Saft

A company of TotalEnergies

Saft lithium product Selector guide

Connected Smart Energy Division

TotalEnergies

Saft, your trusted partner for reliable high-quality batteries

Saft is a battery maker like no other. From research to manufacturing and sales, we set the pace. In fact, Saft pioneered the development and production of both primary lithium cells and lithium-ion technology, and continues today to invest in the development of technologies and solutions that serve the evolving needs of its customers around the world.

When it comes to innovative, robust and reliable batteries, no one can match Saft. Your complex systems, your high-tech equipment and your state-of-the-art devices deserve batteries that are just as focused on performance and reliability as you are.

We serve a huge range of market sectors from IoT to utility metering, tracking, security and alarms, oil & gas, medical or military equipment, offering our lithium-based standard and customized battery systems for many different types of applications.

Beyond knowing you can trust the quality of our extremely wide range of primary and rechargeable lithium battery offer, manufacturers and OEMs can also count on Saft's teams of experts and their comprehensive services covering every step of the manufacturing cycle.

Focused on innovation

For an advanced technology company such as Saft, research and development are a constant. We are always building on our previous achievements and seeking ways to improve existing products and implement new technologies as customers' needs evolve.

Quality as a way of life

Saft's founding strategy is to provide customers with the best battery solutions available. We implement best practices in all fields, and consider high performance and rigorous discipline as our standard operating procedure.

Transport and safety

Saft's packaging, labeling and shipping practices conform to the highest levels of international standards governing battery testing and classification. This allows us to ensure safe and secure transportation and storage to anywhere in the world.

1918
Saft is founded

2016
Acquired by TotalEnergies

Saft Today

- **19** countries
- **17** manufacturing sites
- **31** sales offices
- **+4000** employees
- **+3000** customers
- **€1.2B** revenue in 2023
- **€101M** invested in R&D
- **42** patents filed in 2023

A lithium battery that meets your application's needs

Whether you choose from one of our three primary lithium technologies or from our rechargeable lithium-ion range, Saft has the right lithium battery for your application.

	Primary lithium			Rechargeable lithium	
	$Li\text{-}SOCl_2$	$Li\text{-}SO_2$	$Li\text{-}MnO_2$	Li-ion	Li-ion
	LS/LSH/LSP	LO	LM/M	MP	Small VL
Internet of Things (IoT) & Industrial Internet of Things (IIoT) Smart parking sensors, Industrial IoT, environment monitoring equipment, dataloggers, smart energy management systems, smart building equipment.	■		■	■	■
Utility metering Automatic meter reading (AMR), advanced metering infrastructure (AMI), traditional metering, smart metering systems for electricity, water, gas, and heat, fixed telecommunication devices for Wide Area Network.	■		■	■	■
Medical Defibrillators, respirators & oxygen concentrators, monitoring equipment, mobile diagnostic equipment, infusion pumps, telemedicine equipment.		■	■	■	
Military & defense Portable radio communications, night vision equipment & thermal imagers, tactical engagement simulators, precision gunnery simulators, chemical agent detectors, field radars, munitions & firing systems, torches & lamps.	■	■	■	■	■
Oil & gas Measurement while drilling (MWD), logging while drilling (LWD), well completion & well production tools, subsea equipments, explosive atmosphere devices, seismic survey equipment, pipeline inspection gauges (PIG).	■		■	■	■
Professional electronics Professional handheld tools and portable devices, professional displays, ticketing & information kiosks, vehicle telematics.	■		■	■	
Security & alarms Home and pool surveillance, smoke and CO_2 detectors, locking systems, video surveillance, wireless sirens, call points, PIR presence detectors, glass break detectors, perimeter protection, biometric readers, contact-less card readers and complete wireless alarm systems.	■		■	■	
Tracking Asset tracking equipment, vehicle tracking systems, tollgate transponders.	■	■	■		
Marine & signaling Buoys, beacons, lighthouses, life jackets, oceanography.	■	■	■	■	■

Saft primary lithium

An offer ranging from single cylindrical cells to complex battery systems

Three distinct technologies

- Lithium-thionyl chloride (Li-$SOCl_2$) for our LS/LSH/LSP cells (3.6 V).
- Lithium-sulfur dioxide (Li-SO_2) for our LO cells (2.8 V).
- Lithium-manganese dioxide (Li-MnO_2) for our LM/M cells (3.0 V).

