

EIM Help – Entering Dissolved Oxygen Data

Version 2.5
September 2024

Use the following guidance for entering your **Dissolved Oxygen (DO)** and **DO Percent Saturation** data into the Result Template or Time-Series Result Template. In addition, enter EIM's standard required fields described in the Result Help or Time-Series Result Help. These documents are found on the [Templates & Guidance](#) page.

If you measured DO concentration in the field (in-situ) with an instrument

- **Field Collection Type** (Column D in Result, E in Time-Series): **Measurement**
- **Result Parameter Name** (Column AM, P): **Dissolved Oxygen**
- **Result Value Units, Result Units** (Column AN, R): **mg/L**
- **Result Method** (Column AY, T): Use one of the technology-based field methods below. These replace the old, ambiguous methods like *Multimeter* and the instrument-specific methods like *Sea-Bird Electronics 43 Sensor*. See your instrument manufacturer's tech info to determine the technology used by your instrument.

Alternatively, if you followed a published method, use the published method. ***Note:** Manufacturers will sometimes indicate an instrument is "compliant" with a method, but this doesn't necessarily mean that you're following that method when you're using the instrument. Methods often contain additional QA checks and very specific techniques and procedures. Always read the method before submitting your data. If you were not actually following a published method, use the generic, technology based method instead.

Result Method Code (Measurement)	Result Method Description
Technology-based measurement methods	
DO-CLARK-PULSE	Dissolved Oxygen (DO) by Electrochemical Polarographic (Clark) Cell Sensor with Pulsing Membrane (Flow Independent)
DO-CLARK	Dissolved Oxygen (DO) by Electrochemical Polarographic (Clark) Cell Sensor with Fixed Membrane (Flow Dependent)
DO-GALVANIC	Dissolved Oxygen (DO) by Electrochemical Galvanic Cell Sensor
DO-OPTICAL	Dissolved Oxygen (DO) by Optical (Luminescent) Sensor (LDO)
Published measurement methods*	
SM4500OG	Dissolved Oxygen (DO) by Membrane Electrode Method (equivalent of Polarographic/Clark or Galvanic)

ASTM-D888-12-B	Standard Test Method for Dissolved Oxygen (DO) in Water by Test Method B, Instrumental Probe Procedure - Electrochemical, 2012 Revision
ASTM-D888-12-C	Standard Test Method for Dissolved Oxygen (DO) in Water by Test Method C, Instrumental Probe Procedure - Luminescence-Based Sensor (LDO), 2012 Revision

Don't see your method? Check the [Method Valid Values](#) or [contact us](#) and we can add it.

- **Result Lab Name** (Column BC): **Leave this field blank.**

If your DO samples were analyzed in a lab

Lab analyses for DO are primarily for verifying results obtained using field instruments.

- **Field Collection Type** (Column D): **Sample**
- **Result Parameter Name** (Column AM): **Dissolved Oxygen**
- **Result Value Units** (Column AN): **mg/L**
- **Result Method** (Column AY): If you determined DO using Winkler Titration, use an appropriate analysis method. Examples below:

Result Method Code (Analysis)	Result Method Description
SM4500OC	Dissolved Oxygen (DO) by Winkler (Azide Modification)
EPA360.2	Dissolved Oxygen (DO) by Modified Winkler Full Bottle
HACH-10360-1.1	Luminescence Measurement of Dissolved Oxygen in Water and Wastewater and for Use in the Determination of five-day biochemical oxygen demand (BOD-5) and carbonaceous BOD-5. Revision 1.1, January 2006
HACH-10360-1.2	Luminescence Measurement of Dissolved Oxygen in Water and Wastewater and for Use in the Determination of five-day biochemical oxygen demand (BOD-5) and carbonaceous BOD-5. Revision 1.2, October 2011
ASTM-D888-12-A	Standard Test Method for Dissolved Oxygen (DO) in Water by Test Method B, Instrumental Probe Procedure - Electrochemical, 2012 Revision
DO-WT-GRASSHOFF99	Dissolved oxygen (DO) by Winkler titration modified per Hansen/Grasshoff, Ehrhardt, and Kremling (1999).
DO-WT-STRICKLAND72	Dissolved oxygen (DO) by Winkler titration modified per Strickland and Parsons (1972).
DO-WT-CARPENTER65	Dissolved oxygen (DO) by Winkler titration modified per Carpenter (1965).

