De Dietrich
PROCESS SYSTEMS

GLASLOCK® AGITATORS
FOR GLASS-LINED STEEL VESSELS

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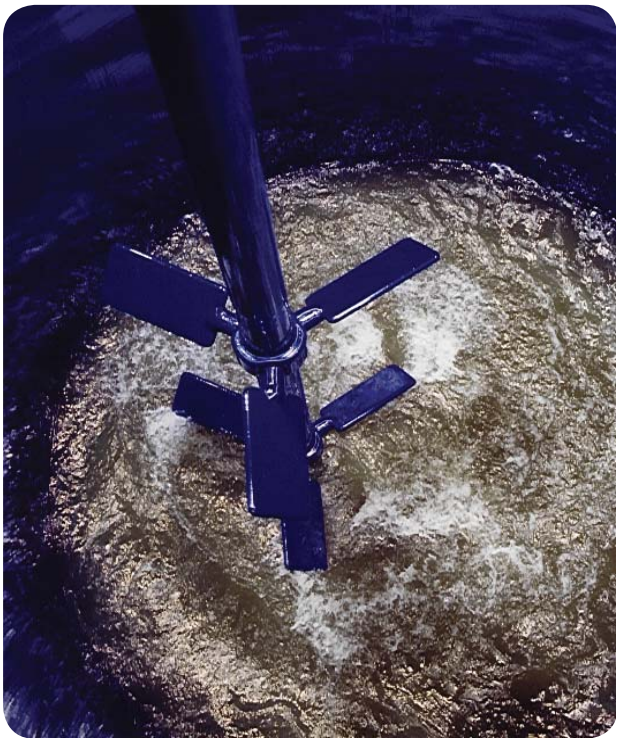
Product Description
Today, the major concerns of the chemical and pharmaceutical industries are improving performance and reducing production costs. Agitation, mixing and heat transfer are directly linked to this problem. De Dietrich Process Systems stocks a line of agitators to optimize your mixing requirements. In addition to the traditional one-piece construction agitator blades, DDPS offers the GlasLock series - the only glass-lined agitators in the world with individually adjustable and removable blades. The constant improvement of glassing techniques makes it possible to optimize the profiles of agitator blades in glass-lined steel. Our research and development teams have perfected a formulation which offers optimal resistance to highly corrosive processes, impact and abrasion, and facilitates cleaning.

GlasLock Advantages
- Reduce maintenance downtime and cost
- Maximize process flexibility
- Improve product yield and quality
- Reduce batch time and cost
- Fit the agitator to your process, not your process to the agitator
- Improve heat transfer efficiency by up to 30%
- Interchangeable with competitive agitators (for DTW, RW and SRW drives)
- Change blade design or pitch to suit changing process needs
- Replace individual blades when they are damaged, not the entire agitator, without disturbing the mechanical seal
- Easy installation with easy to use tools, no hazardous cryogenic fluids to handle

Options
Many blade designs available (see comparison chart)
Single, double or triple tiers

Comparison of pumping capacity: single versus dual tier hydrofoil blades. Greater pumping capacity equals reduced batch mixing time.



Triple tier pitched blade turbine

Dual tier hydrofoil blades

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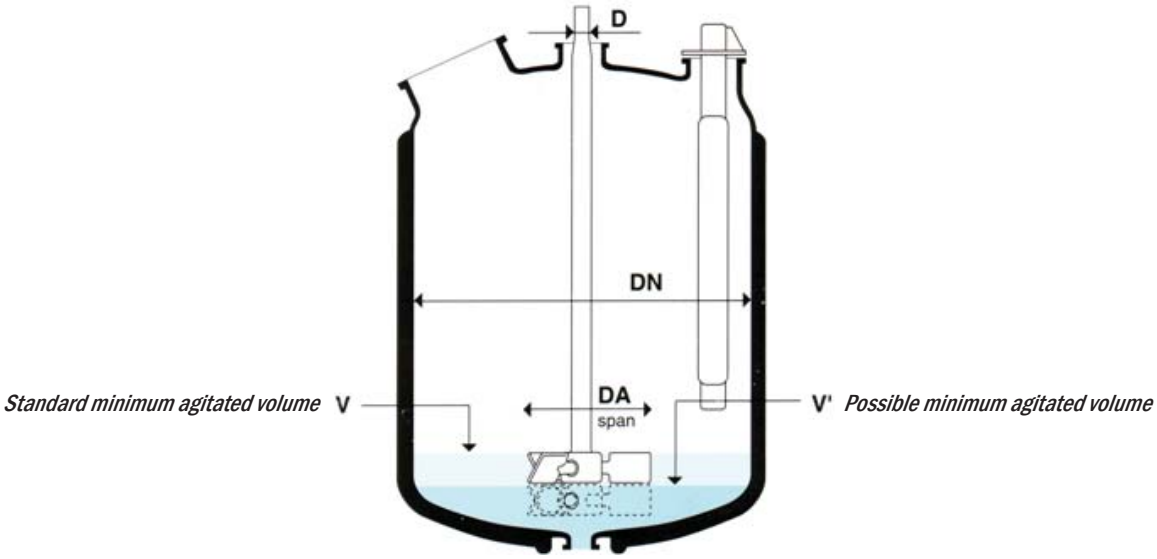
GLASLOCK®/REACTOR
TECHNICAL DATA

