

Version 2

Jan 15, 2021

# Preparation of oxalate reagent V.2

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Works for me

This protocol is published without a DOI.

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## ABSTRACT

This protocol describes how to prepare oxalate reagent, which is used to remove surface adsorbed phosphorus, so that the intracellular phosphorus quotas in microalgae can be measured.

AntonioTovar-Sanchez, Sergio A Sañudo-Wilhelmy, Manuel Garcia-Vargas, Richard S Weaver, Linda C Popels, David A Hutchins. A trace metal clean reagent to remove surface-bound iron from marine phytoplankton. Marine Chemistry.

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## PROTOCOL CITATION

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<https://protocols.io/view/preparation-of-oxalate-reagent-brhwm37e>

Version created by Yingyu Hu

## WHAT'S NEW

Wording in some steps have been revised.

## LICENSE

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Jan 15, 2021

## LAST MODIFIED

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## PROTOCOL INTEGER ID

46358

## PARENT PROTOCOLS

In steps of

[An X-HTDC method for estimating particulate phosphorus from microalgae](#)

## MATERIALS TEXT

### MATERIALS

☒ Potassium chloride Sigma

Aldrich Catalog #P3911-500G

☒ EDTA disodium dihydrate Fisher

Scientific Catalog #324503100

☒ Sodium citrate Contributed by users

☒ Sodium chloride Fisher

Scientific Catalog #S671-3

☒ Sodium hydroxide Fisher


Scientific Catalog #BP359-500

☒ Oxalic acid dihydrate VWR international

Ltd Catalog #BDH4556-500G

## SAFETY WARNINGS

### Sodium hydroxide solution



**DANGER**

Causes severe skin burns and eye damage. May be corrosive to metals.

**PREVENTION**

Do not breathe mists. Wash skin and eyes thoroughly after handling. Wear protective gloves and clothing, and eye and face protection. Keep only in original container. Do not use in aluminum containers.

**RESPONSE**

**If swallowed:** Rinse mouth. Do NOT induce vomiting. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. **If on skin (or hair):** Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. **If inhaled:** Remove person to fresh air and keep comfortable for breathing. **Immediately call a doctor or other medical personnel.** Absorb spillage to prevent material damage.

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## BEFORE STARTING

Glassware and instrument required in the protocol:

Stirrer with heater
1 L volumetric flask (Polypropylene)
100 mL volumetric flask
MilliQ water in squeeze bottle
1000 mL beaker X 1
250 mL beaker X 1
Thermo Scientific™ Nalgene™ Rapid-Flow™ Sterile Disposable Bottle Top Filters with PES Membrane
1 L PP bottle X1
250 mL PP bottle X1
Transfer pipet
Glass rod
Balance/weighting boat/spatulas

#### 10 M NaOH solution

- 1 Add  50 mL MilliQ water in a 250 mL beaker.
  - 2 Weigh  40 g NaOH and slowly pour into the beaker.
  - 3 Use squeeze bottle to rinse the weighing boat and transfer rinse water into the same beaker.
  - 4 Use glass rod to gently stir and fully dissolve NaOH.
- The solution is very hot and corrosive. It can cause skin burns and eye damage.
- 5 Carefully transfer NaOH solution into 100 mL volumetric flask by using glass rod.
  - 6 Rinse beaker with small amount of MilliQ water three times, transfer rinse water into the flask.
  - 7 Mix the solution by gently shaking the capped volumetric flask and top to 100 mL with MilliQ water.
  - 8 Transfer the prepared reagent into a 250 mL PP bottle.

- 9 Label the bottle with SDS pictogram.




#### Oxalate reagent

- 10 In a 1000 mL beaker with stir bar, add **600 mL** MilliQ water.
- 11 Add **18.6 g** EDTA, **14.7 g** sodium citrate, **0.74 g** KCl and **5 g** NaCl into the beaker, stir until all ingredients are dissolved. **pH5.7**
- 12 **[M]10 Molarity (M)** NaOH is added dropwise to bring pH in between 6 to 7 by using a transfer pipet
- 13 Add **12.6 g** oxalic acid to the solution, stir the mixture while heating.
- 14 After oxalic acid is completely dissolved, stop heating and let it cool to room temperature. A water bath filled with tap water can be used to speed up cooling. **pH3.3**
- 15 Add **[M]10 Molarity (M)** NaOH dropwise to bring pH to **pH8**
- 16 Top to 1 L in volumetric flask with MilliQ water.
- 17 Filter oxalate reagent by rapid flow to a 1 L PP bottle.

Sterile Disposable Filter Units with PES  
Membrane

Thermo Scientific™ Nalgene™ Rapid- Flow™	5964 520
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18 Label the bottle and keep it at  **Room temperature** .