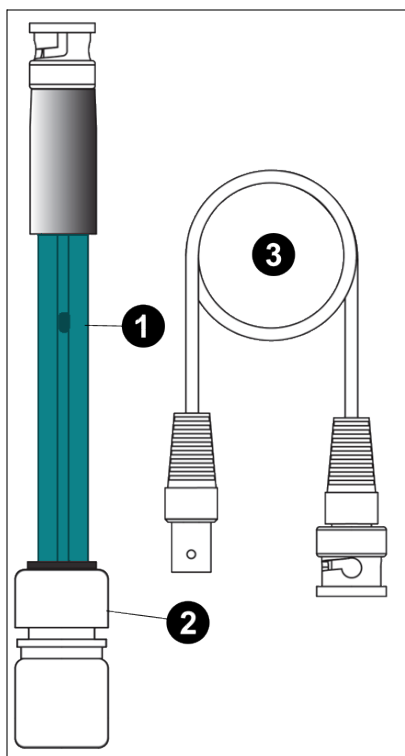


Oxidation Reduction Potential Probe (PS-3515)



Components:

- ❶ Oxidation Reduction Potential Probe
- ❷ Storage bottle
- ❸ Male-to-female BNC cable

Required equipment and solutions:

- PASCO pH measurement device, such as the Wireless pH/ISE/ORP Sensor (PS-3204)
- PASCO Capstone or SPARKvue data collection software
- ZoBell's Solution
- Wash bottle filled with distilled or de-ionized water
- Laboratory magnetic stirrer and magnetic stir bar
- Lab wipes
- Clean beakers, such as SE-7287 (100 mL) or SE-7288 (1000 mL)

Introduction

This Oxidation Reduction Potential (ORP) electrode is a hand-crafted, precision analytical device. Carefully follow the directions in this instruction sheet to obtain the best performance and electrode life.

Get the software

You can use the sensor with SPARKvue or PASCO Capstone software. If you're not sure which to use, visit [pasco.com/products/guides/software-comparison](https://www.pasco.com/products/guides/software-comparison).

SPARKvue is available as a free app for Chromebook, iOS, and Android devices. We offer a free trial of SPARKvue and Capstone for Windows and Mac. To get the software, go to [pasco.com/downloads](https://www.pasco.com/downloads) or search for **SPARKvue** in your device's app store.

If you have installed the software previously, check that you have the latest update:

SPARKvue

Go to Main Menu  > Check for Updates

PASCO Capstone

Go to Help > Check for Updates.

Preparing the electrode

1. Combination ORP electrodes are shipped with a storage bottle containing storage solution. Remove the electrode from the storage bottle; keep the solution bottle and solution for future use.
2. Thoroughly rinse the electrode with distilled water, then wipe carefully with a clean lab wipe.

Checking electrode operation

1. Connect your ORP electrode to the input connector on the Wireless pH/ISE/ORP Sensor or other pH measuring device. Ensure that the electrode is securely connected.
2. Connect the pH measuring device to PASCO Capstone or SPARKvue; create a Graph or Digits display measuring the voltage reading (in mV) from the pH measuring device. For more information on how to connect the sensor or set up the display, see the manual for the pH measuring device or the PASCO Capstone or SPARKvue online help.
3. Begin recording data, then place the electrode into a beaker containing ZoBell's Solution. Stir gently.
4. Wait for the voltage reading to stabilize. After stabilizing, the reading should match the appropriate value from the table below based on the temperature of the ZoBell's Solution.

Temperature (°C)	Voltage for Standard Solution (mV)
5	252.4
10	245.05
15	237.7
20	230.35
25	223
30	215.65
35	208.3

Reading a sample with the electrode

To read a sample with the electrode, follow Steps 1 and 2 from **Checking electrode operation**, then proceed to the steps below.



IMPORTANT: Do not allow the BNC connector to get wet! Direct exposure to water will cause the BNC connector to corrode over time, reducing the probe's responsiveness.

1. Rinse the electrode with distilled water and blot with a lab wipe. Place the electrode into a beaker containing the sample to be measured and a stir bar, then turn on the magnetic stirrer to begin gently stirring the sample.
2. Wait for the voltage reading to stabilize. When the reading is stable, record the value displayed.
3. Remove the electrode from the sample. Rinse the electrode with distilled water over a "waste" beaker, then blot the electrode dry with a lab wipe. The electrode is now ready to read the ORP readings of other samples.

Electrode cleaning

Contamination of the sensing element often results in slow responses and inaccurate readings. Therefore, it is important to clean the sensing element if contaminants are observed.

1. Begin the cleaning process using the following procedures, depending on which type of contaminants are present:
 - a. Inorganic deposits: Immerse electrode tip in 0.1 N HCl for 10 minutes. Wash the tip with distilled water.
 - b. Organic oil or grease films: Wash the electrode tip in a liquid detergent and water.
2. After the above treatment, soak the electrode tip in alcohol for five minutes, then wipe dry and soak the electrode in ZoBell's Solution for 15 minutes. Rinse with distilled water afterwards.



IMPORTANT: DO NOT attempt to sand or polish the sensing element with sandpaper or other polishing materials!

Storing the electrode

Short term

Between measurements, immerse the ORP electrode in the storage solution.

Long term

When storing for long periods, store the ORP electrode in the storage bottle which came with the electrode.

Specifications and accessories

Visit the product page at [pasco.com/product/PS-3515](https://www.pasco.com/product/PS-3515) to view the specifications and explore accessories. You can also download experiment files and support documents from the product page.


Experiment files

Download one of several student-ready activities from the PASCO Experiment Library. Experiments include editable student handouts and teacher notes. Visit [pasco.com/freelabs/PS-3515](https://www.pasco.com/freelabs/PS-3515).

Technical support

Need more help? Our knowledgeable and friendly Technical Support staff is ready to answer your questions or walk you through any issues.

 Chat [pasco.com](https://www.pasco.com)

 Phone 1-800-772-8700 x1004 (USA)
+1 916 462 8384 (outside USA)

 Email support@pasco.com

Regulatory information

Limited warranty

For a description of the product warranty, see the Warranty and Returns page at www.pasco.com/legal.

Copyright

This document is copyrighted with all rights reserved. Permission is granted to non-profit educational institutions for reproduction of any part of this manual, providing the reproductions are used only in their laboratories and classrooms, and are not sold for profit. Reproduction under any other circumstances, without the written consent of PASCO scientific, is prohibited.

Trademarks

PASCO and PASCO scientific are trademarks or registered trademarks of PASCO scientific, in the United States and in other countries. All other brands, products, or service names are or may be trademarks or service marks of, and are used to identify, products or services of, their respective owners. For more information visit www.pasco.com/legal.

Product end-of-life disposal



This electronic product is subject to disposal and recycling regulations that vary by country and region.

It is your responsibility to recycle your electronic equipment per your local environmental laws and regulations to ensure that it will be recycled in a manner that protects human health and the environment.

To find out where you can drop off your waste equipment for recycling, please contact your local waste recycle or disposal service, or the place where you purchased the product.

The European Union WEEE (Waste Electronic and Electrical Equipment) symbol on the product or its packaging indicates that this product must not be disposed of in a standard waste container.