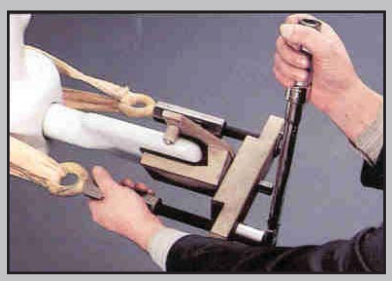


Nominal Capacity	Blade span			End	Volumes		Speed[a] (RPM)	Complete shaft weight (pounds)
	DN (inches)	DA (inches)	Weight[e] (pounds)	D (inches)	V (gallons)	V[1b] (gallons)		
SA / GL – 300	48	26	17.2	2.5	70	32.5	125	213
SA / GL – 500	48	26	17.2	2.5	70	32.5	125	243
SA / GL – 750	61	29.5	22.5	2.5	132	45	125	260
SA / GL – 1,000	61	29.5	22	3.12	132	45	125	305
SA / GL – 1,500	77	33.5	28.2	3.12	260	66	125	313
SA / GL – 2,000	77	33.5	28.2	3.12	260	66	125[c]	363
SA / GL – 3,000	96	41.38	46.3	4.12	511	108	100	542
SA / GL – 4,000	96	41.38	46.3	4.12	511	108	100	642
SA / GL – 5,000	108	47.25	72.7	5.12	712	135	100	906
SA / GL – 6,000	108	47.25	72.7	5.12	712	135	100	1091
SA / GL – 8,000	120	54	97	5.12	971	175	84[d]	1375
SA / GL – 10,000	131	54	97	6.12	1290	200	84	1500

[a] Recommended speed
[b] Volume based on 45° blade angle
[c] Larger OD shaft (optional) for heavy duty low level mixing
[d] 100 RPM with a larger seal
[e] Weight per blade
Note: Do not run agitator at blade level. Agitator must be run in mixing volumes.

Easy mounting and dismantling

A safe design - The torque applied to the blade during installation creates a pressure of about 6,000 psi between the hub and the blade. The ratio between the holding force and the centrifugal force is approximately 120. Considering the compressive strength of glass, this type of assembly does not generate any risk of deterioration for the glass lining.



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GLASLOCK® AGITATORS
COMPARISON CHART

Key:

Flow Pattern
- ● Axial
- ○ Axial / Radial
- □ Radial
- ■ Tangential

Flow Regime
- ● Turbulent
- ○ Turbulent / Laminar
- □ Laminar

Suitability
- +++ Recommended
- ++ Good
- + Acceptable
- - Not advisable

	Design	Flow Pattern	Flow Regime	Max. Viscosity (cP)	Homogenization	Suspension	Liquid/Liquid	Gas/Liquid Dispersion	Heat Transfer	Crystallization	d/T
One-Piece Construction Agitator Blades	Impeller	□	○	8,000	+	++	++	+	+	+	0.55
	Turbine	depends on angle pitch	●	3,000	+	-	++	+	+	-	0.3 to 0.4
	Anchor	■	□	150,000	-	-	-	-	++	++	0.9
	Frame	■	□	100,000	+	-	-	-	+	+	0.3 to 0.41
GlasLock® Removable Agitator Blades	Pitch Blade Turbine 30°	●	●	4,000	-	-	-	-	-	++	0.41 to 0.44
	Pitch Blade Turbine 45°	○	○	8,000	+	+	+	-	+	++	0.41 to 0.44
	Pitch Blade Turbine 60°	○	○	10,000	++	++	+	+	++	+	0.41 to 0.44
	Pitch Blade Turbine 90°	□	●	12,000	+	++	++	+++	++	-	0.41 to 0.44
	HydroFoil	●	○	3,000	++	++	+	+	++	++	0.43 to 0.45
	Rushton Turbine	□	●	3,000	-	-	++	++	+	-	0.3 to 0.4
	Trapezoidal	○	○	12,000	+	++	++	+++	++	-	0.35 to 0.4
	Breaker Bar	□	○	70,000	++	+	-	-	++	++	0.6 to 0.75
	OptiFoil	○	○	15,000	++	+++	++	++	+++	+++	0.45 to 0.55

