

**Part 1 General**

**1.1 REFERENCES**

- .1 American Society of Mechanical Engineers (ASME)
  - .1 ASME BPVC.VIII.1-2019, Boiler and Pressure Vessel Code, Section VIII Division 1: Rules for Construction of Pressure Vessels.
  - .2 ASME CSD-1-2018, Controls and Safety Devices for Automatically Fired Boilers.
- .2 CSA Group
  - .1 CSA 22.2 No. 61010-1 (2017), Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements.
  - .2 CSA 22.2 No. 61010-2-45 (2004), Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-045: Particular Requirements for Washer Disinfectors Used in Medical, Pharmaceutical, Veterinary and Laboratory Fields.

**1.2 SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: Submit manufacturer's printed product literature, specifications, and datasheets. Include product characteristics, performance criteria, physical size, finishes, and limitations.
- .3 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria.
  - .1 Provide Canadian Registration Number (CRN) for Pressure Vessel Design.
- .4 Closeout Submittals: Provide operation and maintenance data for incorporation into O&M manual specified in Section 01 78 00 - Closeout Submittals.

**1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Deliver materials to site in original packaging, labelled with manufacturer's name and product identification.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

**RENOVATION**

- .2 Store and protect products from damage.
- .3 Replace defective or damaged materials with new.

**Part 2 Products**

**2.1 LABORATORY STERILIZER**

- .1 Automatic vacuum/gravity steam sterilizer, to CSA 22.2 No. 61010-1 and 61010-2-45.
  - .1 Unit dimensions: 760 W x 1880 H x 1220 D mm.
  - .2 Internal volume: 275 L (9.7 cu ft).
    - .1 Interior dimensions: 530 W x 530 H x 965 D mm.
  - .3 Temperature range:
    - .1 Gravity/vacuum cycles: 110°C to 135°C.
    - .2 Liquid cycles: 104°C to 135°C.
  - .4 Steam source: built-in carbon steel 30 kW steam generator with pre-filter, installed to base of unit; automatic blowdown and built-in quench to drain; single point power connection.
    - .1 Include automatic fill valve and ASME CSD-1 low-water cut-off safety device.
  - .5 Air removal: ejector.
  - .6 Configuration: free-standing. single door, with cabinet enclosure panels.
    - .1 Panels: 1.27 mm thick stainless steel, brushed finish.
- .2 Vessel construction: 316L stainless steel sectional U-channels welded around 316L stainless steel rectangular inner chamber vessel.
  - .1 Working pressure: 45 psig and full vacuum.
  - .2 Provide welded construction and comply with ASME Code Section VIII Division 1.
  - .3 Chamber piping: Type 304 stainless steel.
  - .4 Shell and Door Insulation: cover exterior of sterilizers and doors with minimum 38 mm of fibreglass insulation.
  - .5 Chamber shelves: open wire, stainless steel; set on interior channels adjustable at 63 mm vertical increments. Include three (3) shelves.
  - .6 Rigidly support vessels on stainless steel height adjustable feet.
  - .7 Safety interlock to prevent steam from entering chamber if door is not sealed.
  - .8 Safety Valve: ASME approved and stamped, set at approved maximum operating pressure of vessel. Seal valve to prevent alteration to setting, with blow down to at least 2 psig before closing. Size valve so that pressure in vessel will not rise more than 10 percent over set pressure.
  - .9 Chamber Penetration: one standard chamber instrumentation port to facilitate insertion of test equipment and instrumentation leads.

**RENOVATION**

- .3 Door: vertical sliding, manual vertical operation, counterbalanced.
  - .1 Construction: 316L stainless steel plate, reinforced to withstand pressure and vacuum without deflection or leakage.
  - .2 Gasket: retracting continuous one-piece silicon rubber O ring gasket, 16 mm diameter, self-compensating and housed in 316L stainless steel channel as part of chamber end ring; easily replaceable without tools.
- .4 Controls: Programmable Logic Controller (PLC) with pre-programmed cycles. Fabricate controls using current PLC technology.
  - .1 Pre-programmed cycles: 20 minimum, including gravity, vacuum, and liquid cycles, and vacuum leak test cycle.
    - .1 Allow for parameter adjustments by supervisor password protected override.
    - .2 Incorporate F sub 0 functions as part of software base.
  - .2 Provide control side with touchscreen operating panel.
  - .3 Display: 8.4 inch (diagonal) SVGA colour screen.
  - .4 Printer: on main control panel, thermal, inkless; 200 dpi resolution, 60 mm wide paper strip; documents cycle performance.
  - .5 Mounting: Mount control panels with touch pads and digital printer above chamber.
  - .6 Utilize connected printed circuit boards for controls and printer.
    - .1 Include RS-232 port.
  - .7 Provide USB port for flash drive and printer connection.
    - .1 Include USB memory device with data storage for minimum 10,000 cycles.
  - .8 Battery back-up: to retain programmed cycles in case of power interruption.
- .5 Gauges: dial type, analog, cabinet front mounted, independent of electrical power or computer controller.
- .6 Load car and trolley: stainless steel construction.
  - .1 Load car: sized to fit steriliser interior dimensions.
  - .2 Trolley: fixed height; releases load car when locked to interior chamber rail.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verify conditions of substrates are acceptable for product installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate.

**RENOVATION**

- .2 Inform Departmental Representative of unacceptable conditions.
- .3 Proceed with installation only after unacceptable conditions have been remedied.

**3.2 INSTALLATION**

- .1 Install equipment to with manufacturer's instructions.
- .2 Install in accordance with standards required by authority having jurisdiction.
- .3 Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- .4 Touch-up minor damaged surfaces caused during installation. Replace damaged components as directed by Departmental Representative.

**3.3 ADJUSTING**

- .1 Adjust operating equipment to efficient operation.

**3.4 CLEANING**

- .1 Cleaning: in accordance with Section 01 74 00 - Cleaning.
- .2 Final Cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment.
- .3 Waste Management: Remove waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

**END OF SECTION**