

Direct Potable Water Reuse Standard Operating Procedure

Wichita Falls, Texas

Chlorine Species Titration WW-L5

This SOP supersedes any previous SOP on this topic. Effective on the date signed approved below

INTRODUCTION

This is the Standard Operating for Chlorine specific Titration.

OBJECTIVE

The objective of this document is standardize Titration.

Using the existing equipment for standard total titration, you can differentiate between three forms or Species of chlorine. They are as follows:

1. Free Chlorine. Chlorine which is not attached to any other molecule.
2. Monochloramine. Chlorine attached to one Ammonia molecule. ($\text{NH}_2 \text{Cl}$)
3. Dichloramine. Two Chlorine attached to one Ammonia molecule. (NHC_2)
4. Total Chlorine. Which is all of the above added together.

The Titration has to be done as soon as possible after collecting preferably at the source. The sample must not be agitated before titration. The sample needs to be at least 250 mls. Follow these steps.

- a) Prepare the titrator by rinsing the agitator area with DI water. Fill the titrator cup up to the pre-marked fill line with the sample. **Do not add any KI or acid to the sample.**
- b) Free Chlorine. Stabilize the needle and begin titration very slowly. If the needle does not deflect, there is no Free Chlorine. If the needle deflects, continue titrating until the needle does not deflect. **Do not over feed phenylarsene oxide (P.O.) solution.** The end point is the free Chlorine residual.
- c) Monochloramine. Add four drop (0.2 mls) of Potassium Iodine (KI) solution to the sample on the titrator. Do not add the acid yet. Continue titrating to an end point. **Do not over feed phenylarsene oxide (P.O.) solution.** This end point minus the Free Chlorine end point is the Monochloramine residual.
- d) Dichloramine. Add one ml of the acid buffer and then one ml of the Potassium Iodine (KI) solution. Finish titrating as you would normally. The end point of the phenylarsene oxide (P.O.) solution minus the end point of the free and the Monochloramine is the Dichloramine residual.

Chlorine Species Titration

- e) The Total Chlorine residual is the final end point and should equal the sum of Free, Mono, and Di.

All results will have to be written down individually in order.

Related SOP: QAQC Graphing DPR SOP
MonoChloramine residual below 1.0 mg at 1J DPR SOP

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Prepared Date: May 6, 2014

Approved by: W. L. Bowers

Approved Date: 5/9/14

Reviewed by: _____

Reviewed Date: _____

Reviewed by: _____

Reviewed Date: _____

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Reviewed Date: _____

*SOP's are to be reviewed and/or updated annually or any time this process has changed.

Sign below and date that you have received this SOP.

Name	Signature	date	Signature	date
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