Note: The above described standard blades meet 95% of the agitation requirements. In case of a specific need, other shapes can be engineered (special agitators, custom-built span of blades, etc.).

OPTIFOIL® BLADES

Product Descripton

OptiFoil®, the newest design of GlasLock blades from De Dietrich Process Systems, combines the advantages of HydroFoil blades and Trapezoidal blades for optimized mixing.

The hydrofoil profile improves on the pumping effect given by the standard pitch blade turbine impellers of the GlasLock® agitation system. The bends and twists of its construction are specifically adapted to crystallization and suspension processes.

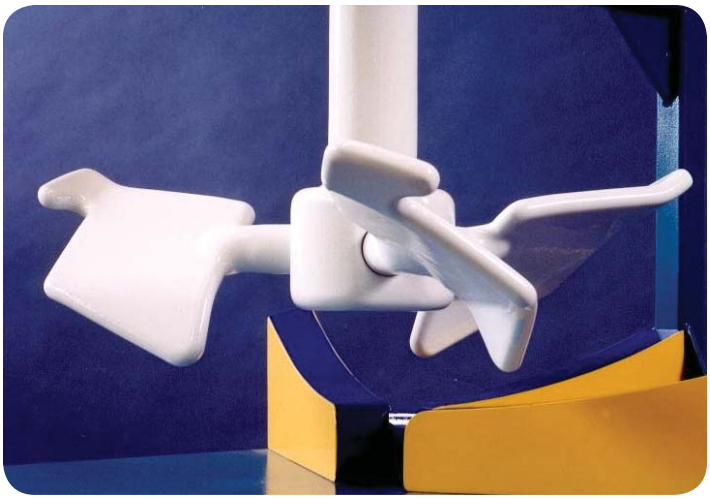
Trapezoidal blades have been designed to mix very low product volumes and facilitate the final emptying of the reactor by reducing the gap between the blades and the bottom of the reactor.

OptiFoil takes the features of these two designs and provides a solution that ensures a high axial flow for suspension processes and also facilitates the operation of minimum volumes. The pitch angle of these blades gives a smoother contact with the product than the vertical trapezoidal blades, and is specifically recommended to avoid the alteration of fragile crystals.

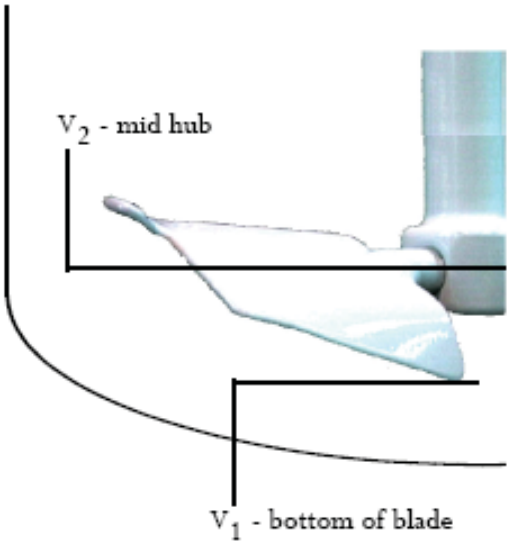
OptiFoil Advantages

OptiFoil is ideally suited for reactors involving homogenization and suspension, as well as heat transfer, crystallization, and dispersion. Its axial/radial flow is advisable for virtually every process. OptiFoil will also mix higher viscosity liquids than standard flat blades. Additional benefits include:

- Low level mixing with high axial flow
- Facilitates emptying of reactor without damaging fragile crystals
- Improved suspension
- Strong flow at reactor bottom



OptiMix Minimum Mixing Volumes



Size (Gal)	V_1 (Gal)	V_2 (Gal)
500	**14.9**	**41.1**
1000	**14.6**	**61.5**
2000	**20.9**	**77.4**
4000	**22.3**	**140.1**

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