Don't see find your method? Check the [Method Valid Values](#) or [contact us](#) and we can add it.

- **Result Lab Name** (Column BC):
 - If you sent your DO samples to a lab, enter lab name. Find lab names in [EIM's Labs Valid Values](#).
 - If you did your own Winkler titrations at a wet lab at your office, use **"Wet lab at data collector's office/lab."** Ecology staff, if you did Winkler titrations at an Ecology wet lab, use one of the following:

Ecology Wet Labs
Dept of Ecology Wet Lab, Olympia WA

Dept of Ecology Marine Waters Lab, Olympia WA
Dept of Ecology Wet Lab, Union Gap WA
Dept of Ecology Wet Lab, Spokane WA
Dept of Ecology Wet Lab, Wenatchee WA

- If you analyzed your DO sample on-site, but *not* in-situ (such as in a vehicle) use “**Mobile lab at data collector field site.**”

If you are reporting DO Percent Saturation

DO Percent Saturation is calculated from a measured DO concentration using correction factors for water temperature, atmospheric pressure, and salinity (or conductivity).

Sometimes your instrument calculates DO Percent Saturation for you. In other cases you might have calculated it yourself. This guidance shows you how to enter both.

- **Field Collection Type** (Column D, E): **Measurement**
- **Result Parameter Name** (Column AM, P): **Dissolved Oxygen Percent Saturation**
- **Result Value Units, Result Units** (Column AN, R): **%**
- **Result Method** (Column AY, T): If your instrument calculated DO Percent Saturation for you, use the same measurement method you used for your measured DO (page 1). If you calculated DO Percent Saturation yourself, enter the method you used to apply your correction factors. The most common are below:

Result Method Code (Derivation)	Result Method Description
Owens&Millard85DOSAT	Dissolved Oxygen (DO) Percent Saturation in water calculated from temperature and salinity at standard pressure = 1 atm using Owens & Millard, 1985, algorithms.
Garcia&Gordon92DOSAT	Dissolved Oxygen (DO) Percent Saturation in water calculated from temperature and salinity at standard pressure = 1 atm using Garcia & Gordon, 1992, algorithms.
Benson&Krause84DOSAT	Dissolved Oxygen (DO) Percent Saturation in water calculated using Benson & Krause 1984 & 1980 algorithms.

Don't see your method? Check the [Method Valid Values](#) or [contact us](#) and we can add it.

- **Result Lab Name** (Column BC): **Leave this field blank.**

Document revision history

Revision Date	Revision No.	Summary of Changes	Reviser(s)
6/4/09	1.0	Original document	CN
11/6/09	1.1	Updated references to spreadsheet column headings per data model change	CL, CN
8/1/13	1.2	Updated references to spreadsheet column headings per data model change	CN
7/21/16	2.0	Removed reference to instrument-specific measurement methods HYDROLAB-DO-CLARK HYDROLAB-LDO-HACH, SBE43-DO, SBE13-DO, DOFM, SBE19BECK, SBE911P-13. Replaced with technology-based measurement methods. CALCDOSAT removed because it was not specific. Replaced with Owens&Millard85DOSAT and Garcia&Gordon92DOSAT. Replaced Dept of Ecology Wet Lab, Yakima WA with Dept of Ecology Wet Lab, Union Gap WA. Added guidance on DO Sat.	CN
7/26/16	2.1	Added ASTM-D888-12-A, B, & C for DO and Benson&Krause84DOSAT for DO Percent Saturation. Added “Percent” to heading for DO Saturation and column info for time-series data. Removed ASTM-D5543A (barely used in EIM). Added way to reference back to instrument when it calculates DO Percent Saturation for you.	CN
9/15/16	2.2	Added HACH-10360 methods for DO	CN
09/05/17	2.3	Updated links	KC
09/06/24	2.4	Added “in-situ” to the first heading. Updated lab name “Wet lab at data collector’s site” to ‘Wet lab at data collector’s office/lab.’ Added bullet point about “Mobile lab at data collector field site.”	KC
09/20/24	2.5	Added paragraph about published methods to page 1	MP, SR, KC