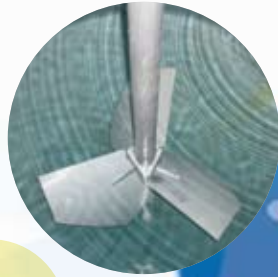


MIXERS



*Top-entry mixers
without sealing*



*Top-entry mixers
with sealing*

*Side-entry
mixers*



Customized mixers

*Heavy duty
mixers
and rakes*

Impellers











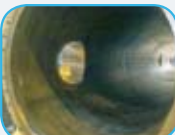

















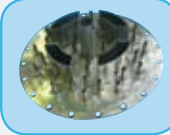







MERSEN, AN EXPERT IN MATERIAL AND EQUIPMENT FOR DEMANDING ENVIRONMENTS

Mersen wishes to share its extensive expertise in high-performance equipment with its customers. Mersen designs innovative solutions to address its clients' specific needs to enable them to optimize their manufacturing process in sectors such as energy, transportation, electronics, chemical, pharmaceutical and process industries.

Mersen's experience and skills in thermal design, process engineering and anticorrosion materials ensure that all the manufactured equipment can cope with your process constraints. All the equipment and systems are compliant with international standard requirements and certifications such as ASME, AS ADM, JIS, CODAP, RCCM, HAF 601.

To serve its worldwide customers, Mersen manufactures its equipment through American, European, Indian and Chinese first-class production plants representing more than 220,000 m².

	Reactors Pressure vessels	Mixers	Heat exchangers		Columns	Piping Fittings
			Block / Plate	Shell & Tube		
Graphite						
SiC						
Tantalum						
Zirconium						
Titanium						
Carbon Steel Stainless Steel Nickel Alloys						
Fluoropolymer						
			Anticorrosion Systems			

Mersen has designed and manufactured mixers for more than 60 years to comply with specific customer needs.

Mixers are key equipment for most chemical engineering processes

Mixers are composed of a mechanical part called the head and an hydraulic part called the impeller which is the core of the mixer. The design of the impeller is the key to make the process happen at the most effective cost.

Mersen has been developing impellers and various head constructions for years to efficiently cope with most processes and to ensure extended reliability of the mixers.

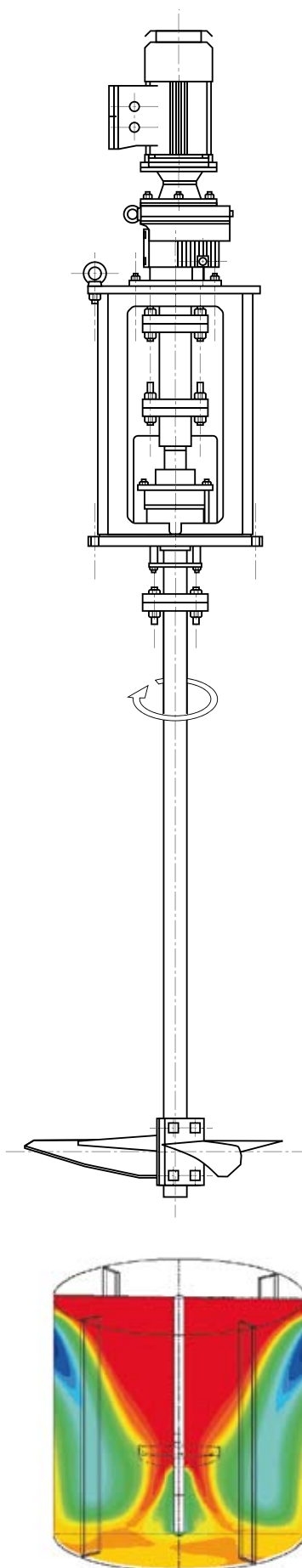
Our engineering capacities are acknowledged in hydraulic design (in-house software, calculation by CFD) and mechanical design (in-house software, simulation, finite elements calculation)

Mersen can rely on the top-level 8,000m² workshop located in Brignais (France) where highly skilled experts design and manufacture mixers. The team can count on worldwide workshops (Europe, Africa...) for the after-sales service.