High and stable operating voltage

3.6 V for LS/LSP cells, 2.8 V for LO and 3.0 V for LM/M cells.

Wide range of current capabilities

From a few microamperes base current to more than 10 A pulses for some LO and LM/M cells.

Wide range of operating temperatures

From – 60°C to +85°C, depending on cells, current drain and environmental conditions. Our LSH 20-150 cell will operate safely and reliably up to +150°C.

Long shelf life

From less than 1% to maximum 3 % annual capacity loss in storage at +20°C, after the cell's stabilization period.

Extended operating life

Typically more than 5 years, and up to 20 years or more for some applications.

High energy densities

Three to ten times greater than non-lithium systems.

Excellent behavior in humid environments

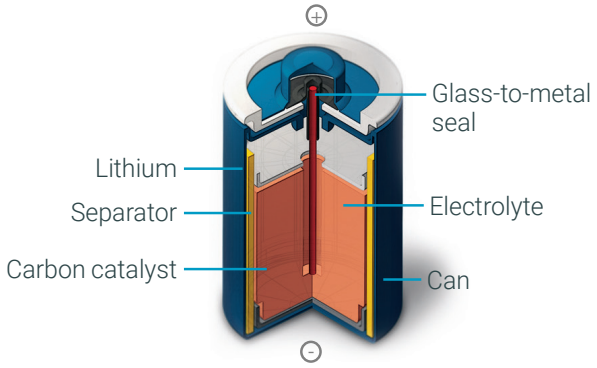
Corrosion-free, hermetically-sealed container.

Safety

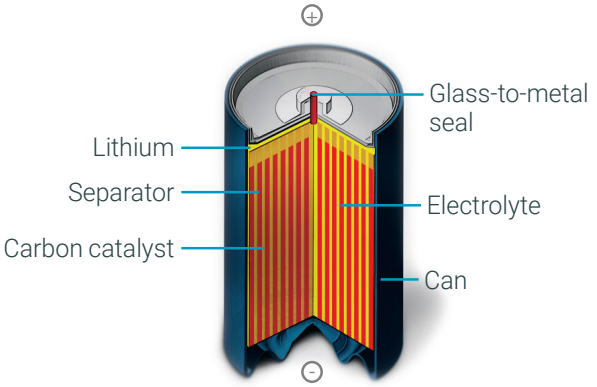
Saft's lithium cells meet UL and IEC standards UL 1642 and IEC 60086-4 and are certified in accordance with UN transport regulations. Most battery packs comply with European and US military standards. Several cell sizes from the (Li-$SOCl_2$) LS and (Li-MnO_2) M and LM product range have been independently assessed and relevant parts of IEC 60079-0 and IEC 60079-11 of the IECEx system. This allows them to be considered for applications in hazardous locations and potentially explosive atmospheres.

High quality cell construction

- Stainless steel or nickel-plated cans
- Laser welding & glass-to-metal seals
- Safety vents
- Built-in fuses or PTC
- Shutdown separator



Bobbin construction (LS and LSP ranges)



Spiral construction (LSH, LM, M, LO range)

Li-$SOCl_2$ product range

High energy, high voltage, high pulse capability, long life, wide temperature range

- Lowest self-discharge for extended operating life.
- Well controlled passivation.
- Operating temperature: - 60°C to +150°C
- The LS cell product range has been independently assessed and tested to the relevant parts of IEC 60079-0 and IEC 60079-11 in the IECEx system. This allows them to be considered for applications in hazardous locations and potentially explosive atmospheres.
- Non-flammable electrolyte.
- Excellent resistance to corrosion.
- Low magnetic signature.
- Bobbin LS cells are designed specifically for long term applications (5 to 20+ years), featuring a few µA base currents and periodic pulses, typically in the 5-150 mA range.
- Spiral LSH cells are designed for long term applications (2 to 10+ years), featuring low background currents and periodic pulses (typically in the 50 mA to 2 A range) and for applications requiring continuous currents from 0.1 A to 1.8 A.

