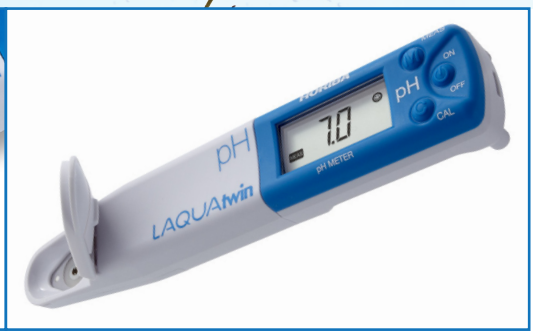
Application Note

pH Measurement To Determine Acidification of Sushi Rice

LAQUAtwin is a series of pocket ION meters. Using Ion Selective Electrode (ISE) technology, they are available for measuring Conductivity, Calcium, Nitrate, Potassium, Sodium, Salt concentration and pH measurement. Using just a tiny amount of sample, the LAQUAtwin proprietary flat sensors can quickly and accurately measure the values of the chemical parameters in the field.



Introduction

Rice used for sushi must have a pH of less than 4.6. At pH levels below 4.6, most pathogenic bacteria do not grow or produce toxins[1]. Thus, the rice must be acidified using acetic acid (vinegar) to be classified as non-hazardous. The LAQUAtwin pocket pH Meter is used as quality control check to ensure that the rice is adequately acidified, before selling to consumers. This is an easy, quick check method used to abide to the ANZ Standards[2] in ensuring that customers are safely consuming sushi.

Method

Acetic acid (vinegar) should be mixed into the rice according to the following table.

Ingredients	Recipe 1	Recipe 2	Recipe 3
Short Grain Rice	900 g	900 g	900 g
Water	1100 ml	1320 ml	1250 ml
Rice Vinegar	135 ml	99 ml	128 ml
Sugar	57 g	94 g	44 g
Salt	9 g	25 g	8 g

A small sample of the rice mixture is placed on the flat sensor of the LAQUAtwin pocket pH Meter and measured. If the measured value is above pH 4.6, add more acetic acid to the rice mixture and stir well. Place new rice sample on the senor and repeat testing process. After tests, wash the sensor with diluted soap water and pat dry with a paper tissue.

Results and Benefits

The use of accurate pH testing in controlling the quality of sushi rice prevents the growth of pathogenic bacteria and toxins.

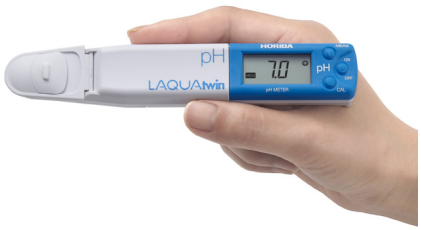
The LAQUAtwin pocket pH meter is small and compact; convenient to carry around in your pocket and is ideal for on-site testing. Its easy-to-use interface makes the LAQUATwin pocket pH Meter an indispensable tool for food testing.

[1] Hocking, A.D; 2003. Foodborne Microorganisms of Public Health Significance, AIFST, Waterloo
[2] Food Safety Guideline for Preparation and Display of Sushi, June 2007, NSW/FA/F1005/0706

Pocket ION Meter

LAQUAtwin

Unique Features



Calibrate and measure at the touch of a button—the smiley face will tell you when the result can be read.

Hassle-free automatic calibration with a few drops of standard solution reassures you of your measurement accuracy. Two-point calibration is also possible.*1

*1 Except for B-711

LAQUAtwin is fully waterproof and dustproof.

The meter and sensor are fully waterproof*3 and dustproof, so you can take it anywhere.

*3 IP67 rated. Will withstand immersion for 30 minutes at 1 m. Not suitable for underwater use.

LAQUAtwin: the only meters with flat sensor technology.

HORIBA's highly-sensitive, flat sensor technology opens up new possibilities for sampling and sample types. Only a small amount of sample is required, so you can easily sample in situ without the need for beakers or other labware. Sensors are easily replaced as required.

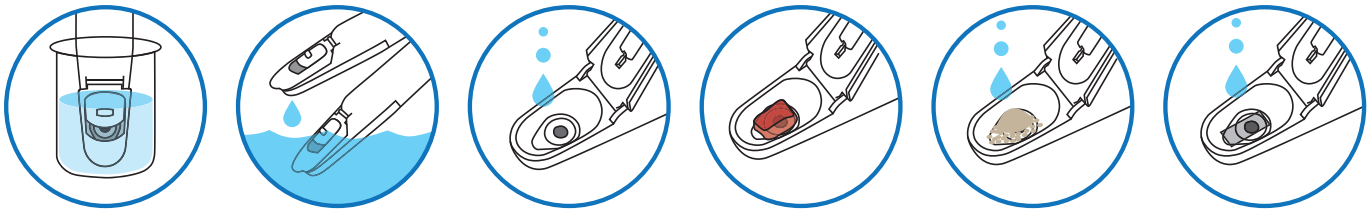
Carry case comes as standard for handy portability.

The compact carry case contains everything you need for your measurements, including the standard solution and sampling sheets.

1 X 6

One meter, six methods.

Only LAQUAtwin allows you to be this flexible!
Choose the best method according to your sample, your situation, and your needs.



01 Immersion

When you're in the lab, you can test the sample in a breaker. Ensure the sensor guard sliding cap is open.

02 Scoop

Use as a scoop to test water eg from a river. A vertical scoop for an aquarium is also available with a unique sensor guard.

03 Drops

Place a drop of the sample onto the sensor with a pipette. Laquatwin meters can measure sample volume as low as 0.1mL

04 Solid Samples

Foods containing some moisture can be tested by placing a small piece directly onto the sensor.

05 Powders

Laquatwin meters can also test dry powders. Simply place the powder sample onto the sensor and drop on your defined volume of pure water.

06 Paper and textiles

To test sheets of paper and textiles, cut up the sample into small pieces and place directly onto the sensor. Drop on your defined volume of pure water.

Lineup

pH

Accurate pH measurements in a few seconds, from a single drop.

Water pH varies in different environments, and a slight change can often have a major effect.

Whether you need to keep the pH of an aquarium within tight limits, are checking for the acidity of rain water or for the quality of meat and fish products, LAQUAtwin compact pH meters are ideal for you. No matter where and when you need to test.

COND

Determine water conductivity with as little as 0.12 mL of sample.

The conductivity of rain water is a trusted guide to determining atmospheric purity. In agriculture, measuring the conductivity of soil allows farmers and agronomists to determine optimum fertilizer usage and check the 'health' of soil after salt water damage. The LAQUAtwin meter makes conductivity testing simple, anywhere.

Na+

Only compact meter for a quick and reliable measurement of sodium ion at the scene using ion selective membrane.

K+

Only compact meter for a quick and reliable measurement of potassium ion at the scene using ion selective membrane.

NO3–

Only compact meter for a quick and reliable measurement of nitrate ion at the scene. Special application packages for crop (B-741) and soil (B-742) are also available.

Ca2+

Only compact meter for a quick and reliable measurement of ionized calcium at the scene using ion selective membrane.

http://www.horiba.com/laquatwin

IMS

HORIBA Group is operating Integrated Management System (IMS)
ISO9001 JOA-0298 / ISO14001 JOA-E-90039 / ISO13485 JOA-MD0010 / OHSAS18001 JOA-OH0068

CE RoHS COMPLIANT