Specific Mersen's expertise in **reactive metals** drives us to offer complete skids or packages with mixers in **tantalum, zirconium or titanium** to cope with drastic corrosive environment.



Brignais workshop

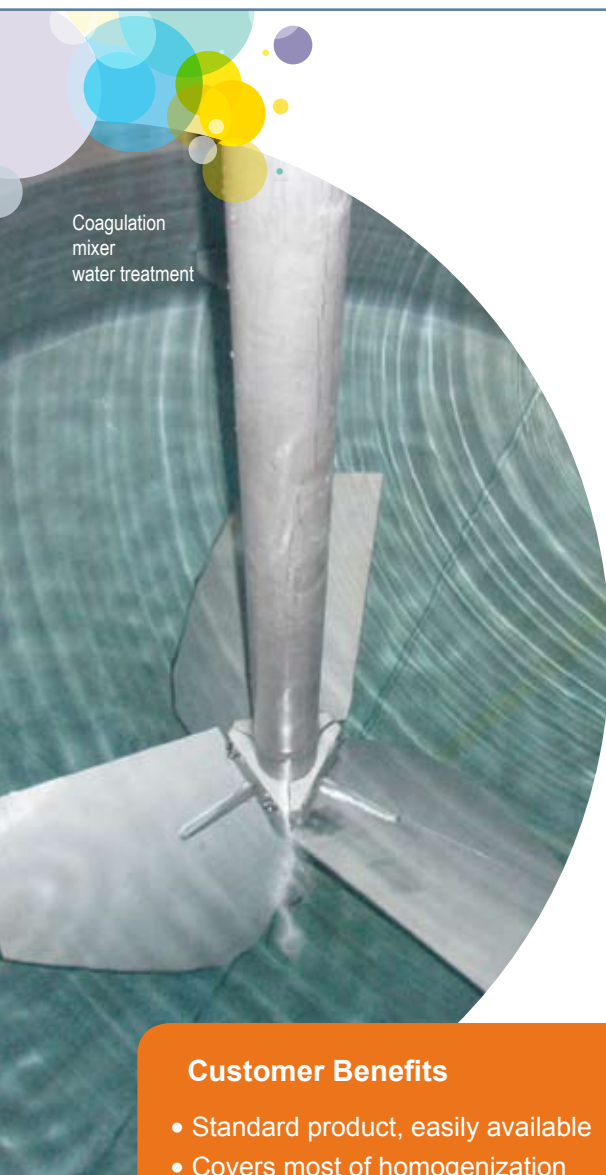


MIXERS PORTFOLIO

			Key Features	Markets
Standard	Top-entry mixers without sealing		<ul style="list-style-type: none"> • Power from 0.18 to 11 kW • Speed from 1,500 to 10 rpm • Shaft length up to 5,000 mm • Impeller diameter up to 3,000 mm 	<ul style="list-style-type: none"> • Waste water treatment • Phosphoric acid/fertilizers • Hydrometallurgy
	Top-entry mixers with sealing		<ul style="list-style-type: none"> • Power from 0.18 to 30 kW • Speed from 1,500 to 30 rpm • Simple or double mechanical seal • Shaft length up to 4,000 mm • Impeller diameter up to 1,800 mm 	<ul style="list-style-type: none"> • Fine chemicals /pharmaceuticals • Petro-chemicals
	Side-entry mixers		<ul style="list-style-type: none"> • Power from 0.55 to 45 kW • Speed from 1,500 to 200 rpm • DN flange, straight or inclined 7 to 10° • Impeller diameter up to 800 mm 	<ul style="list-style-type: none"> • Waste water treatment • Phosphoric acid/ Fertilizers • Oil and gas
Tailored	Customized mixers		<ul style="list-style-type: none"> • Double movement mixers • Magnetic-driven mixer to handle very high pressure and temperature ... • Static mixers: when dilution is needed in-line • Specific impellers: anchor, ribbon, rake... 	<ul style="list-style-type: none"> • All markets
	Heavy-duty mixers and rakes		<ul style="list-style-type: none"> • Power up to 600 kW • Torque handled up to 96,000 Nm. • Shaft length up to 20,000 mm • Rakes up to 34,000 mm diameter 	<ul style="list-style-type: none"> • Waste water treatment • Phosphoric acid/ Fertilizers • Petro-chemicals • hydrometallurgy
	Impellers		<ul style="list-style-type: none"> • High performance axial flow propellers • For producing turbulence or/and shear • Specific design to handle highly viscous products 	<ul style="list-style-type: none"> • All markets

