

Challenge Activities

Testing Water Quality

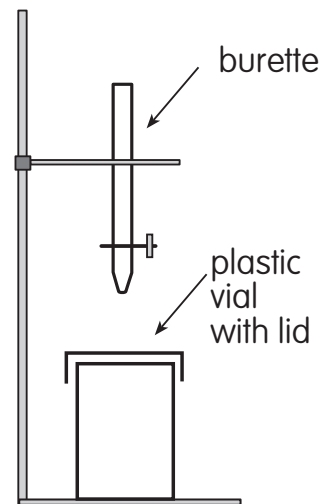
Challenge

How accurate can you be?

The alkalinity of seawater is one of the vitally important factors that influence reef growth. Calcium Carbonate (CaCO_3) contains the essential chemical components that both hard and soft corals use when forming their skeletons.

In the following simple experiment we will test the alkalinity of Reef HQ's Coral Reef Tank water. In the small plastic vial with lid, add:

- Step 1 3 mL of Coral Reef Tank water to be tested (for instance CRE water) - Measure volume with measuring cylinder.
- Step 2 12mL of deionised water - Measure volume with measuring cylinder.
- Step 3 3 drops of Reagent 1 (Liquid) - Mix well and WAIT for 30 SECONDS before proceeding to Step 4.
- Step 4 3 level scoops of Reagent 2 (Powder) - Mix gently until all reagents are dissolved.
- Step 5 Drip titrant slowly from the burette into vial until the colour changes from pink to true blue. Swirl to mix after a few drops. When the colour starts changing to a purple blue, mix after each drop.
- Step 6 When the colour is true blue, read the volume left in the burette and calculate the volume of titrant dispensed using the table on your challenge card. Read what the concentration of calcium is in the sample tested from the right-hand column of the Calcium Concentration Table.



Highlight the volume of Titrant dispensed in the Calcium Concentration Table below.

Volume of Titrant dispensed (mL)	Calcium Concentration (mg/L)	Volume of Titrant dispensed (mL)	Calcium Concentration (mg/L)	Volume of Titrant dispensed (mL)	Calcium Concentration (mg/L)	Volume of Titrant dispensed (mL)	Calcium Concentration (mg/L)
3.00	500	2.58	430	2.16	360	1.74	290
2.94	490	2.52	420	2.10	350	1.68	280
2.88	480	2.46	410	2.04	340	1.62	270
2.82	470	2.40	400	1.98	330	1.56	260
2.76	460	2.34	390	1.92	320	1.50	250
2.70	450	2.28	380	1.86	310	1.44	240
2.64	440	2.22	370	1.80	300	1.38	230

The calcium carbonate range for coral reef growth is 314 - 320mg/L. Why might Reef HQ require the calcium carbonate concentration to be at the level calculated?

