

SECTION 407521 - CHLORINE ANALYZER

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Potable water chlorine analyzer for continuous monitoring of free or total chlorine.

1.02 REFERENCES

- A. ANSI/AWWA B301- Standard for Liquid Chlorine
- B. NSF/ANSI 61- Drinking Water System Components – Health Effects
- C. EPA 334.0- Determination of Residual Chlorine in Drinking Water
- D. UL61010-1- Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use

1.03 SUBMITTALS

- A. Section 013300 “Submittal Procedures”: Requirements for submittals.
- B. Product data including manufacturer’s specifications, dimensions, and performance data.
- C. Certifications demonstrating compliance with NSF/ANSI 61 and EPA Method 334.0.

1.04 CLOSEOUT SUBMITTALS

- A. Section 017700 “Closeout Procedures”: Requirements for submittals.
- B. Operation and maintenance (O&M) manuals.

1.05 QUALITY ASSURANCE

- A. The chlorine analyzer shall be manufactured by a company with at least five (5) years of experience in producing water quality monitoring equipment.

1.06 BUY AMERICAN REQUIREMENTS

- A. Provide certificates to show that all products meet the following requirements.
 - a. American Iron and Steel (AIS)
 - b. Build America, Buy America Act
- B. See Supplementary Conditions for details.

PART 2 - PRODUCTS

2.01 CHLORINE ANALYZER

- A. The analyzer shall continuously measure free or total chlorine residual in potable water applications using a reagentless, electrochemical, three-electrode amperometric sensor with automatic pH compensation.
- B. Waste stream shall be clean water with no reagents.
- C. The system shall include the following components:
 - 1. Sensor – Amperometric chlorine sensor capable of measuring free or total chlorine from 0 to 20 mg/L.
 - 2. Controller – Digital controller with a backlit display for real-time monitoring and data logging.
 - 3. Flow Cell – Flow-based sample conditioning system with a constant flow regulator.
- D. The analyzer shall have the following features:
 - 1. Accuracy : $\pm 10\%$ of the reference test (DPD) at stable pH less than 8.5 (± 0.5 pH unit from the pH at calibration).
 - 2. Response Time : 140 s or less for 90% change (T90) at a stable temperature and pH.
 - 3. Sampling Time: Continuous
 - 4. Sample Temperature: 5°C to 45°C (41°F to 113°F).
 - 5. Sample Flow Rate: 7.9 - 13.2 gal/hour
 - 6. Lower Level of Detection (LOD): 0.03 ppm
 - 7. pH Range: 4-9
 - 8. Outputs: At least two (2) 4-20 mA analog outputs, and Modbus or SCADA-compatible digital output.
 - 9. Sensor Power Requirements: 12 Vdc.
 - 10. Controller Power Requirements: 120 Vac.
- E. All chlorine analyzer system components shall be furnished mounted to a stainless steel panel suitable for wall mounting. The chlorine analyzer system assembly envelope shall not exceed 19.00 inches (H) x 19.50 inches (W) x 6.00 inches (D). The chlorine analyzer system controller may be mounted separately from the panel.
- F. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:
 - 1. Hach
 - 2. Endress+Hauser
 - 3. Halogen Systems, Inc.
 - 4. Or equal.

EXECUTION

2.02 INSTALLATION

- A. The analyzer shall be installed in accordance with the manufacturer's written instructions.
- B. Mount the analyzer at a location that provides easy access for maintenance and calibration.
- C. Ensure proper flow conditions and water temperature to maintain measurement accuracy.
- D. Electrical wiring shall conform to NEC and local electrical codes.

2.03 TESTING AND COMMISSIONING

- A. Verify installation and wiring connections before applying power.
- B. Conduct startup and calibration per manufacturer's recommendations.
- C. Demonstrate proper operation to the Owner's representative.
- D. Provide training on operation, calibration, and maintenance.

2.04 WARRANTY AND MAINTENANCE

- A. The manufacturer shall provide a minimum one-year warranty covering defects in materials and workmanship.
- B. Spare parts and consumables shall be available for at least five years after installation.
- C. Provide scheduled maintenance recommendations and troubleshooting guidance.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK.