

Industrial Electrochemical Oxygen Sensors

PO2, TO2 and OKS Series | Combined KOH & Acetic Acid Electrolyte Families

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Section 1 Identification

Field	Information
Product Name	Industrial Electrochemical Oxygen Sensors - PO2, TO2 and OKS Series
Model / Electrolyte Identification	-1: Potassium Hydroxide (KOH) electrolyte -2: Acetic Acid electrolyte
Synonyms	Precision Electrochemical Oxygen Sensor
Manufacturer	Southland Sensing Ltd.
Address	4405 E. Airport Dr. STE 100, Ontario, CA 91761 USA
Contact	Tel: 1-949-398-2879 E-mail: sales@sso2.com www.sso2.com
Recommended Use	Industrial oxygen sensing and oxygen analysis
Restrictions on Use	For industrial oxygen sensing and oxygen analysis applications. Do not open, disassemble, puncture, crush, or intentionally expose internal sensor materials.
Emergency Telephone	1-949-398-2879 (Southland Sensing Ltd.)

For standard PO2, TO2 and OKS model numbers, the first numeric digit following the model prefix identifies the electrolyte family: (-1) = potassium hydroxide (KOH); (-2) = acetic acid. Refer to Appendix A for models that do not follow this convention.

Section 2 Hazard(s) Identification

Oxygen sensors are sealed electrochemical devices containing electrolyte and a lead anode within a protective housing. Under normal handling and operating conditions, the internal materials are not exposed and the intact sensor does not normally present a direct contact hazard. The following hazard information applies if a sensor is damaged, punctured, leaking, opened, heated in a fire, or otherwise compromised.

(-1) - Potassium Hydroxide (KOH) Electrolyte



- Signal Word: DANGER | GHS symbols: Corrosion; Exclamation Mark
- Hazard Statements: Harmful if swallowed. Causes severe skin burns and eye damage. May be corrosive to metals.
- Precautionary Statements: Avoid contact with skin and eyes. Wear protective gloves and eye/face protection when handling a leaking sensor. Rinse exposed areas immediately with water. Do not induce vomiting if swallowed; obtain medical attention.
- Incompatibilities: Avoid contact with strong acids and reactive soft metals.
- Environmental: Avoid release of sensor contents to drains, waterways, or the environment.

(-2) - Acetic Acid Electrolyte



- Signal Word: DANGER | GHS symbols: Corrosion
- Hazard Statements: Acidic electrolyte solution. Causes severe skin burns and eye damage upon direct contact with released electrolyte.
- Precautionary Statements: Avoid breathing mist or vapor. Wear protective gloves and eye/face protection when handling a leaking sensor. If swallowed, rinse mouth; do not induce vomiting; obtain medical attention.
- Incompatibilities: Avoid contact with strong bases and incompatible reactive materials.
- Heating: Heating released electrolyte may produce irritating or toxic fumes.
- Environmental: Avoid release of sensor contents to drains, waterways, or the environment.



Lead (Pb) Anode - Applicable Sensor Families

- Signal Word: WARNING | GHS symbols: Health Hazard; Environment. Lead is sealed within the sensor and is not normally accessible during use. If internal materials are exposed, lead may be harmful if swallowed, is suspected of causing cancer and reproductive harm, may cause organ damage through prolonged or repeated exposure, and is very toxic to aquatic life with long-lasting effects.
- Avoid ingestion and exposure to internal sensor materials. Avoid release to the environment.

Section 3 Composition / Information on Ingredients

Sensor Family	Component	CAS Number	Concentration (wt%)	Function
(-1)	Potassium Hydroxide (KOH)	1310-58-3	1-10%	Electrolyte
(-1)	Lead (Pb)	7439-92-1	50-75%	Anode
(-2)	Acetic Acid	64-19-7	1-10%	Electrolyte
(-2)	Lead (Pb)	7439-92-1	25-50%	Anode
(-2)	Potassium Acetate	127-08-2	1-10%	Electrolyte constituent

The internal materials are encapsulated by the sensor body and protective coverings during normal handling and use. Concentration ranges shown are formulation ranges used for hazard communication for the covered electrolyte families; see Section 16 reference basis.

Section 4 First-Aid Measures

The following measures apply to exposure resulting from a damaged or leaking sensor.

- Eye Contact: Immediately rinse cautiously with water for at least 15-20 minutes. Remove contact lenses if present and easy to do. Continue rinsing and obtain prompt medical attention.
- Skin Contact: Remove contaminated clothing. Rinse affected skin thoroughly with water and wash with soap and water. Obtain medical attention for burns, persistent irritation, or significant exposure.
- Ingestion: Rinse mouth. Do not induce vomiting. Never give anything by mouth to an unconscious person. Obtain prompt medical attention.
- Inhalation: Exposure from an intact sensor is not expected. If mist, vapor, dust, or decomposition products from a damaged sensor are inhaled, move the person to fresh air and obtain medical attention if symptoms occur.

