

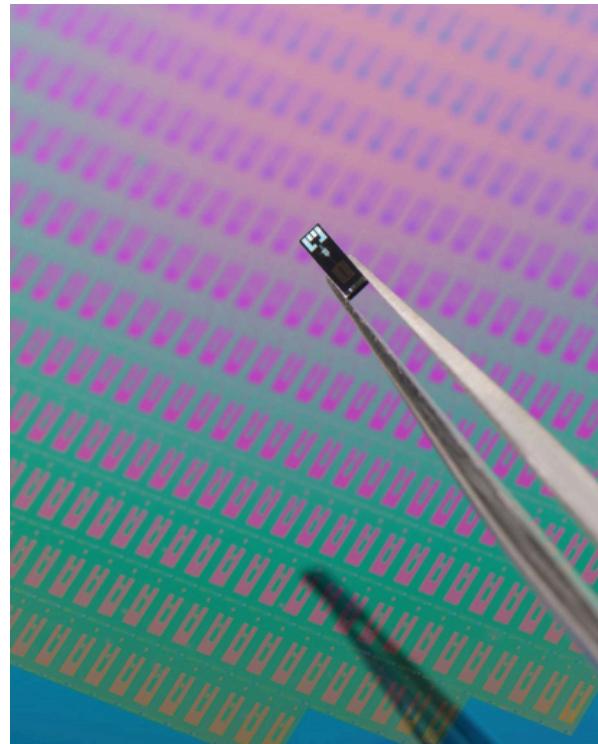
Oxidation Reduction Potential (ORP)

Oxidation Reduction Potential (ORP), expressed in millivolts (mV), measures the tendency of aqueous solutions or chemical species to accept or donate electrons. It serves as an indicator of oxidizing or reducing activity in water quality processes.

- **Higher (more positive) ORP values** indicate stronger oxidizing conditions. These solutions tend to accept electrons, meaning they can oxidize other species.
- **Lower (more negative) ORP values** indicate stronger reducing conditions. These solutions tend to donate electrons, meaning they can reduce other species.

How to Measure ORP

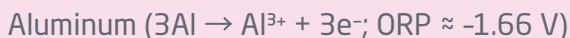
Millar / Sentron ORP sensors use a noble-metal measuring electrode (typically platinum or gold) paired with a reference electrode to detect changes in REDOX potential. The result is a stable, linear measurement ideal for continuous monitoring or integration into smart sensing systems. Unlike pH sensors, ORP sensors do not require calibration, reducing maintenance and simplifying long-term deployment.



Why Measure ORP?

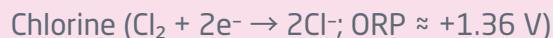
- Oxidizers (positive ORP) accept electrons and are used for disinfection (chlorine, ozone, bromine).
- Reducers (negative ORP) donate electrons and are used in processes involving chemical reduction.
- ORP does not directly measure disinfectant concentration – but in systems with one dominant oxidizer (e.g., chlorine in pool water), ORP strongly correlates with sanitizing effectiveness.

Example Equations



Al metal: strong reducing agent

Al³⁺ ion: weak oxidizing agent



Cl⁻ ion: weak reducing agent

Cl₂ molecule: strong oxidizing agent

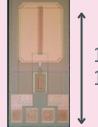
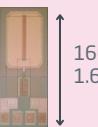
For inquiries, quotes, and orders, contact:

T: +1 832-667-7000

<https://millar.com/contact/quote-request>

ORP Levels by Application

0-150 mV	Low oxidation environment
150-250 mV	Aquaculture
250-350 mV	Cooling Towers
400-475 mV	Swimming Pools
450-600 mV	Hot Tubs
600 mV	Water Disinfection
800+ mV	Water Sterilization

pH Sensors	ISFET1000	ISFET800	ISFET520
	 3000 μ m 3mm 1000 μ m 1mm	 1700 μ m 1.7mm 800 μ m .8mm	 1665 μ m 1.6mm 520 μ m .5mm

Test our Technology

Wireless Parameter Probe



- **Enhanced Efficiency & Accuracy:** Save time and resources with rapid measurements and seamless data management. Trust in precise measurements for confident decision-making.
- **Enhanced Durability:** Say goodbye to fragile glass probes, our silicon-based sensor technology is robust and durable.
- **Wide Applicability:** From industrial processes to research, we adapt to your needs.
- **Custom OEM Opportunities:** Designed for B2B worldwide, our probe can adapt to various market needs and sample types.