	ENERGY						POWER		
	LS 14250	LS 14500	LS 17330	LS 17500	LS 26500*plus*	LS 33600	LSH 14 light	LSH 14	LSH 20
Cell size	1/2 AA	AA	2/3 A	A	C	D	C	C	D
Cell construction	Bobbin	Bobbin	Bobbin	Bobbin	Bobbin	Bobbin	Spiral	Spiral	Spiral
Nominal voltage	3.6 V	3.6 V	3.6 V	3.6 V	3.6 V	3.6 V	3.6 V	3.6 V	3.6 V
Nominal capacity	1.2 Ah	2.6 Ah	2.1 Ah	3.6 Ah	8.5 Ah	17.0 Ah	3.6 Ah	5.8 Ah	13.5 Ah
Max. continuous current	35 mA	50 mA	25 mA	100 mA	150 mA	250 mA	1.3 A	1.3 A	1.8 A
Max. pulse discharge rate	0.1 A	0.25 A	0.12 A	0.25 A	0.3 A	0.4 A	2.0 A	2.0 A	4.0 A
Max. outside diameter	14.62 mm	14.62 mm	16.5 mm	17.16 mm	26.0 mm	33.3 mm	26.0 mm	26.0 mm	33.3 mm
Max. height	25.13 mm	50.28 mm	33.4 mm	50.77 mm	50.4 mm	61.3 mm	50.4 mm	50.4 mm	61.3 mm
Typical weight	9 g	17 g	14.4 g	22 g	47 g	90 g	51 g	51 g	100 g
Operating temperature range	- 60 / + 85°C	- 60 / + 85°C	- 60 / + 85°C	- 60 / + 85°C	- 60 / + 85°C	- 60 / + 85°C	- 60 / + 85°C	- 60 / + 85°C	- 60 / + 85°C

Typical values relative to cells stored for one year or less at +30°C max; Performances vary according to discharge characteristics (current, duration, frequency), temperature conditions, storage conditions prior to usage and applications acceptable minimum voltage.

	HIGH TEMPERATURE		
	LS 14500 ht	LSH 20 hts	LSH 20 150
Cell size	AA	D	D
Cell construction	Bobbin	Spiral	Spiral
Nominal voltage	3.6 V	3.6 V	3.6 V
Nominal capacity	2.2 Ah	11.0 Ah	14.0 Ah
Max. continuous current	100 mA	1.0 A	300 mA
Max. pulse discharge rate	0.15 A	3.0 A	0.5 A
Max. outside diameter	14.62 mm	33.4 mm	32.05 mm
Max. height	50.28 mm	61.6 mm	61.7 mm
Typical weight	17 g	100 g	104.5 g
Operating temperature range	- 40 / + 150°C	- 60 / + 85°C	- 40 / + 150°C

Typical values relative to cells stored for one year or less at +30°C max; Performances vary according to discharge characteristics (current, duration, frequency), temperature conditions, storage conditions prior to usage and applications acceptable minimum voltage.

Li-$SOCl_2$ product range

The hybrid LSP range consists of a LS bobbin cell assembled in parallel with a pulse support component, selected to sustain high amplitude / long duration pulses. If you want other solutions, please contact Saft.

	HIGH PULSE		
	LSP 14250-H	LSP 14500-H	LSP 17330-H
Cell size	A	AA	2/3A
Cell construction	Hybrid	Hybrid	Hybrid
Nominal voltage	3.6 V	3.6 V	3.6 V
Nominal capacity	1.2 Ah	2.6 Ah	2.1 Ah
Max. continuous current	35 mA	50 mA	25 mA
Typical Pulse Capability	1 A for 3 seconds at + 20°C to 2 V		
Max. outside diameter	25.7 mm	15.2 mm	17.5 mm
Max. height	33.2 mm	52.7 mm	35.5 mm
Typical weight	15 g	22 g	20 g
Operating temperature range	- 20 / + 70°C	- 20 / + 70°C	- 20 / + 70°C

Typical values relative to cells stored for one year or less at +30°C max; Performances vary according to discharge characteristics (current, duration, frequency), temperature conditions, storage conditions prior to usage and applications acceptable minimum voltage.