	Phosphoric acid	Fine chemicals Pharmaceuticals	Water treatment	Petro-Chemicals	Hydrometallurgy
Top-entry mixers without sealing					
Top-entry mixers with sealing					
Side-entry mixers					
Customized mixers					
Heavy-duty mixers and rakes					
Impellers					

STANDARD TOP-ENTRY MIXERS WITHOUT SEALING



Mersen's top-entry mixers without sealing are designed and manufactured to be installed in an open tank with atmospheric pressure and an inside temperature up to 100°C. This range of mixers has been specially designed to cover most of the usual needs in terms of standard agitation and to be able to handle a density up to 1,200 kg/m³ and a viscosity up to 500 cps.

Mersen mixers are mostly installed in:

- Waste and water treatment
- Final blends: paint, ink, fine polymers
- Reagent preparation: metallurgy, fine chemistry, polymerization
- Food: flavors, syrups, sweets, starch, yeast, amino-acids
- Beverage: wine, beer, alcohol, oil
- Bioenergy: small volumes for fermentation, liquefaction, washing...

Key Features

- Power from 0.18 to 11 kW
- Speed from 1,500 to 10 rpm
- Shaft length up to 5,000 mm
- Available wetted part material: stainless steel, carbon steel, rubber, halar covered ...
- ATEX certified
- Impeller diameter up to 3,000 mm
- Equipped with high performance propeller or turbine

Customer Benefits

- Standard product, easily available
- Covers most of homogenization needs
- Short delivery time
- Easily associated with other Mersen products on a customized skid
- Mersen's process expertise



Maturation mixers - wastewater treatment

STANDARD TOP-ENTRY MIXERS WITH SEALING

Mersen's top-entry mixers with sealing are designed and manufactured to be installed in a closed tank, up to 15 barG with an inside temperature up to 200°C. This range of mixers has been specially designed to meet most of the needs of the chemical industry. These mixers are designed to be installed on standard DIN reactors and are able to handle a density up to 1,300 kg/m³ and a viscosity up to 2,000 cps.

Mersen mixers are mostly installed in:

- Fine chemicals
- Pharmaceuticals
- Biochemicals
- Various other chemicals

Key Features

- Power from 0.18 to 30 kW
- Speed from 1,500 to 30 rpm
- Guiding turret and DIN flange
- Simple or double mechanical seal
- Mechanical seal maintenance device
- Shaft length up to 4,000 mm
- Available wetted part material: stainless steel, nickel alloys ...
- ATEX certified
- Impeller diameter up to 1,800 mm
- Equipped with high performance propeller or turbine



