



Aug 10, 2020

# Preparation of oxalate reagent

Zoe V Finkel<sup>1</sup><sup>1</sup>Dalhousie University

1

Works for me

This protocol is published without a DOI.

Marine Microbial Macroecology Lab

Tech. support email: [ruby.hu@dal.ca](mailto:ruby.hu@dal.ca)Yingyu Hu  
Dalhousie University

## 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 quantified.



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. [https://doi.org/10.1016/S0304-4203\(03\)00054-9](https://doi.org/10.1016/S0304-4203(03)00054-9)

## PROTOCOL CITATION

Zoe V Finkel 2020. Preparation of oxalate reagent. **protocols.io**  
<https://protocols.io/view/preparation-of-oxalate-reagent-bhkvj4w6>



## LICENSE

This is an open access protocol distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

## CREATED

Jun 17, 2020

## LAST MODIFIED

Aug 10, 2020

## PROTOCOL INTEGER ID

38261

## PARENT PROTOCOLS

In steps of

[Particulate phosphorus in microalgae](#)

## MATERIALS


NAME	CATALOG #	VENDOR
<a href="#">Potassium chloride</a>	P3911-500G	<a href="#">Sigma Aldrich</a>
<a href="#">EDTA disodium dihydrate</a>	324503100	<a href="#">Fisher Scientific</a>
<a href="#">Sodium citrate</a>		
<a href="#">Sodium chloride</a>	S671-3	<a href="#">Fisher Scientific</a>
<a href="#">Sodium hydroxide</a>	BP359-500	<a href="#">Fisher Scientific</a>
<a href="#">Oxalic acid dihydrate</a>	BDH4556-500G	<a href="#">VWR international Ltd</a>

## EQUIPMENT

NAME	CATALOG #	VENDOR
Sterile Disposable Filter Units with PES Membrane	5964520	Fisher Scientific

## 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.

## 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.

Use glass rod to gently stir and fully dissolve NaOH.

4  The solution is very hot and corrosive. It can cause skin burn 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  **10 Molarity (M)** NaOH is added dropwise to bring pH to 6~7 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 (tap water bath can speed up cooling)  **pH3.3**

15 Add **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™ 5964520

18 Label the bottle and keep it at **Room temperature**.