	HIGH PULSE		
	LSP 17500-H	LSP 26500*plus*-H	LSP 33600-H
Cell size	A	C	D
Cell construction	Hybrid	Hybrid	Hybrid
Nominal voltage	3.6 V	3.6 V	3.6 V
Nominal capacity	3.6 Ah	8.5 Ah	17.0 Ah
Max. continuous current	100 mA	150 mA	250 mA
Typical Pulse Capability	1 A for 3 seconds at + 20°C to 2 V		
Max. outside diameter	17.5 mm	26.5 mm	33.5 mm
Max. height	52.5 mm	51.5 mm	62.5 mm
Typical weight	28 g	52 g	92 g
Operating temperature range	- 20 / + 70°C	- 20 / + 70°C	- 20 / + 70°C

Typical values relative to cells stored for one year or less at +30°C max; Performances vary according to discharge characteristics (current, duration, frequency), temperature conditions, storage conditions prior to usage and applications acceptable minimum voltage.

Meter Life Analysis Service

The Meter Life analysis service is based on the evaluation of health and ageing process of the meters by measuring and testing a representative sample of batteries collected from the field.

Benefits

In depth analysis provides key information to determine the best-connected device asset management strategy. Our comprehensive facts and figures test reports lead to fully informed decision making for asset maintenance and/or renewal. You can have a better knowledge and expertise in battery ageing processes, solutions to detect and manage the parameters that influence battery lifetime. It's a fast service because you can have a completion within several weeks from the initial order. This service is available for all brands of Li-$SOCl_2$ batteries.

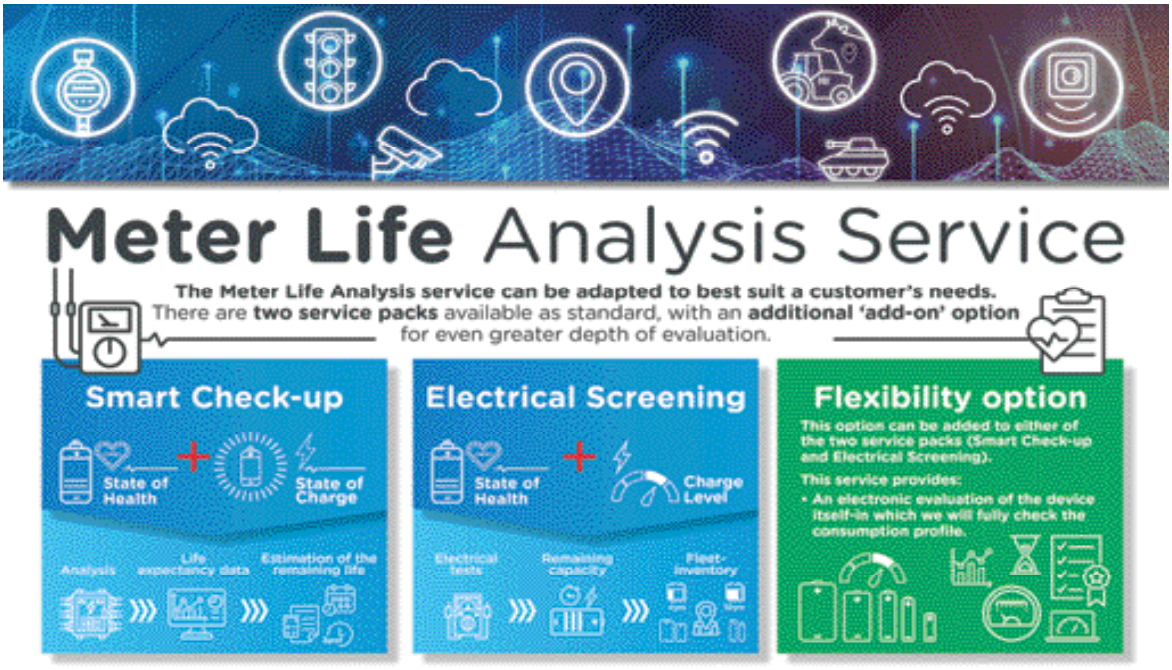
Saft's vision for service

Saft has always been known for the quality of its products and technology. They are now fully supported with high quality and responsive service of battery systems. Training, installation, maintenance, fleet management and e-supervision are all included within Saft's growing 'Service' portfolio.

