

DO measurement.



E i M A S
Institut Alam Sekitar Malaysia
Environment Institute of Malaysia



Dissolved oxygen in waters.

- ◆ Aquatic organisms uses DO for metabolism.

Carbon + oxygen \rightarrow energy + CO₂

- ◆ Major sources of DO in waters comes from atmospheric oxygen diffusion into water and photosynthesis.
- ◆ High oxygen increases overall aquatic production as it promotes metabolism.



1. Membrane electrode - polarographic.



1. Membrane electrode - polarographic.

- ◆ Oxygen sensitive membrane electrode are composed
 1. 2 solid metal as anode & cathode,
 2. contacted with electrolyte (KCl)
 3. separated by a selective membrane.
- ◆ Oxygen permeable PE membrane protects sensing elements, as a diffusion barrier against impurities.



1. Membrane electrode - polarographic.

Factors affecting DO measurement.

- 1. Temperature (~ 3% per °C)**
- 2. Sample Stirring**
- 3. Membrane Fouling**
- 4. Sample Salinity**
- 5. Barometric Pressure (air only)**



1. Membrane electrode - polarographic.

Calibration of DO measurement.

- ◆ should be performed at least once a day, more often is recommended.
- ◆ Calibration via air saturation calibration.
- ◆ can be disturbed by physical shock, touching or fouling the membrane or drying out of the electrolyte.



1. Membrane electrode - polarographic.

Taking DO measurement.

1. Place the probe in sample
2. Stabilize temperature
3. Stir
4. Read DO



1. Membrane electrode - polarographic.

Precautions in DO measurement.

- ◆ Change membrane every 2-4 weeks depending on application
- ◆ Make sure the membrane is smooth and tight
- ◆ Wait at least 15 minutes after the meter is turned on to calibrate or measure
- ◆ Leave instrument on if time between measurement is short



1. Membrane electrode - polarographic.

Precautions in DO measurement.

- ◆ Always assure liquid flow past the sensor is at least 0.3 m/sec
- ◆ Always allow probe to come to temperature equilibrium with sample
- ◆ Be sure there no air bubbles bursting on the probe surface

DO measurement.



E i M A S
Institut Alam Sekitar Malaysia
Environment Institute of Malaysia