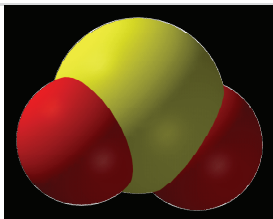


**Potential Industries and applications for ozone detection:**

- Coal Mining
- Oil & Gas Extraction
- Oil & Gas Refineries
- Metals & Minerals Processing
- Industrial Wastewater Treatment Plants
- Municipal Wastewater Treatment Plants
- Chemical Manufacturing Plants
- Food Processing Plants
- Wineries
- Pulp & Paper Mills
- Fabric Processing Plants

**Sulfur dioxide (SO<sub>2</sub>)** is a chemical compound which is formed by various industrial processes and is also created in nature by volcanoes. Since coal and petroleum often contain sulfur compounds, their combustion will generate SO<sub>2</sub> unless the sulfur compounds are removed before the fuel is burned.

Further oxidation of sulfur dioxide, usually in the presence of a catalyst such as NO<sub>2</sub>, forms H<sub>2</sub>SO<sub>4</sub>, an acid that forms acid rain. SO<sub>2</sub> emissions are also a precursor to particulates in the atmosphere. Both of these effects are cause for concern over the environmental impact of these fuels.

**Sulfur Dioxide (SO<sub>2</sub>)**

**General**

Systematic Name	SulfurDioxide
Other Names	SulphurDioxide Sulfur(IV)oxide Sulfurous anhydride
Molecular Formula	SO <sub>2</sub>
Appearance	colorless gas
CAS Number	7446-09-5

**Properties**

Molecular Mass	64.07 g/mol
Vapour Density	2.551 g/L
Melting Point	-75.5°C, -104°F
Boiling Point	-10.0°C, -14.0°F

**Hazards**

ACGIH-TLV	
Time Weighted Value (TWW)	Short Term Exposure Limit (STLV)
2ppm	5ppm
OSHA-PEL	
Permissible Exposure Limit- Time Weighted Average (TWA)	Permissible Exposure Limit (PEL)
5ppm	5ppm
NIOSH	
Permissible Exposure Limit- Time Weighted Average	Immediately Dangerous to Life or Health
2ppm	100ppm

Corrosive

**Industrial Applications**
**Precursor to sulfuric acid**

Sulfur dioxide is an intermediate in the production of sulfuric acid, being converted to sulfur trioxide, and then to oleum, which is made into sulfuric acid. Sulfur dioxide for this purpose is made when sulfur combines with oxygen. Sulfur dioxide is converted to sulfuric acid by means of a method called the contact process. Several billion kilograms are produced annually for this purpose.

**As a preservative**

Because of its antimicrobial properties, sulfur dioxide is sometimes used as a preservative, sometimes called E220, for dried fruits. As a preservative, it maintains the appearance of the fruit and prevents rotting.

**In winemaking**

Sulfur dioxide is an important compound in winemaking, and is designated as parts per million in wine, E number: E220. It is present even in so-called unsulfurated wine at concentrations of up to 10 milligrams per litre. It serves as an antibiotic and antioxidant, protecting wine from spoilage by bacteria and oxidation. It also helps to keep volatile acidity at desirable levels. SO<sub>2</sub> is also a very important compound in winery sanitation. Wineries and equipment must be kept clean, and because bleach cannot be used in a winery, a mixture of SO<sub>2</sub>, water, and citric acid is commonly used to clean and sanitize equipment.

**As a reducing agent**

Sulfur dioxide is also a good reductant. In the presence of water, sulfur dioxide is able to de-colorize substances. Specifically it is a useful reducing bleach for papers and delicate materials such as clothes. In municipal wastewater treatment sulfur dioxide is used to treat chlorinated wastewater prior to release. Sulfur dioxide reduces free and combined chlorine to chloride.

**As a reagent and solvent in the laboratory**

Sulfur dioxide is a versatile inert solvent that has been widely used for dissolving highly oxidizing salts. It is also used occasionally as a source of the sulphonyl group in organic synthesis. Treatment of aryl diazonium salts with sulfur dioxide and cuprous chloride affords the corresponding aryl sulphonyl chloride, for example.



