








EKATO HIGH PERFORMANCE IMPELLERS

	VISCOPROP	ISOJET	ISOJET-B	COMBIJET	PHASEJET	GASJET	INTERMIG	PARAVISC	COAXIAL	TORUSJET
IMPELLER TYPE	Central / off center Baffles: 0 / 2 / 3 / 4 Blades: 2 / 3 / 4 Stages: 1 - x	Central / off center Baffles: 2 / 4 Blades: 2 Stages: 1 - x	Central Baffles: 2 / 4 Blades: 4 Stages: 1 - x	Central Baffles: 2 / 4 Blades: 3 Stages: 1 - x	Central Baffles: 2 / 4 Blades: 6 Stages: 1 / 2	Central Baffles: 2 / 4 alone or combined with PHASEJET or VISCOPROP	Central Baffles: 2 / 4 Blades: 2 / 3 / 4 Stages: 2	Central 2 baffles or feed pipes in the center applicable Blades: 2	Central Two different shaft speeds / directions of wall and center impellers possible Stages: 1 / 2	Central / draft tube Baffles: 3 / 5 Blades: 3 / 4 / 5 Stages: 1
FLOW DIRECTION	Axial / radial	Axial	Axial	Radial / axial	Radial	Radial	Axial / radial	Axial / positive displacement	Axial / radial / positive displacement	Axial
PREFERRED ARRANGEMENT										
BLENDING	● ● ●	● ● ●	● ● ●	● ●	●		● ●	● ● ●	● ● ●	● ●
SUSPENDING	● ● ●	● ● ●	● ●	● ●	●		● ●		●	● ● ●
DISPERSING	●	●					●		● ● ●	
HEAT TRANSFER	● ●	● ●	● ●	● ● ●	● ● ●	● ●	● ●	● ● ●	● ● ●	● ● ●
GASSING	●		●	● ● ●	● ● ●	● ● ●	● ●			
FLOW RANGE	Turbulent / transitional / laminar	Turbulent	Turbulent / transitional / laminar	Turbulent	Turbulent	Turbulent	Turbulent / transitional / laminar	Laminar	Turbulent / transitional / laminar	Turbulent / transitional / laminar
VISCOSITY RANGE	≤ 40,000 [mPas]	≤ 20,000 [mPas]	≤ 100,000 [mPas]	≤ 10,000 [mPas]	≤ 10,000 [mPas]	≤ 2,000 [mPas]	≤ 20,000 [mPas]	≤ 1,000,000 [mPas]	≤ 1,000,000 [mPas]	≤ 100,000 [mPas]
FEATURES	- Universal mixing impeller for a wide viscosity range - Variable blade angles (standard versions with 25° and 53°)	- Homogeneous suspension - Excellent axial pumping rates - High axial velocities can create a virtual draft tube by a multistage setup	- Low shear mixing - Homogeneous energy dissipation - Reliable suspending even under gassed conditions	- High local shear rates - Combines strong radial and axial flows - Very good gas dispersion - High flooding limit, stable operation with respect to power consumption	- Primary gas disperser with gas pipe or sparger ring - Strong dispersion performance even at high gas flow rates - Almost no reduction of power under gassing conditions	- Self-induced gassing through hollow shaft - Combined with PHASEJET or VISCOPROP in high performance gas-liquid reactors - Very high mass transfer - Complete conversion of the gas	- Homogeneous suspension - Homogeneous energy distribution - Gassing of non-Newtonian fluids	- Short mixing times for high viscous and non-Newtonian fluids - Both pumping directions possible - Ideal for mixing low to high viscous process stages	- Ideal for multi-purpose plants - Highly flexible modular system - Complex mixing tasks - Blending and heat transfer in non-Newtonian fluids	- Application with draft tube in the vessel - Efficient axial pumping - High circulation rates at low power consumption
APPLICATIONS	Polymerization (suspension / pearl / emulsion), leaching, crystallization, precipitation, storage tanks	Polymerization (suspension), crystallization, precipitation	Bio-leaching, fermentation, polymerization, precipitation, crystallization	Fermentation, bio-leaching, atmospheric leaching	Fermentation, hydrogenation, oxidation, alkoxylation, hydroformulation, carboxylation	Hydrogenation, chlorination, oxidation, alkoxylation, amination, carboxylation	Fermentation, crystallization, resin emulsions	High viscous adhesives, polymerization (bulk / solution), rubbers, creams, mascara, sealants, grease, ointments, etc.	Applications with extreme non-Newton characteristics, polymerization (bulk / solution), resin emulsions, mascara, pastes	Continuous crystallization, polycondensation, low temperature applications, polymerization (solution)
INDUSTRIES	Formulated consumer products, chemicals, polymers, flue gas desulfurization & water treatment, biofuels & bio refineries, minerals processing	Chemicals, API production, polymers, consumer goods	Hydrometallurgy, chemicals, polymers, biofuels & bio refineries, API production	Chemicals, biotechnology, polymers, hydrometallurgy	Chemicals, hydrometallurgy, pharmaceuticals, food	Chemicals, pharmaceuticals, hydrometallurgy	Chemicals, biotechnology	Food, cosmetic, polymers (e.g. polyolefins), paints and lacquers, pharmaceuticals, formulated products	Formulated products, cosmetics, pharmaceuticals, polymers	Chemicals, hydrometallurgy, polymers
DIAMETER RATIO	0.3 - 0.7 [d ₁ /d ₂]	0.05 - 0.5 [d ₁ /d ₂]	0.3 - 0.96 [d ₁ /d ₂]	0.2 - 0.7 [d ₁ /d ₂]	0.2 - 0.6 [d ₁ /d ₂]	0.2 - 0.5 [d ₁ /d ₂]	0.3 - 0.95 [d ₁ /d ₂]	0.9 - 0.98 [d ₁ /d ₂]	0.9 - 0.98 / 0.3 - 0.5 [d ₁ /d ₂]	0.95 - 0.98 [d ₁ /d ₂]
SPEED	Medium	High	Medium	High	High	High	Medium	Low	Low / high	High
TIP SPEED	3 - 10 [m/s]	4 - 15 [m/s]	3 - 10 [m/s]	4 - 15 [m/s]	4 - 15 [m/s]	8 - 15 [m/s]	1 - 9 [m/s]	< 2 [m/s]	< 2 / 5 - 30 [m/s]	2 - 15 [m/s]

* The impeller selection and the areas of operation may differ for individual cases.

EKATO SPECIAL IMPELLERS

<p>DISSOLVER CERAMIC</p> <p>Application of high shear for dissolving or disagglomeration purpose or establishing emulsions (stable droplet sizes)</p> 	<p>EPOX-R</p> <p>A wear-optimized impeller which is ideal for use in pressure oxidation autoclaves (hydrometallurgy)</p> 	<p>EPAL</p> <p>Designed for continuously operating horizontal vessels (e.g. leaching autoclaves)</p> 	<p>ISOPAS</p> <p>Impeller for mixing and drying of products with a wide range of flow properties</p> 	<p>HELICAL RIBBON</p> <p>Impeller for high-viscous media and low-shear applications, special applications in emulsion polymerization</p> 	<p>SOLIDFOIL</p> <p>Perfect handling of continuously flowing solids, e.g. stripping monomer residues from polymers</p> 	<p>WINGJET</p> <p>A wear-optimized impeller for side entry agitators with an excellent axial flow and dispersion of very high gas rates (flue gas desulfurization, storage tanks)</p> 
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Legend: ● ● ● = excellent / ● ● = very good / ● = good