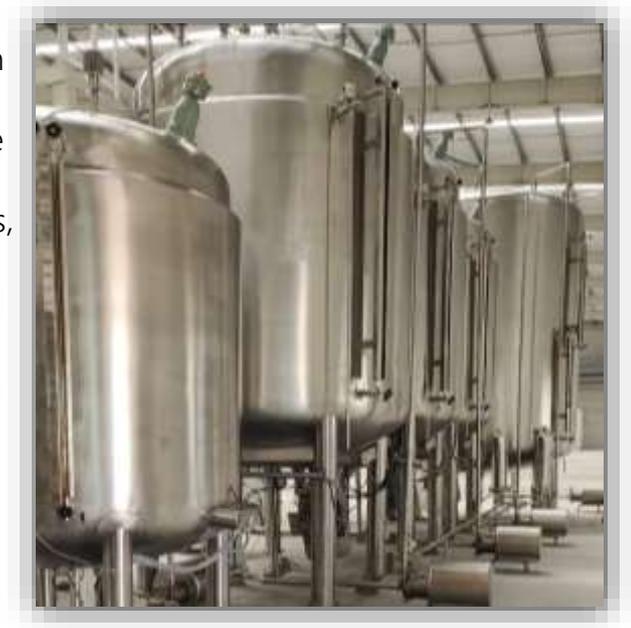


REACTORS

A reactor is a vessel or system where a chemical reaction takes place under controlled conditions. They're a core part of process industries like pharma, petrochemicals, food, fertilizers, and polymers. Reactors are designed to maximize reaction efficiency while ensuring safety, quality, and economic viability.



APPLICATIONS

- Synthesis of APIs
- Crystallization & fermentation
- Blending of excipients
- Formulation of syrups, creams, ointments
- Reaction vessels for chemical synthesis
- Polymerization & Neutralization
- Heat-sensitive compound production



COMPONENTS

- Shell contains the reactions, material chosen for compatibility & durability.
- Agitated system mixes contents like shaft, impellers, motor, gearbox, and seals.
- Jacket controls temp. via external fluids.
- Baffles improves mixing by disrupting flow patterns.
- Instrumentation measures and control key process variables.
- Insulations maintains temperature efficiency.
- Safety mechanisms protects against overpressure and operational hazards.



TECHNICAL PARAMETERS

Parameter	Typical Values / Notes
H/D Ratio	1.2 – 1.5
Impeller Power	mixing intensity dependent
Residence Time τ	V / Q (volume divided by flow rate)
Heat & Mass Transfer	Moderate, enhanced via jackets/coils
Typical Materials	SS304/316, MS, Hastelloy
Instrumentation & Safety	controls, relief valves,