Section 5 Fire-Fighting Measures

- Flammability: The finished sensor is not flammable under normal handling and operating conditions.
- Suitable Extinguishing Media: Use extinguishing media appropriate for the surrounding fire.
- Special Hazards: Heated sensor contents may produce decomposition products. Lead oxides may be produced in a fire. KOH-containing material may generate hydrogen when reacting with certain metals. Heated acetic-acid electrolyte may produce irritating or toxic fumes.
- Firefighter Protection: Use appropriate protective equipment and self-contained breathing apparatus when conditions warrant.

Section 6 Accidental Release Measures

If a sensor is leaking, do not handle exposed electrolyte or internal materials with bare hands.

- Wear chemical-resistant gloves and safety glasses or chemical splash goggles.
- Prevent contact with eyes, skin, and clothing.
- Prevent released material from entering drains, waterways, or the environment.
- Place a leaking sensor in a compatible sealed container or plastic bag for handling and disposal.
- For small residue on equipment or surfaces, use water and fresh disposable wipes, using a clean wipe for each pass. Avoid spreading contamination.
- Dispose of the sensor and contaminated cleanup materials in accordance with applicable federal, state, and local requirements.

Do not use a single chemical neutralization procedure for both electrolyte families unless the electrolyte chemistry has first been identified from the sensor model.

Section 7 Handling and Storage

- Handle sensors carefully. Avoid dropping, crushing, puncturing, or damaging the sensing membrane or sensor body.
- Avoid exposing sensors to rapid changes in pressure.
- Do not remove protective coverings or probe the sensor with sharp objects.
- Inspect packaged sensors for leakage or physical damage before use.
- Store sensors in original packaging in a cool, dry, well-ventilated area.
- Keep away from excessive heat and conditions that could damage the sensor housing.

Section 8 Exposure Controls / Personal Protection

Under normal use, the internal materials are sealed inside the sensor and exposure is not expected.

Component	Exposure Limit
Potassium Hydroxide (KOH)	2 mg/m ³ ceiling (ACGIH/NIOSH)
Acetic Acid	10 ppm TWA
Lead (Pb)	0.05 mg/m ³ OSHA PEL
Potassium Acetate	No established OSHA/ACGIH/NIOSH limit

- Eye/Face Protection: Safety glasses or goggles when handling a leaking or damaged sensor.
- Hand Protection: Nitrile, rubber, or latex gloves when handling leaked electrolyte or damaged sensors.
- Respiratory Protection: Normally not required for intact sensors. Use suitable respiratory protection if exposure to mist, vapor, dust, or decomposition products is possible.
- Hygiene: Wash hands thoroughly after handling damaged sensors or internal sensor materials.

Section 9 Physical and Chemical Properties

The finished product is a sealed electrochemical oxygen sensor. The following values apply to the internal electrolyte solutions.

Property	1x - KOH Electrolyte	2x - Acetic Acid Electrolyte
Appearance	Colorless, odorless aqueous solution	Colorless aqueous solution; vinegar-like odor
pH	>14	2-3
Water Solubility	Complete	Complete
Boiling Point Range	100-115 C	100-117 C
Freezing Point Range	-40 to -10 C	-40 to -10 C
Specific Gravity	1.09 @ 20 C	1.05 @ 20 C
Vapor Pressure	Not available	11.4 @ 20 C

Section 10 Stability and Reactivity

- Chemical Stability: Stable under recommended storage and use conditions.
- (-1) KOH Electrolyte Sensors: Avoid contact with strong acids, strong oxidizers, and reactive soft metals such as aluminum, tin, magnesium, and zinc; contact with certain metals may generate flammable hydrogen gas.
- (-2) Acetic Acid Electrolyte Sensors: Avoid contact with strong bases, strong oxidizers, and incompatible reactive materials.
- Conditions to Avoid: Excessive heat, physical damage, puncture, and incompatible materials.
- Hazardous Decomposition: Fire or excessive heating may produce lead oxides and other irritating or toxic fumes. KOH-containing material may generate hydrogen gas on contact with certain reactive metals.

Section 11 Toxicological Information

Potential exposure is associated with a damaged or leaking sensor rather than normal use of the sealed device.

- Primary Routes of Exposure: Eye contact, skin contact, ingestion, and possible inhalation of mist/vapor from released material.
- Eye Contact: Electrolyte may cause serious irritation, corrosive injury, or eye damage.
- Skin Contact: Electrolyte may cause irritation or chemical burns.
- Ingestion: Electrolyte may be harmful if swallowed.
- Lead: Lead may present chronic health and reproductive hazards if internal sensor materials are exposed.