Customer reviews:

'For more than 10 years, Saft has provided batteries for Eau de Paris's many different brands, makes and models of Automatic Meter Reading (AMR) systems that serve 99% of Parisian the actual power consumption of installed batteries. By performing laboratory analysis and then correlating the results with life expectancy data, Saft can accurately estimate the remaining service life of devices and equipment that are deployed across our fleet.' ***Louise Dauffy,*** *Metering, Metrology and Smart Metering / Water Distribution / Eau de Paris.*

' Birdz have been using Safts' IoT battery monitoring service for more than ten years. Today, this service continues to align perfectly with our monitoring program of approximately 5 million connected devices in the field, all of which are centrally monitored from France. This information is combined with a scheduled detailed physical analysis of batteries taken from the field, to provide our customers with a real-time operational view of their batteries, energizing the IoT fleet.' ***Benoît Bourrel,*** *CTO Birdz (leader in IoT environmental monitoring).*



Find out more

Li-SO_2 product range

High power, excellent functionality in cold environments

- Operating temperature: - 60°C to +70°C
- Non-flammable electrolyte
- Superior pulse capacity
- Excellent capacity above 1 A
- Superior power at - 40°C
- Wide acceptance for military use
- Well controlled passivation
- Low self-discharge during storage.
- Excellent energy density under high discharge rates.
- Fully hermetic seals up to +95° C.
- LO spiral cells are designed for applications featuring continuous currents in the 0.1-5 A range, with pulses as high as 20 A.

	POWER						HIGH POWER			
	LO 34 SX	LO 35 SX	LO 40 SX	LO 26 SX	LO 26 SXC	LO 25 SX	LO 29 SHX	LO 43 SHX	LO 30 SHX	LO 26 SHX
Cell size	1/3 C	2/3 C	2/3 thin D	D	D	Fat D	C	5/4 C	Thin D	D
Cell construction	Spiral	Spiral	Spiral	Spiral	Spiral	Spiral	Spiral	Spiral	Spiral	Spiral
Nominal voltage	2.8 V	2.8 V	2.8 V	2.8 V	2.8 V	2.8 V	2.8 V	2.8 V	2.8 V	2.8 V
Nominal capacity	1.0 Ah	2.2 Ah	3.5 Ah	7.75 Ah	9.2 Ah	8.0 Ah	3.75 Ah	5.0 Ah	5.75 Ah	7.5 Ah
Max. continuous current	0.5 A	2.0 A	2.0 A	2.5 A	2.5 A	2.5 A	2.5 A	2.5 A	3.0 A	4.0 A
Max. pulse discharge rate	1.0 A	5.0 A	5.0 A	5.0 A	10.0 A	10.0 A	6.0 A	10.0 A	10.0 A	15.0 A
Max. outside diameter	25.6 mm	25.9 mm	28.95 mm	34.2 mm	34.2 mm	39.5 mm	25.6 mm	26.0 mm	29.1 mm	34.2 mm
Max. height	20.45 mm	35.9 mm	42.29 mm	59.3 mm	59.3 mm	50.3 mm	50.4 mm	59.2 mm	62.5 mm	59.3 mm
Typical weight	16 g	30 g	40 g	85 g	85 g	96 g	40 g	53 g	63 g	85 g
Operating temperature range	- 40 / + 70°C	- 60 / + 70°C	- 60 / + 70°C	- 60 / + 70°C	- 60 / + 70°C	- 60 / + 70°C	- 60 / + 70°C	- 60 / + 70°C	- 60 / + 70°C	- 60 / + 70°C

Typical values relative to cells stored for one year or less at +30°C max; Performances vary according to discharge characteristics (current, duration, frequency), temperature conditions, storage conditions prior to usage and applications acceptable minimum voltage.

Li-MnO_2 product range

High power and high energy with no passivation

- Operating voltage: 3.0 V
- Operating temperature: - 40°C to +85°C
- Spiral construction
- Non-corrosive electrolyte
- Cells non-pressurised at room temperature
- High pulse capability
- Minimal voltage delay
- Competitive capacity at high current and low temperatures (- 40°C)
- Low self-discharge compatible with long storage duration and extended operating life.
- Spiral cells designed specifically for applications featuring continuous currents in the 0.1-5 A range, with pulses as high as 10 A.
- Excellent resistance to passivation, even after long-term storage in uncontrolled temperature environments.

