



**Advanced Impeller**

**Technology**

**for Superior Performance**



# Advanced Designs

Chemineer impeller designs are the result of over five decades of research and applied application experience, resulting in the broadest range of durable and efficient impeller options. Proprietary technologies are applied to thoroughly analyze all process parameters, ensuring proper impeller selection for optimal performance in every application. 316/316L stainless, high alloys and coatings are available for all impellers.

## SC-3 Impeller

- Advanced design engineered for deep tank applications
- Produces flow of larger impellers without added weight or loss of efficiency
- Longer shafts possible with lighter weight designs
- Can reduce capital costs for agitator

## HE-3 Impeller

- An established industry standard for axial flow impellers
- Extremely efficient: creates greater fluid motion with less energy
- Ideal for blending, heat transfer and solids suspension

## Maxflo W

- Excellent performer in abrasive solids suspension, liquid-solid-gas and boiling or near-boiling applications
- 10% better than the Maxflo T means retrofits with no decrease in performance
- High-solidity blade design translates into higher gas rates and viscosity values over other high efficiency designs

## Maxflo WSE

- Advanced side-entering hydrofoil design with high efficiency for maximum pumping action
- More cavitation resistant than other designs through effective hydrodynamic design
- Reduced wear through lower tip speeds
- Ease of maintenance via bolted blade construction

## Gas Dispersion Impellers

### BT-6

- Most advanced design
- Highest gas dispersing capability at nearly six times the D-6 (Rushton) turbine
- Reduced unloading
- Relatively insensitive to viscosity

### Other Designs

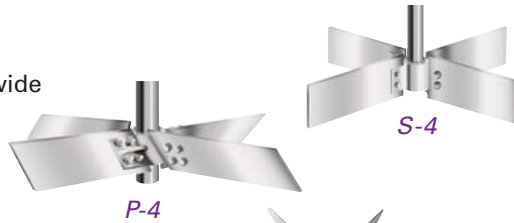
- CD-6: Predecessor (and similar in appearance) to the BT-6, the CD-6 has gas dispersing capability over two times that of the D-6
- D-6 (Rushton): A cost-effective design for low gas rates or concentrations of immiscible liquids



# Time-Proven Technology

## P-4 Impeller

- Axial flow design suitable for wide changes in process viscosity
- Good for blending and solids suspension where elevated shear is needed
- Able to handle higher gas rates over high efficiency designs



## S-4 Impeller

- Close clearance design for operation near the tank bottom
- Excellent for low-liquid-level solids suspension applications
- Designed for use in laminar regime (Reynolds number < 50) applications

## JP-3 Impeller

- Marine style energy efficient design
- Ideal for small batches
- Handles higher viscosities than hydrofoil designs



## ChemShear Impeller

- Customize levels of shear to suit your process
- Proper fluid turnover minimizes the need for auxiliary pumping impellers
- Small particles possible: 2 microns achieved in processes such as micro-encapsulation
- Traditional dispersion blades can also be used in high shear applications

# High-Viscosity Impellers

## Double Helical Ribbon Impeller

- Proven the best high viscosity, laminar flow impeller
- Highly effective in heat transfer
- Efficiently incorporates surface liquids and solids
- For viscosities over 30,000 Mpa



Double Helical Ribbon



Anchor



Screw (Auger)

## Anchor Impeller

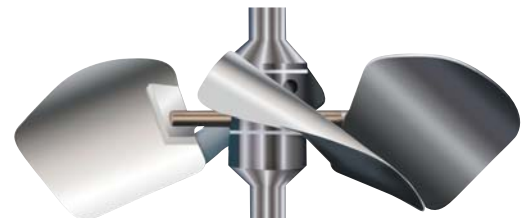
- Most economical laminar flow impeller available
- Horizontal flow well suited for low-liquid-level geometries
- Solve heat transfer fouling problems with optional wall scrapers

## Screw (Auger) Impeller

- Ideal for shear sensitive, uniform blending applications (polymers)
- Excellent top-to-bottom turnover flow characteristics
- Use in mildly pseudoplastic applications with power law indexes as low as 0.5

# High Cleanability: Smoothline Impeller

- Innovative Patent Pending design
- Liquid-shedding surfaces and concealed hardware for enhanced CIP performance
- FDA/USP CL VI materials
- Removable components allow ease of installation through large and small openings
- Axial or radial flow, single or multiple impellers



Smoothline

Impeller Selection Guide					
<b>Application</b>	Miscible Fluids Blending	Solids Suspension	Three Phase Process	Immiscible Fluids Blending	High Viscosity
<b>Impeller Type(s)</b>	High Efficiency (HE-3, SC-3)	High Efficiency (HE-3, SC-3, Maxflo W)	Gas Dispersion (BT-6, Maxflo W)	ChemShear, Dispersion, P-4	Helix, Anchor, Screw

ChemScale®—The Industry Standard Method for Effective Mixer Selection	
Blending	
ChemScale®	Description
1-2	Mild/minimum blending and motion. Produces a flat, but moving fluid surface.
3-5	Intermediate/moderate blending of miscible liquids when specific gravity differences are less than 0.6. Produces surface rippling at water-like viscosities.
6-8	Moderate to vigorous agitation for uniform blending of miscible liquids when specific gravity differences are less than 0.6. Produces surface rippling at lower viscosities.
9-10	Very vigorous agitation for uniform blending of miscible liquids when specific gravity differences are less than 1.0. Produces violent surface motion at lower viscosities.

Solids Suspension	
Intensity	Definition
Solids Motion	Solids are allowed to settle on the vessel bottom, but remain in motion.
Complete Suspension	None of the solids remain on the vessel base for a significant length of time.
Uniform Suspension	Homogeneous distribution of solids throughout the liquid volume.



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