Marine Education

Mandatory Practical – Investigate the effects an altered ocean pH has on marine carbonate structures T121

Name:

Date:

The aim of this experiment is to measure the dissolution rates of marine carbonate structures in various pH solutions

Dissolution means *to dissolve*. Dissolution rates increase as H^+ ion concentrations increase (pH decreases).

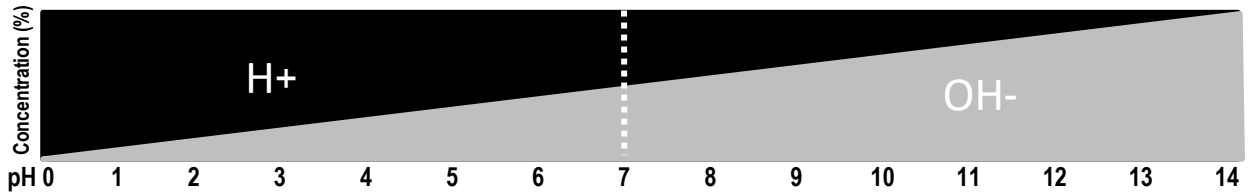


Figure 1: Each one-unit change in pH corresponds to a ten-fold change in H+ ion concentration. Acidic solutions have more H+ ions than OH^- ions.

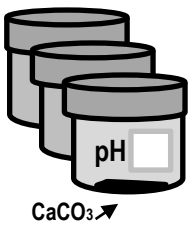
Experimental Design

An easy way to achieve the desired pH for each treatment is to add hydrochloric **acid** (HCl) to distilled water. Adding acid lowers the pH. Alternatively, your teacher will prepare HCl solutions for you. Measure the pH and record below. Then, measure and record the dry weight of $CaCO_3$ before the experiment, and again after the experiment (make sure it's dry!). The *dissolution rate* will be the (mean) change in mass over time.

Treatment 1

____ % HCl

____ % distilled water

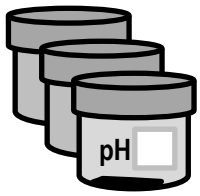


$CaCO_3$

Treatment 2

____ % HCl

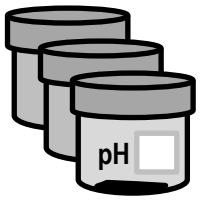
____ % distilled water



Treatment 3

____ % HCl

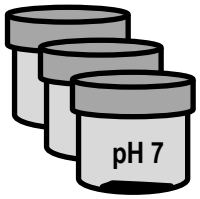
____ % distilled water



Control

0 % HCl

100 % distilled water



Activity: Record and Discuss your Results below. Discuss how to improve the experiment.

Repeats ⇩	Treatment 1 (g)			Treatment 2 (g)			Treatment 3 (g)			Control (g)		
	Before	After	Change in mass	Before	After	Change in mass	Before	After	Change in mass	Before	After	Change in mass
1												
2												
3												
MEAN												