

SECTION 22 31 00 - DOMESTIC WATER SOFTENERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes commercial water softeners and accessories.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for water softeners.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
 - 3. Wiring Diagrams: For power, signal, and control wiring.
- B. Operation and Maintenance Data: For water softeners to include in emergency, operation, and maintenance manuals.
- C. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended application.
- B. ASME Compliance for Steel Tanks: Fabricate and label mineral tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1, where indicated.
- C. ASME Compliance for FRP Tanks: Fabricate and label mineral tanks to comply with ASME Boiler and Pressure Vessel Code: Section X, where indicated.
- D. UL Compliance: Fabricate and label water softeners to comply with UL 979, "Water Treatment Appliances."

1.5 COORDINATION

- A. When required, coordinate sizes and locations of concrete bases with actual equipment provided.

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1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of water softeners that fail in materials or workmanship within one year of substantial completion.

1.7 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of water softener supplier \ installer. Include preventive maintenance, repair or replacement of worn or defective components, cleaning, and adjusting as required for proper water softener operation at rated capacity. Provide parts and supplies the same as those used in the manufacture and installation of original equipment.

PART 2 - PRODUCTS

2.1 WATER SOFTENERS

- A. Provide water softeners with capacities and operating characteristics to meet the performance requirements as indicated on the drawings and manufactured by Klenzoid Inc or equal.
- B. Provide the number of Resin and Brine tanks indicated on the drawings. Tanks to be constructed with non-metallic and feature one-piece, totally seamless construction. The outer shell shall be a continuous wrap of fiberglass filament and epoxy resin. Tanks shall be manufactured to operate at 150 pounds per square inch and 120 degrees Fahrenheit.
- C. Provide PVC internal distribution piping and isolation valves.
- D. Controls: Regeneration of the softening equipment shall be initiated by a signal from an automatic reset, electric signal water meter. The meter shall be properly sized to allow the specified flow through the system with a minimal pressure loss. Provision for manual initiation of regeneration by lever or push-button shall be included.
- E. Ion Exchange Resin: The ion exchange resin shall be virgin, high-capacity type cross-linked styrene and divinylbenzene polymer and be classified as 8% cross-linked. The resin shall contain a minimum of 95% whole, clear beads provided in the sodium (Na) state. The resin shall be stable over the entire pH range with good resistance to bead fracture due to attrition or osmotic shock. Each cubic foot of resin shall be capable of removing 30,000 grains of hardness as calcium carbonate (CaCO₃) when regenerated at a 15 pound per cubic foot salt dosage.
- F. Brine System: Provide brine measuring and salt storage tank(s) capable of converting fresh water to saturated brine immediately upon contact with the salt. The tank shall be sufficiently sized to provide at least four (4) regenerations per refill at the maximum salt dosage. Brine dosage shall be fully adjustable by time clock. Brine systems requiring the removal of the brine well from the brine tank to adjust the salt dosage will not be acceptable. The Brine tank will include a cover and shall be constructed of molded polyethylene. Brine tank shall be provided with a brine pick-up tube complete with a ball check shut-off to prevent air from entering the system after brine draw.

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2.2 ACCESSORIES

- A. Water Test Kit: The softener manufacturer shall provide a water test kit and testing instructions. Include metal container suitable for wall mounting.
- B. Provide pressure gauge(s) for the raw water inlet and /or the treated water outlet.
- C. Provide sample cock(s) for the raw water inlet and/or the treated water outlet.

PART 3 - EXECUTION

3.1 WATER SOFTENER INSTALLATION

- A. Equipment Mounting: Install water softeners per the manufacturer's installation instructions maintaining manufacturer's recommended clearances. Arrange units so controls and devices that require servicing are accessible.
- B. Install brine lines and fittings furnished by equipment manufacturer but not specified to be factory installed.
- C. Install water-testing sets mounted on wall, unless otherwise indicated, and near water softeners.

3.2 CONNECTIONS

- A. Where piping is installed adjacent to equipment, allow space for service and maintenance of equipment.
- B. Install shutoff valves on raw-water inlet and soft-water outlet piping of each mineral tank, and on inlet and outlet headers.
- C. Install pressure gages on raw-water inlet and soft-water outlet piping of each mineral tank. Pressure gages are specified in Div
- D. Install valved bypass in water piping around water softeners.
- E. Install drains as indirect wastes to spill into open drains or over floor drains.

3.3 IDENTIFICATION

- A. Identify and label system components.

3.4 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist. After electrical circuitry has been energized, start units to confirm proper unit operation.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Water softeners will be considered defective if they do not pass tests and inspections.

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- C. Prepare test and inspection reports.

3.5 STARTUP SERVICE AND DEMONSTRATION

- A. Engage a factory-authorized service representative to perform startup service and to train Owner's personnel to adjust, operate, and maintain water softeners. Coordinate training time with the owner's representative prior to scheduling training.

END OF SECTION 22 31 00