**Conspec's CN Series** is an economical choice for SO<sub>2</sub> gas monitoring. The CN Series is a simple "smart" gas detector. An industry standard 4-20mA analog output signal. Can be connected to any existing PLC, DCS, or EMS system.

**Specifications:**

**Mechanical**

Enclosure	NEMA 4x
Dimensions	4.5"x5"x4"
Weight	1 ¼ lbs.
Mounting	4 holes
Conduit Entry	One (3/4" cable grip)

**Environmental**

Operating Temperature	-4°F - 120°F (-20°C - 50°C)
Temperature Compensation	Full Temperature Range
Operating Humidity	10% - 90% RH Non-condensing

**Electrical**

Operating Voltage	12-24VDC
Cable Requirements	3 Conductor 18 AWG Suggested
Current Consumption	50mA full scale
Output Signal	Linear 4-20mA, RS-485 (optional)

**System**

Sensor Ranges Sulfur Dioxide	Electrochemical: 0-10ppm, 0-20ppm Photo-ionization: 0-20ppm, 0-200ppm
Sensor Type	Electrochemical, Photo-ionization
Keypad	9-Button Infrared Remote Control
Modes	2 (Normal & Calibration)
Display	Two-Line, 8-Character Alphanumeric LCD Display
Status LEDs	3 LEDs, 4 Status
Alarms	2 User-Defined



**Conspec's CX Series** is an economical choice for SO<sub>2</sub> gas monitoring. The CX Series is a simple "smart" gas detector designed for use in hazardous or classified locations. An industry standard 4-20mA analog output signal. Can be connected to any existing PLC, DCS, or EMS system.

**Specifications:**

**Mechanical**

Enclosure	Explosion-Proof UL Listed Class 1 Div. 1 or 2 Groups B, C & D
Dimensions	4.5"x5"x4"
Weight	4 lbs.
Mounting	Conduit Mounted
Conduit Entry	One (3/4" cable grip)

**Environmental**

Operating Temperature	-4°F - 120°F (-20°C - 50°C)
Temperature Compensation	Full Temperature Range
Operating Humidity	10% - 90% RH Non-condensing

**Electrical**

Operating Voltage	12-24VDC
Cable Requirements	3 Conductor 18 AWG Suggested
Current Consumption	50mA full scale
Output Signal	Linear 4-20mA, RS-485 (optional)

**System**

Sensor Ranges Sulfur Dioxide	Electrochemical: 0-10ppm, 0-20ppm Photo-ionization: 0 - 20ppm, 0 - 200ppm
Sensor Type	Electrochemical, Photo-ionization
Keypad	9-Button Infrared Remote Control
Modes	2 (Normal & Calibration)
Display	Two-Line, 8-Character Alphanumeric LCD Display
Status LEDs	3 LEDs, 4 Status
Alarms	2 User-Defined



**Conspec's new Smart Head Gas Monitoring System** monitors, records, and stores data, and warns and advises if it replacement is needed.

**Conspec's Smart Head Single-Channel Monitor and Smart Head Multi-Channel Controller** are smarter than your average monitors because they are digital yet simpler and more reliable.

**Specifications:**

**Mechanical**

Enclosure	NEMA 4x
Dimensions	7.5"x5"x3"
Weight	3 ½ lbs.
Mounting	Plate-Mounted, 6 holes for suspension, grooves for slot mounting
Conduit Entry	One (3/4" cable grip)

**Environmental**

Operating Temperature	-4°F - 120°F (-20°C - 50°C)
Temperature Compensation	Full Temperature Range
Operating Humidity	10% - 90% RH Non-condensing

**Electrical**

Operating Voltage	12-24VDC
Cable Requirements	4 Conductor 18 AWG Suggested
Current Consumption	50mA full-scale
Output Signal	RS-485; 4 Open-Collector Digital Output, Linear 4 - 20mA (Single-Channel only); HART (Optional).

**System**

Sensor Ranges Sulfur Dioxide	Electrochemical: 0-10ppm, 0-20ppm Photo-ionization: 0-20ppm, 0-200ppm
Sensor Type	Electrochemical, Photo-ionization
Keypad	4 Button Keypad or Infrared Remote Control
Modes	2 (Normal & Calibration)
Display	3.5" LCD Display
Status LEDs	4 LEDs, 4 Status
Alarms	3 User-Defined