

Contactor of HDPE Plant**Product Coding**
PXXXXXXXXX**Introduction**

Contactor is a critical mixing vessel in the HDPE production process for controlled contact between process fluids such as hexane, demineralized water, and caustic soda. Designed for continuous operation under industrial conditions, the contactor ensures efficient removal of impurities from solvent feed streams, enabling a stable and reliable polymerization process.

Two contactors are installed in the HDPE unit:

- Hexane and NaOH Contactor
- Hexane and Water Contactor

Both units are engineered for high reliability, safe operation in hazardous areas, and long service intervals.

Role in the HDPE Process

In slurry HDPE production, solvent purity is essential for catalyst performance and stable polymerization. Impurities such as acidic components, water-soluble ions, or polar contaminants can poison the catalyst and reduce reactor productivity.

The contactors serve the following key functions:

Hexane/caustic contacting:

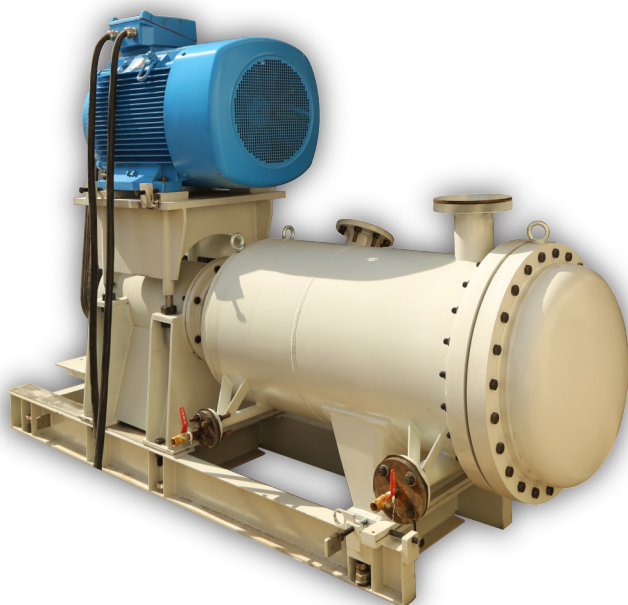
- Removes acidic impurities and polar contaminants from the solvent
- Provides fast and homogeneous mixing of hexane with caustic solution
- Ensures an 8-second residence time for complete neutralization reactions
- Hydrodynamically optimized for uniform dispersion and minimal dead zones

Hexane/water contacting:

- Washes hexane to remove residual caustic, salts, and dissolved impurities
- Delivers a clean, conditioned solvent stream to downstream refining systems
- Designed for precise liquid/liquid contacting and uniform residence time

Together, these units safeguard the quality of solvent entering the HDPE reactor, ensuring:

- Stable catalyst activity
- Reduced fouling
- Improved polymer quality
- Increased plant uptime



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The contactor is a continuous flow mixer where two liquid phases are injected into the vessel and vigorously mixed for a controlled residence time.

1. **Simultaneous feed injection:** Hexane and caustic (or water) enter the vessel through dedicated inlets designed for uniform distribution.
2. **High intensity mixing:** The impeller and internal flow baffles ensure rapid phase dispersion and prevent dead zones.
3. **Chemical interaction:** Caustic neutralizes acidic impurities. Water dissolves and removes residual salts and ionic contaminants.
4. **Uniform discharge:** Conditioned solvent exits the vessel at a constant flow rate, ensuring stable downstream separation.

**Advantages in HDPE Plants**

- Enhances catalyst efficiency and reactor stability
- Minimizes catalyst poisoning and deactivation
- Ensures high purity solvent feed
- Reduces operational problems in the reactor
- Low maintenance frequency with easy access for mechanical seals and impellers
- Long-term industrial operation with reliable hydrodynamics and precise residence time

Accessories & Other Supply

- Baseplate and foundation hardware
- Flexible coupling and guards
- Motor and shaft protection covers
- Nameplate
- Earthing lugs
- Mechanical seal flushing system
- Designed for easy inspection and maintenance of internal parts



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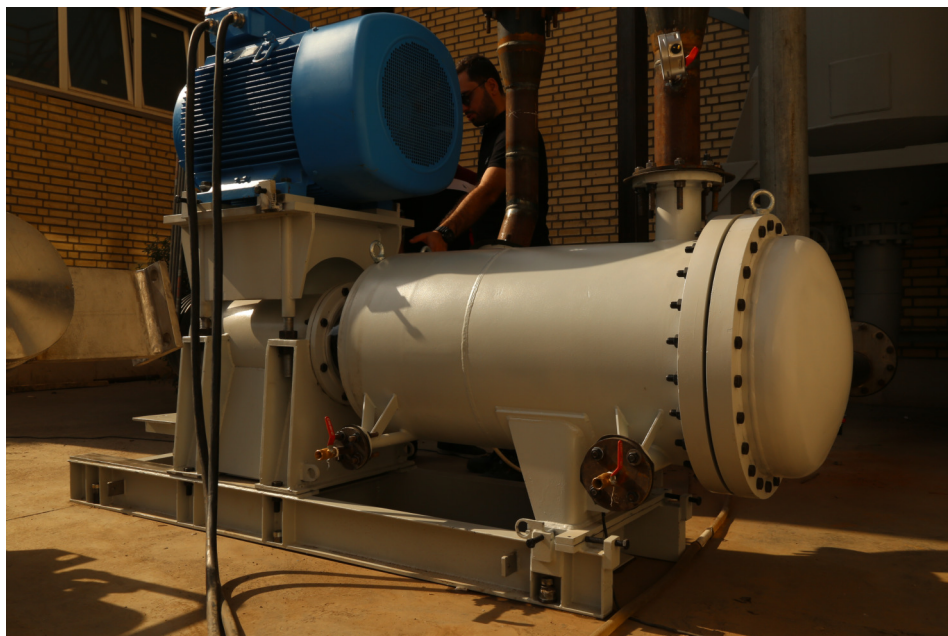
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Features

- Design according to ASME Sec. VIII Div. 1 for pressure vessel integrity
- Mechanical seal with external demineralized water flushing
- High efficiency impeller with optimized hydrodynamics for fast phase dispersion
- Easy maintenance with lifting lugs, earth lugs, and access points
- Noise level below 85 dB at 1 meter
- Residence time fully controlled by flow distribution and impeller design

Applications

- HDPE/LLDPE slurry process solvent preparation
- Neutralization and washing of hydrocarbon solvents
- Removal of ionic and polar contaminants from process streams
- Conditioning of hexane prior to catalyst contact
- Any chemical process requiring fast, continuous liquid/liquid contacting



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