Reactor mixer
fine chemicals

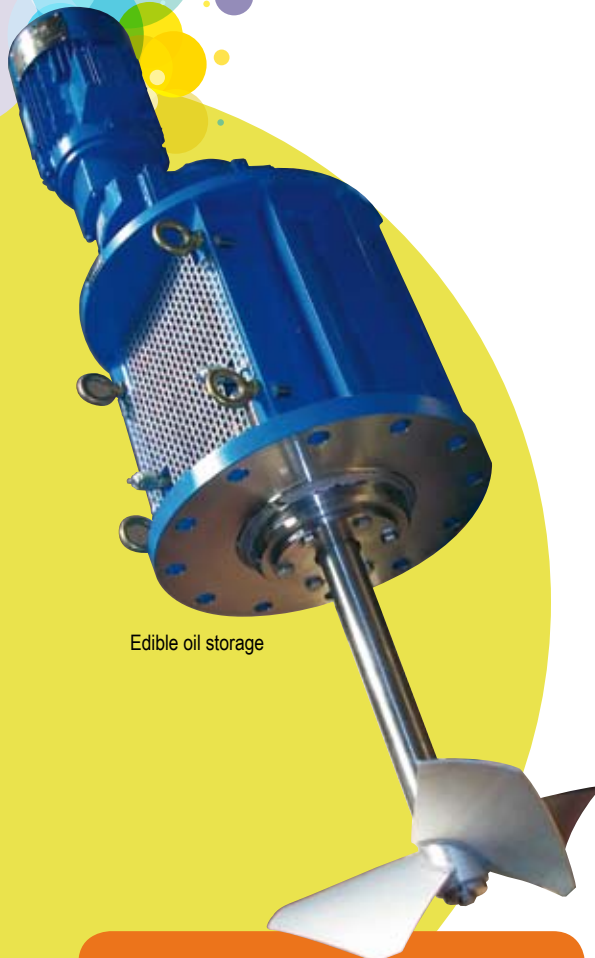


Standard mixer
fine chemicals

Customer Benefits

- Standard product, easily available
- Can be installed on DIN reactors
- Quick mechanical self-maintenance
- Easily associated with other Mersen products on a customized skid
- Mersen's process expertise

STANDARD SIDE-ENTRY MIXERS



Edible oil storage

Customer Benefits

- Standard product, can be easily customized
- Easy installation, easy maintenance (seal can be dismantled without emptying the tank)
- Easily associated with other Mersen products on a customized skid
- Mersen's process expertise

Mersen's side-entry mixers are designed and manufactured to be installed through the side of tanks. This range of mixers has been specially designed to be fitted close to the bottom of the tank. These mixers cover most of the needs in various storage tanks where homogenization is required. These mixers are designed to be installed on DN flanges and are able to handle a density up to 1,100 kg/m³ and a viscosity up to 500 cps.

Mersen agitators are mostly installed in the following applications:

- Petroleum storage
- Refined product
- FGD
- Bioethanol fermentation
- Edible oil storage
- Bitumen
- Alcohol storage
- Pulp and paper ...

Key Features

- Power from 0.55 to 45 kW
- Speed from 1,500 to 200 rpm
- DIN flange, straight or inclined 7 to 10°
- Simple, double mechanical seal, stuffing-box
- Available wetted part material: carbon steel, stainless steel and duplex steel, nickel alloys ...
- ATEX certified
- Impeller diameter up to 800 mm
- Equipped with high performance propeller



Side entry
vine storage

Mersen's customized mixers are designed and manufactured to meet the specific needs of the customer. Whatever process, installation, energy, space constraints the customer has, Mersen's customized mixer will comply with it.

Mersen's customized mixers can be installed for:

- Very high pressure (> 150 barG)
- Very high viscosity (> 150 000 cps)
- Very corrosive bulk (concentrated acids: H_2SO_4 , HCl, $HF..$)
- Explosive area (ATEX certification)
- Limited space ...

Key Features

- Double movement mixers: peripheral anchor combined with internal axial flow mixer
- Magnetic-driven mixer to handle very high pressure and temperature ...
- Static mixers: when dilution is needed in-line
- Bottom-entry mixers for polymerization applications ...
- Available wetted part material: stainless steel, duplex and super duplex stainless steel, nickel alloys, titanium, zirconium, tantalum, various rubber type coating (Halar, Ebonite, PTFE, PVDF..)
- ATEX Zone 0
- Specific impellers: anchor, ribbon, polymerisation impeller, rake ...