	POWER							HIGH POWER		
	M 52	M 52 CV	M 56	M 19	M 20	M 20 CV	M 62	M 52 HR	M 19 HR	M 20 HR
Cell size	C	C	5/4 C	Short D	D	D	DD	C	Short D	D
Cell construction	Spiral	Spiral	Spiral	Spiral	Spiral	Spiral	Spiral	Spiral	Spiral	Spiral
Nominal voltage	3.0 V	3.0 V	3.0 V	3.0 V	3.0 V	3.0 V	3.0 V	3.0 V	3.0 V	3.0 V
Nominal capacity	5.6 Ah	5.3 Ah	6.7 Ah	10.3 Ah	12.6 Ah	12.5 Ah	33.0 Ah	4.8 Ah	10.3 Ah	11.5 Ah
Max. continuous current	2.0 A	2.0 A	2.5 A	3.0 A	3.5 A	3.5 A	6.0 A	2.0 A	4.0 A	4.0 A
Max. pulse discharge rate	4.0 A	4.0 A	6.0 A	7.5 A	8.0 A	8.0 A	12.0 A	5.0 A	10.0 A	10.0 A
Max. outside diameter	26.2 mm	25.7 mm	26.2 mm	33.5 mm	34.2 mm	33.8 mm	42.5 mm	26.2 mm	33.5 mm	34.2 mm
Max. height	51.5 mm	51.5 mm	61.5 mm	58.5 mm	61.5 mm	61.5 mm	133 mm	51.5 mm	58.5 mm	61.5 mm
Typical weight	58 g	59 g	70 g	105 g	117 g	120 g	355 g	59 g	107 g	117 g
Operating temperature range	- 40 / + 72°C	- 40 / + 72°C	- 40 / + 72°C	- 40 / + 72°C	- 40 / + 72°C	- 40 / + 72°C	- 40 / + 72°C	- 40 / + 72°C	- 40 / + 72°C	- 40 / + 72°C

Typical values relative to cells stored for one year or less at +30°C max; Performances vary according to discharge characteristics (current, duration, frequency), temperature conditions, storage conditions prior to usage and applications acceptable minimum voltage.

	POWER				ATEX/IECEx certified*	
	LM 17130	LM 17500	LM 26500	LM 33600	M 52 EX SV*	M 20 EX SV*
Cell size	1/3 A	A	C	D	C	D
Cell construction	Spiral	Spiral	Spiral	Spiral	Spiral	Spiral
Nominal voltage	3.0 V	3.0 V	3.0 V	3.0 V	3.0 V	3.0 V
Nominal capacity	0.5 Ah	3.3 Ah	7.75 Ah	13.4 Ah	5.6 Ah	12.4 Ah
Max. continuous current	0.3 A	1.5 A	2.0 A	4.0 A	2.0 A	3.5 A
Max. pulse discharge rate	0.4 A	2.0 A	4.0 A	8.0 A	4.0 A	8.0 A
Max. outside diameter	16.7 mm	17.5 mm	26.5 mm	34.2 mm	26.2 mm	34.2 mm
Max. height	16.33 mm	51.5 mm	51.5 mm	61.5 mm	51.5 mm	61.5 mm
Typical weight	8 g	28 g	61 g	113 g	58 g	115 g
Operating temperature range	- 40 / + 85°C	- 40 / + 85°C	- 40 / + 85°C	- 40 / + 85°C	- 40 / + 72°C	- 40 / + 72°C

Typical values relative to cells stored for one year or less at +30°C max; Performances vary according to discharge characteristics (current, duration, frequency), temperature conditions, storage conditions prior to usage and applications acceptable minimum voltage.

*Cells with ATEX/IECEx component certificates according to (EN) IEC 60079-0 /-11 and manufactured under the standard ISO/IEC 80079-34 (Explosive atmospheres - Part 34: Application of quality management systems for Ex Product manufacture).

Saft rechargeable lithium-ion

Cutting-edge technology for high performance

Two distinct technologies

Lithium mixed oxide (NMC/NCA) for MP xlr and VL xlr (energy applications), with the MP ise specially designed as an ATEX compatible component. NMC technology for MP xtd (extended life and temperatures).

Extended operating life

In most circumstances, Saft's Li-ion technologies will more than double the operating lifetime as compared to competitor's cells. This extended life can take place over a broad temperature range, beyond that of most commercial cells.

