

HYGIENIC EXCELLENCE

Enerquip is a trusted supplier of pharmaceutical-grade stainless steel shell and tube heat exchangers, built with the precision and quality required to support life-saving work. Our team takes this responsibility seriously, upholding the highest standards through expert craftsmanship, rigorous inspections, thorough testing, and full material traceability.

Learn how our heat exchangers are designed to protect your products, your process, and ultimately the patients who rely on them.

PHARMACEUTICAL APPLICATIONS

Enerquip's shell and tube heat exchangers are designed for flexibility, efficiency, and hygiene in high-purity pharmaceutical processes. Built to handle extreme temperatures, pressures, and cleaning requirements, they support critical operations across the plant, including:

- **Product Heating & Cooling**
- **Process Cooling**
- **Clean-in-Place (CIP) Heating**
- **Water for Injection (WFI) Heating & Cooling**
- **Point-of-Use Cooling**
- **Vapor Condensing**
- **Clean Steam Generation**

COMMITMENT TO HIGH-PURITY AND SAFETY STANDARDS

Enerquip's heat exchangers are engineered to exceed sanitary and safety requirements, delivering the highest quality in pharmaceutical processing:

- **ASME-BPE compliant** – our engineers actively participate in ASME-BPE committee meetings to stay ahead in hygienic design and fabrication
- **ASME Boiler & Pressure Vessel Code compliance**
- **Easy disassembly** for inspection and maintenance
- **Pharma-grade finishes** (25Ra or better)
- **Customizable designs** with styles, orientations, and upgrades tailored to your process



Vertical pharmaceutical-grade heat exchanger



Vertical pharmaceutical-grade heat exchanger (side cut-view)

STANDARD PHARMACEUTICAL DESIGN

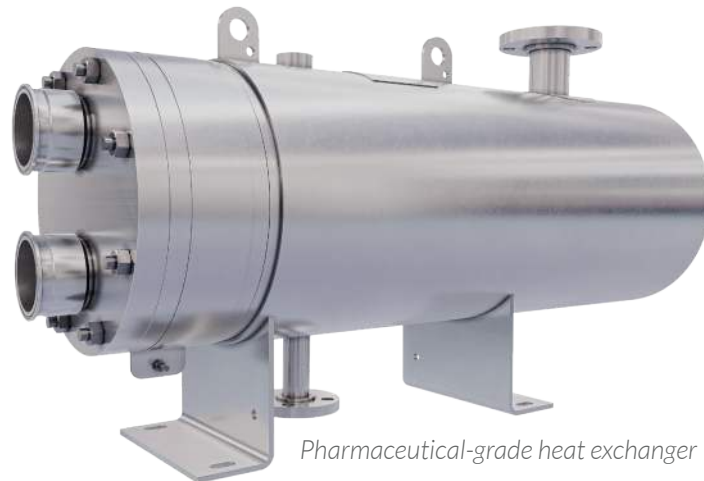
Our pharmaceutical-grade heat exchangers come equipped with premium features as standard:

- **316L stainless steel** tube-side material
- **Seamless tubes polished to 25Ra**
- **40Ra exterior finish**
- **Tube-to-tube sheet seal-welding**
- **Double tube sheet** – prevents cross-contamination between shell and tubes and allows easy leak detection
- **Fully radiused and polished return pockets and weep slots** – enhance cleanability and draining
- **Pitched for draining** – highly polished tubes may still require customer-supplied air or heat for full drainage due to surface tension
- **Passivation of product-contact surfaces** to ensure your equipment is clean, degreased, and more passive to corrosion

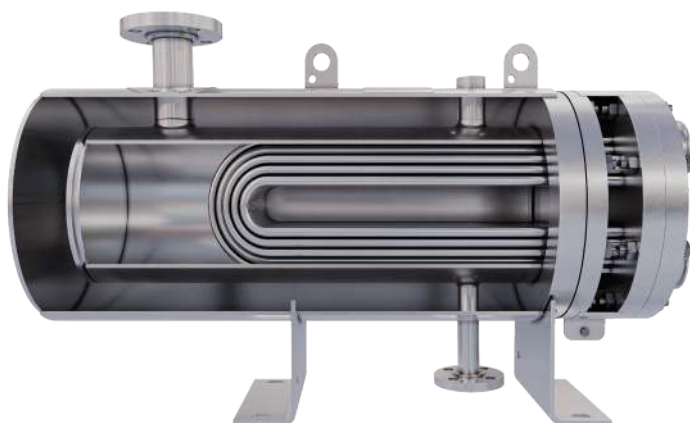
OPTIONAL UPGRADES

We also offer advanced features frequently selected by pharmaceutical customers:

- **15Ra electropolish**
- **Insulation jacket** with ThurmaloX moisture barrier and non-asbestos, chloride-free Inswool ceramic insulation
- **Sight glasses** (utility side)
- **Level gauge ports**
- **Condensate collection sumps/chambers**
- **Nozzle covers** – tack-welded stainless sheet or PipeTite boots



Pharmaceutical-grade heat exchanger



Pharmaceutical-grade heat exchanger (side cut-view)



Pharmaceutical-grade heat exchanger (top cut-view)

Want more? Enerquip also designs and builds bayonet heaters, condensers, and more. Learn for yourself why Enerquip's quality and service is unmatched in the industry. Call us, today!