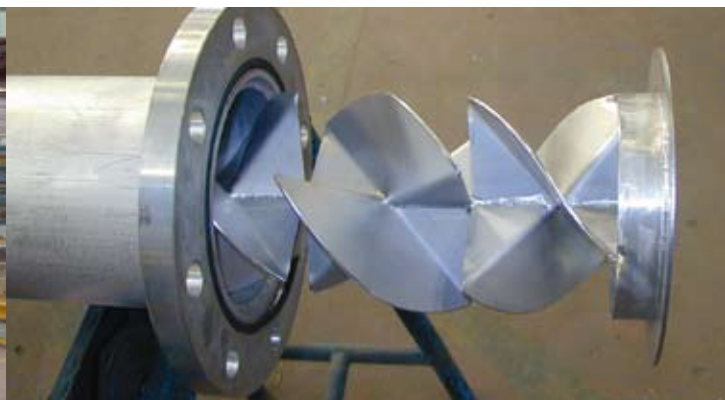
Complete package
fine chemicals

Customer Benefits

- Dedicated equipment for dedicated products
- Easily associated with other Mersen products on a customized skid
- Mersen's process expertise



Paint industry



Static mixer - water treatment

HEAVY-DUTY MIXERS AND RAKES

Rakes
Phosphoric
acid tank



Customer Benefits

- Equipment reliability for years
- Installation eased with the help of Mersen's supervision and start-up team
- Easily associated with other Mersen products on a customized skid
- Mersen's process expertise

Mersen's heavy-duty mixers are designed and manufactured to handle very demanding processes in very large tanks. Heavy-duty mixers are designed to handle high loads and high torque. Most heavy duty Mersen mixers show impressive features.

Mersen's heavy-duty mixers can be seen in:

- Phosphoric acid industry
- Various hydrometallurgy processes: Ni, Zn, Au, Co, Cu
- Biogaz production
- Polymerization processes.
- Fermentation ...

Key Features

- Power up to 600 kW
- Torque handled up to 96,000 Nm.
- Shaft length up to 20,000 mm
- Rakes up to 34,000 mm diameter
- Impeller up to 9,000 mm diameter
- Available wetted part materials: 316L, 52N+, UB6, titanium, zirconium, nickel alloys, inconel G30, various rubber coating (Halar, Ebonite, PTFE, PVDF..)
- ATEX certified
- Impellers such as high performance propellers, specific rakes, turbines



Super duplex stainless steel rake - Phosphoric acid



904L mixer - Acid treatment plant



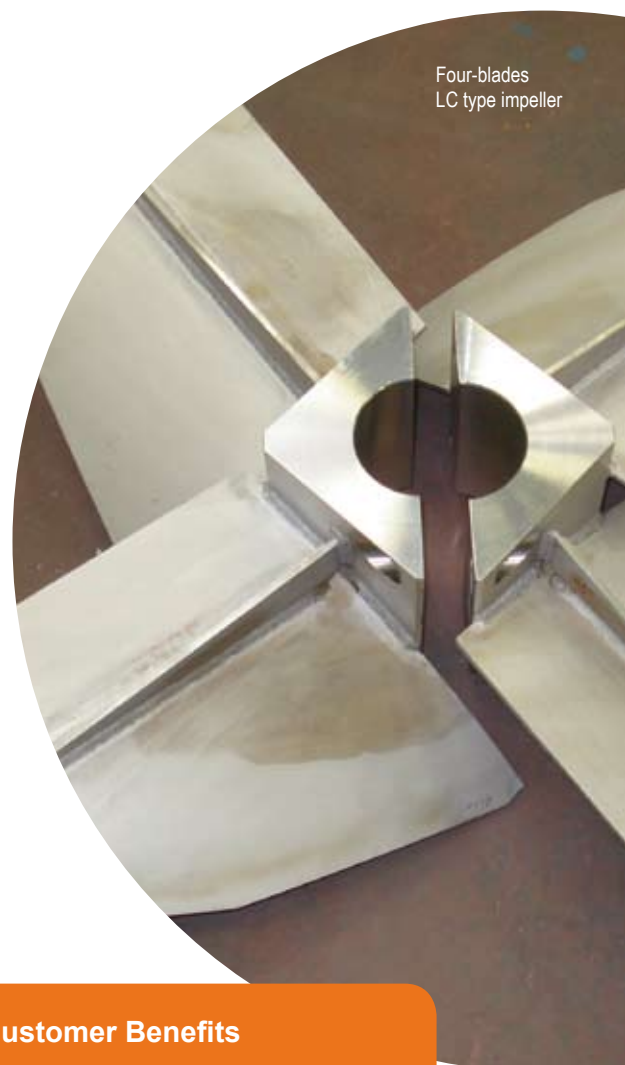
Duplex stainless steel reactor shaft - Acid treatment