Wide temperature range

Saft's Li-ion technologies offer unique performances in unregulated outdoor conditions or in extreme conditions, either hot or cold.

Rugged design

Saft's Li-ion cells and batteries are designed to meet the harsh environments of industrial & defence applications.

Safety

All of Saft's Li-ion cells meet the relevant UL and IEC standards, and are certified in accordance with UN transport regulations. Our military batteries comply with European and US military standards. Saft's MP ise cells are compatible with IEC 60079-11 requirements for intrinsic safety. Contact Saft for further details.

Flexibility of design

A range of formats including prismatic and cylindrical.

High quality cell construction

MP xtd and MP ise cells have an aluminium container, while the MP xlr and VL xlr cells have a stainless steel container. All cell designs have a safety vent, circuit breaker and shutdown separator.

Diagram MP xtd/ise cells

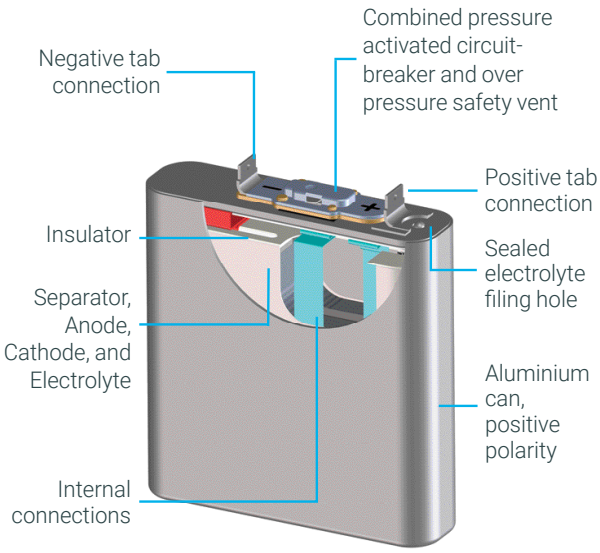
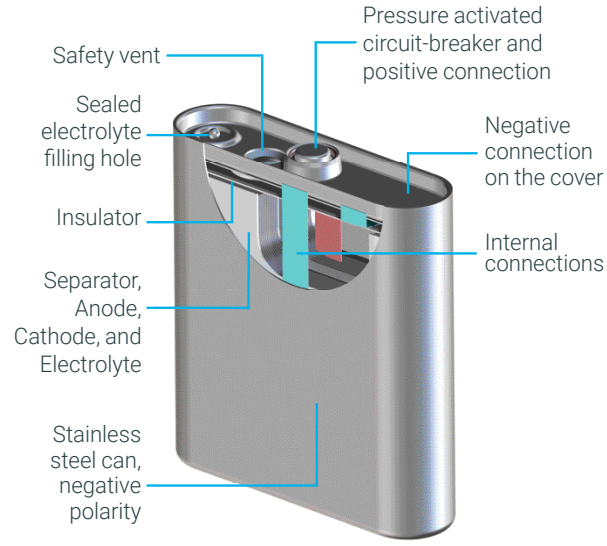


Diagram MP xlr cells



Li-ion product range

Greater energy density, wider temperature range and longer life

- Extended lifetime in cycling, floating and calendar conditions, even at high temperature
- Unrivalled operating temperature range:
  - 35°C to +60°C for Saft's MP xlr range and
  - 40°C to +85°C for Saft's MP xtd range
- High operating voltage: 4.2 V - 2.5 V range
- Unrivalled low and high temperature performance
- High energy density: up to 364 Wh/l and 165 Wh/kg
- Maintenance-free reliability
- Low life cycle cost
- Powering portable equipment in potentially explosive atmospheres: Saft's MP ise cells are compatible with IEC 60079-11 requirements for intrinsic safety. Consult Saft for further details.