Section 12 Ecological Information

Do not release sensor contents into drains, waterways, or the environment. Lead is highly toxic to aquatic life with long-lasting effects. Environmental hazards should be considered when a sensor is damaged, leaking, or discarded.

Section 13 Disposal Considerations

Dispose of used, damaged, or leaking sensors in accordance with applicable federal, state, and local regulations. Sensors contain lead and either KOH-based or acetic-acid/potassium-acetate electrolyte. Do not discharge leaked electrolyte into drains or the environment.

Section 14 Transport Information

DOT: Sensors contain hazardous internal materials. Determine the applicable shipping description, classification, packaging, and any small-quantity exceptions for the specific sensor family, quantity, and shipment configuration before transport. References 49 CFR 173.4 small-quantity provisions when applicable.

IATA: Determine the applicable dangerous-goods classification, packaging, and any excepted-quantity provisions for the specific sensor family, quantity, and shipment configuration before air transport. Typically meets small-quantity exceptions.

Section 15 Regulatory Information

The sensor families covered by this SDS contain lead and either potassium hydroxide or acetic acid. Applicable occupational, environmental, transportation, and state requirements depend on sensor model, quantity, condition, and jurisdiction.

California Proposition 65: This product contains lead, a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

Section 16 Other Information

Item	Information
Document	Safety Data Sheet - Industrial Electrochemical Oxygen Sensors
Product Families	PO2, TO2 and OKS Series
Electrolyte Identification	(-1) = KOH electrolyte; (-2) = Acetic Acid electrolyte
Revision	1.02
Supersedes	1.01 SDS dated August 14, 2026
Manufacturer Address	4405 E. Airport Dr. STE 100, Ontario, CA 91761 USA
Last Revision Date	September 3, 2026
Reference Basis	All KOH SDS PFR 7.3-1002-0 Rev 1 and Acid SDS PFR 7.3-1002-1 Rev 0 (revised Jan. 31, 2023) - benchmark basis for composition ranges and hazard language.

Appendix A Sensor Electrolyte Identification

Southland Sensing industrial electrochemical oxygen sensors use either a potassium hydroxide (KOH) or acetic acid electrolyte. Use the tables below to identify the electrolyte family applicable to the sensor.

Potassium Hydroxide (KOH) Electrolyte Sensors

Sensor Model	Description
OXS-2	Percent O2 Sensor; KOH Electrolyte
OXS-19	Percent O2 Sensor; KOH Electrolyte
PO2-1x	Percent O2 Sensor; KOH Electrolyte
PO2-1E	Percent O2 Sensor; KOH Electrolyte
PO2-13	Percent O2 Sensor; KOH Electrolyte
PO2-154	Percent O2 Sensor; KOH Electrolyte
PO2-160	Percent O2 Sensor; KOH Electrolyte
PO2-1120	Percent O2 Sensor; KOH Electrolyte
TO2-1x	Trace O2 Sensor; KOH Electrolyte
TO2-1L	Trace O2 Sensor; KOH Electrolyte
TO2-1xL	Trace O2 Sensor; KOH Electrolyte
TO2-133	Trace O2 Sensor; KOH Electrolyte
TO2-IT	Trace O2 Sensor; KOH Electrolyte
TO2-IT-XL	Trace O2 Sensor; KOH Electrolyte
TO2-1M	Trace O2 Sensor; KOH Electrolyte
TO2-13M	Trace O2 Sensor; KOH Electrolyte
TO2-19	Hybrid ppm / percent O2 Sensor; KOH Electrolyte

Acetic Acid Electrolyte Sensors

Sensor Model / Family	Description
PO2-24	Percent O2 Sensor; Acetic Acid Electrolyte
PO2-2x	Percent O2 Sensor; Acetic Acid Electrolyte
PO2-238	Percent O2 Sensor; Acetic Acid Electrolyte
TO2-2x	Trace O2 Sensor; Acetic Acid Electrolyte
TO2-233	Trace O2 Sensor; Acetic Acid Electrolyte
TO2-238	Trace O2 Sensor; Acetic Acid Electrolyte
TO2-IT-A	Trace O2 Sensor; Acetic Acid Electrolyte
TO2-2M	Trace O2 Sensor; Acetic Acid Electrolyte
TO2-23M	Trace O2 Sensor; Acetic Acid Electrolyte

Important: For standard PO2, TO2 and OXS model numbers, (-1) identifies potassium hydroxide (KOH) electrolyte and (-2) identifies acetic acid electrolyte. Appendix A also identifies models that do not follow this numeric convention. Refer to the sensor label and the applicable electrolyte information in this Safety Data Sheet when handling a damaged or leaking sensor.