Mixing is a combination of mechanical and hydraulic design. Mechanical features are the visible features of a mixer. Hydraulic ones solve the specific process problems. Mersen's impellers have been designed for years to cope with all the process problems our customers are facing.

Mersen's impellers can be found in every single process depending on the function the process requires. Different types of Mersen's impellers can be found in one tank to cope with different process characteristics.

Key Features

- High performance axial flow propellers (to produce flow with low power): the L propeller family (LA, LB, LC and LBS) with 2, 3 or 4 blades. To be installed with fixed or adjustable position on shaft. Create flow with low turbulence. To be used in low to middle viscosity products
- For producing turbulence or/and shear, Mersen proposes: pitched blade turbine, Rushton type turbine, Cowles turbine, rotor-stator device, dedicated to gas dispersion, powder dispersion, emulsion
- Specific design to handle highly viscous products:
 - Simple or double ribbon
 - Archimedean screw
 - Anchor
 - Double flux L propellers



Four-blades
LC type impeller

Customer Benefits

- Easily associated with other Mersen products on a customized skid
- Mersen's process expertise to offer the most process-appropriate impeller



PVDF lined impeller - LB type



Polished stainless steel impeller - LC type



Radial turbine + axial flow impeller LC type



MERSEN
Expertise, our source of energy

**A worldwide specialist
in anticorrosion
and process equipment**

Worldwide presence
with several manufacturing
sites and workshops close
to our customers

Mersen France Pagny-sur-Moselle

- > 36,000 m²
- > Heat exchangers, pressure vessels, columns, piping, bellows and compensators, mixers, systems, bursting discs

Mersen USA Salem

- > 6,690 m²
- > Graphite heat exchangers, systems, welded plate heat exchangers, piping, bellows and compensators, bursting discs

Mersen France Brignais

- > 8,000 m²
- > Welded and gasketed plate heat exchangers, metallic shell and tubes heat exchangers, mixers

Mersen France Grévy

- > 8,000 m²
- > Specialist in equipment for the nuclear industry
- > Pressure vessels, columns, mixers, heat exchangers

Nippon Carbon Mersen

- > Distribution and repair shop

Mersen UK Teesside

- > 5,600 m²
- > Graphite heat exchangers, bursting discs

**Mersen Deutschland
Linsengericht**

- > 3,000 m²
- > Tantalum equipment : heat exchangers, bayonets, heating coils, columns, accessories

Mersen USA Oxnard

- > 6,600 m²
- > Pressure vessels, columns, heat exchangers (zirconium, titanium)

Mersen India Chennai

- > 2,600 m²
- > Graphite heat exchangers, systems

Mersen Maroc El Jadida

- > 2,500 m²
- > Graphite and metallic heat exchangers
- > After-sales service, assembling

Mersen Xianda Shanghai-Fengxian

- > 150,000 m²
- > Heat exchangers, pressure vessels, columns, piping, mixers, systems

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