

# Making PACI Stock Solutions

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Polyaluminum chloride (PACl) is an inorganic polymer coagulant commonly used in water treatment. Its chemical formula is

$[\text{Al}_2(\text{OH})_4(\text{H}_2\text{O})_2]^{+}$ . For all experiments requiring the use of PACl, individual stock solutions must be mixed from the lab stock solution. The lab stock solution can be found in the chemical cabinet in Hollister 160.

When mixing a solution for your experiments:

Calculate the volume of lab stock solution required to make the stock for your experiments. (If you don't know what concentration you need to mix for your experiments, consult your team leader.) Use a mass balance to solve for the volume required

$$C_{\text{LabStock}} V_{\text{LabStock}} = C_{\text{ExperimentStock}} V_{\text{ExperimentStock}}$$

Where

$C_{\text{LabStock}}$  = concentration of lab stock that is written on the container

$V_{\text{LabStock}}$  = volume of lab stock to pipette out

$C_{\text{ExperimentStock}}$  = desired concentration of stock for experiments

$V_{\text{ExperimentStock}}$  = desired volume of experiment stock to make (usually 1 liter)

USE CLEAN GLASSWARE and GLOVES.

Pipette  $V_{\text{LabStock}}$  into a volumetric flask that matches  $V_{\text{ExperimentStock}}$  (these can be found in gradations of 250, 500 and 1000 mL) and fill the remaining flask with distilled water (found in HLS 150). Pour flask solution into the container that will be used for experiment stock.

CLEAN ALL GLASSWARE WITH DISTILLED WATER AND SOAP. Return PACl stock to cabinet and discard gloves to the trash.