

Dual-Jacketed ASME 200L Reactor

316L-Grade Stainless Steel | Model USALAB-SR200 | ASME Section VIII, Div. 1 (U-Stamp)



The USA Lab Dual-Jacketed ASME 200L 316L-Grade Stainless Steel Reactor is built for demanding laboratory, pilot-scale, and industrial processing applications. Constructed from corrosion-resistant 316L stainless steel, this reactor is designed for durability, sanitary performance, and long-term reliability.

Its dual-jacketed design allows for efficient heating and cooling control, making it ideal for mixing, reaction, crystallization, extraction, and temperature-sensitive processing workflows. With ASME-rated construction, this 200L reactor provides a dependable solution for facilities that require higher safety standards, pressure-rated performance, and professional-grade stainless steel equipment.

The system includes top and bottom Tri-Clamp connections, integrated sight glass options, tube-in-shell condensing sections, and collection assemblies for advanced process control and customization.

|                                                      |                                                        |                                                     |                                                   |
|------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------|
| <div>SHELL VOLUME</div> <div>200 L Full Volume</div> | <div>SHELL WORKING PRESSURE</div> <div>≤ 250 PSI</div> | <div>MATERIAL</div> <div>316L Stainless Steel</div> | <div>WORKING TEMPERATURE</div> <div>≤ 200°C</div> |
|------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------|

Technical Specifications

| Parameter               | Shell          | Inner Jacket    | Outer Jacket    |
|-------------------------|----------------|-----------------|-----------------|
| Working Pressure        | ≤250 PSI       | ≤87 PSI         | ≥-14.7 PSI      |
| Design Pressure         | 260 PSI        | 88 PSI          | FV              |
| Working Temperature     | ≤200°C         | ≤200°C          | ≤200°C          |
| Design Temperature      | 200°C          | 200°C           | 200°C           |
| MAWP at Design Temp     | 250 PSI        | 87 PSI          | FV              |
| MDMT at Design Pressure | -40°C          | -40°C           | -40°C           |
| Full Volume             | 0.2 m³   200 L | 0.057 m³   57 L | 0.041 m³   41 L |

| Connections & Process Detail          | Specification                                                                               |
|---------------------------------------|---------------------------------------------------------------------------------------------|
| Top Connections                       | 4 x 1.5" Tri-Clamp   2 x 3" Tri-Clamp   2 x 6" Tri-Clamp                                    |
| Bottom Connections                    | 6" Tri-Clamp                                                                                |
| Inner Jacket Connection               | 1.5" Tri-Clamp                                                                              |
| Outer Jacket Connection (Vacuum Only) | 1/2" Compression                                                                            |
| Tube-in-Shell Material                | 316L Grade Stainless Steel                                                                  |
| Tube-in-Shell Tubes / Area            | 91 Tubes   0.9 m² Condensing Area                                                           |
| Tube-in-Shell Connections             | 2 x 1.5" Tri-Clamp   1 x 3" Tri-Clamp   1 x 2" Sight Glass                                  |
| Collection Specifications             | 316L Grade Stainless Steel   50L Volume   1 Collection   6" Tri-Clamp   2 x 1.5" Tri-Clamps |

## USA-SR200 Mixer Specifications

### Standard vs. Explosion-Proof Configuration

| Spec                  | Standard TCM033VDD-41658                                                      | Explosion-Proof TCM033XDD-41662                                               |
|-----------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| MOTOR                 |                                                                               |                                                                               |
| Motor Type            | TEFC, IP55                                                                    | XPFC inverter duty                                                            |
| Horsepower            | 1/2 HP                                                                        | 1/2 HP                                                                        |
| Voltage               | 208–230/460V, 3Ph                                                             | 230/460V, 3Ph                                                                 |
| Motor RPM             | 1760                                                                          | 1735                                                                          |
| Turndown Ratio        | 5:1                                                                           | 10:1                                                                          |
| XP Class Rating       | —                                                                             | C1D1 Gr D / C2D1 Gr F&G; · T3C                                                |
| CONTROL               |                                                                               |                                                                               |
| Controller            | 0.5 HP VFD, digital RPM readout                                               | 0.5 HP VFD, digital RPM readout                                               |
| Enclosure             | NEMA 4X outdoor rated                                                         | NEMA 4X outdoor rated                                                         |
| VFD Placement         | Wired & mounted to motor                                                      | Mounted outside XP area                                                       |
| Local XP Control Pkg. | —                                                                             | Yes                                                                           |
| Control Input         | 120V / 1Ph                                                                    | 120V / 1Ph                                                                    |
| Shaft RPM Range       | 352–1760                                                                      | 174–1735                                                                      |
| No-Run Zone (RPM)     | 814–1221                                                                      | 814–1221                                                                      |
| Cord & Plug           | Included                                                                      | Included                                                                      |
| SHAFT & IMPELLER      |                                                                               |                                                                               |
| Shaft Diameter        | 0.625"                                                                        | 0.625"                                                                        |
| Shaft Length          | 24" exposed                                                                   | 24" exposed                                                                   |
| Shaft Material        | 17-4 H900 hardened SS, no polish                                              | 17-4 H900 hardened SS, no polish                                              |
| Impeller Type         | 4.5" marine propeller (PRL)                                                   | 4.5" marine propeller (PRL)                                                   |
| Impeller Blades       | 3-blade, low shear, 316SS, deburred, mill finish, set screw                   | 3-blade, low shear, 316SS, deburred, mill finish, set screw                   |
| MOUNT, SEAL & FINISH  |                                                                               |                                                                               |
| Mount                 | 3" sanitary tri-clamp, tapered CIP recess                                     | 3" sanitary tri-clamp, tapered CIP recess                                     |
| Wetted Material       | 316SS wetted / aluminum externals / carbon steel hardware                     | 316SS wetted / aluminum externals / carbon steel hardware                     |
| Bearing               | SS bearing; carbon steel coupler                                              | SS bearing; carbon steel coupler                                              |
| Seal                  | Dual food grade PTFE blend double lip seals w/ silicone anti-rotation O-rings | Dual food grade PTFE blend double lip seals w/ silicone anti-rotation O-rings |
| Pressure/Vacuum Rated | Yes                                                                           | Yes                                                                           |
| Wetted Surface Finish | Mill                                                                          | Mill                                                                          |

Verify pressure, temperature, gasket, clamp, and process compatibility before operation. Professional installation and operation by trained personnel is recommended.

**Ready to spec a reactor for your process?** Our engineers can help size jacket volumes, mixer torque, and condensing capacity to your workflow.

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