4	Before analyzing a sample under a hood what should you check?

Training & Development IPT Modules
Chlorinated Methanes

LAB OPERATIONS MODULE

LAB PROCEDURE

PURPOSE To familiarize you with where to find procedures which will be used to do all the training and operations of the CMP lab.

RESOURCES (CMP LAB IPT MANUAL, LAB MANAGER and SHIFT SUPERVISOR)

**REQUIRED
LEVEL OF
PERFORMANCE:** 100%

OBJECTIVES:

1	Where are all procedures located ?
2	Who is responsible for keeping these resources updated and available?
3	Once used what should you do when finished with a procedure manual?

Training & Development IPT Modules
Chlorinated Methanes

LAB OPERATIONS MODULE

LAB UTILITIES
(AIR, H₂, N₂, He, Water)

PURPOSE To familiarize you with the utilities, which support the lab equipment for normal operation.

RESOURCES (CMP LAB MANUAL, LAB MANAGER and SHIFT SUPERVISOR)

**REQUIRED
LEVEL OF
PERFORMANCE:** 100%

OBJECTIVES:

1	Explain what each of the following are used for: Zero Air, Plant Air, Hydrogen, Low Pressure Nitrogen, High Pressure Nitrogen, Helium, Process Water and Dionized Water.
2	Physically locate the normal and backup utilities supply to the lab.
3	Explain how the backup gas supply system should operate.
4	Who would you report problems to ?
5	Physically locate all block valves for utilities to the lab.

Training & Development IPT Modules
Chlorinated Methanes

LAB OPERATIONS MODULE

LAB WASTE HANDLING

PURPOSE To familiarize you with the basic responsibilities you have as a lab operator here at CMP on handling and disposing of hazardous waste.

RESOURCES (CMP LAB MANUAL, LAB MANAGER, SHIFT SUPERVISOR, ENVIROMENTAL CONTACT)

**REQUIRED
LEVEL OF
PERFORMANCE:** 100%

OBJECTIVES:

1	Explain what would be hazardous waste.
2	How would you dispose of lab waste.
3	Demonstrate how to operate the chemical waste pot.
4	Housekeeping !!!!!