	ENERGY				EXTENDED LIFE & TEMPERATURE	
	VL 34570 xlr	MP 144350 xlr	MP 174865 xlr	MP 176065 xlr	MP 174565 xtd	MP 176065 xtd
Form factor	Cylindrical D	Prismatic	Prismatic	Prismatic	Prismatic	Prismatic
Nominal voltage	3.65 V	3.65 V	3.65 V	3.65 V	3.65 V	3.65 V
Nominal capacity	5.4 Ah	2.6 Ah	5.3 Ah	6.8 Ah	4.0 Ah	5.6 Ah
Max. continuous discharge current	11.0 A	5.0 A	10.0 A	14.0 A	8.0 A	11.0 A
Max. pulse discharge rate	21.0 A	10.0 A	21.0 A	27.0 A	16.0 A	22.0 A
Max. charge current	5.4 A	2.6 A	5.0 A	6.8 A	4.0 A	5.6 A
Cycle life *(Cycled to 70 % of the cells original capacity)*	>3600 (100 % DoD, C/2-C/2, + 20°C)	1100 (100 % DoD, C-C/2, + 20°C)	950 (100 % DoD, C-C/2, + 20°C)	1800 (100 % DoD, C-C/2, + 20°C)	2700 (100 % DoD, C-C/2, + 25°C)	2700 (100 % DoD, C-C/2, + 25°C)
Typical weight	130 g	66 g	121 g	150 g	97 g	135 g
Discharge temperature range	- 35 / + 60°C	- 35 / + 60°C	- 35 / + 60°C	- 35 / + 60°C	- 40 / + 85°C	- 40 / + 85°C
Charge temperature range	- 30 / + 60°C	- 30 / + 60°C	- 30 / + 60°C	- 30 / + 60°C	- 30 / + 85°C	- 30 / + 85°C

Typical values relative to cells stored for one year or less at +30°C max; Performances vary according to discharge characteristics (current, duration, frequency), temperature conditions, storage conditions prior to usage and applications acceptable minimum voltage.

	IECEx certified component cells and batteries - IEC 60079-11 (10.5.2 and 10.5.3 (b)			
	MP 174565 ise[1]	MP 176065 ise[1]	1s1p INT174565 isr FL	1s1p INT176065 isr FL
IECEx ExTR	FR/INE/ExTR18.0022/00	FR/INE/ExTR18.0024/00	FR/INE/ExTR19.0047/00	FR/INE/ExTR19.0047/00
Form factor	Prismatic	Prismatic	Prismatic	Prismatic
Nominal voltage	3.65 V	3.65 V	3.65 V	3.65 V
Nominal capacity	4.0 Ah	5.6 Ah	4.0 Ah	5.6 Ah
Max. continuous discharge current	8.0 A	11.0 A	8.0 A	11 A
Max. pulse discharge rate	16.0 A	22.0 A	16.0 A	22.0 A
Max. charge current	4.0 A	5.6 A	4.0 A	5.6
Cycle life *(Cycled to 70 % of the cells original capacity)*	2300 (100 % DoD, 2-C/C, + 25°C)	2200 (100 % DoD, 2-C/C, + 25°C)	2300 (100 % DoD, 2-C/C, + 25°C)	2200 (100 % DoD, 2-C/C, + 25°C)
Typical weight	97 g	135 g	107 g	155 g
Discharge temperature range	- 30 / + 60°C	- 30 / + 60°C	- 30 / + 60°C	- 30 / + 60°C
Charge temperature range	- 30 / + 60°C	- 30 / + 60°C	- 30 / + 60°C	- 30 / + 60°C
Part number	70345Q	70346R	70462J	70463K

Typical values relative to cells stored for one year or less at +30°C max; Performances vary according to discharge characteristics (current, duration, frequency), temperature conditions, storage conditions prior to usage and applications acceptable minimum voltage.

IECEx certified products are manufactured under the standard ISO/IEC 80079-34:2018. Explosive atmospheres - Part 34: Application of quality management systems for Ex Product manufacture.

Beyond cell manufacturing, offering high-value services and expertise

Battery Packs for a wide array of applications and environments

- High/Low Temperatures
- Complex fit in to enclosures
- Hazardous Locations (Atex)

Battery Packs designed and built to meet industry standards of safety and compliance in challenging markets such as military, IoT, medical and security.

Full design process supported by Saft, from conception and technical feasibility through to preproduction, and volume mass production.

Saft battery packs are made only with Saft- manufactured cells, ensuring a full turn-key solution, and providing traceability to customers.

Our capability is from simple, high volume battery packs to complex, niche requirements.

Energizing IoT

How to read a datasheet, Things to know before transporting lithium batteries, 5 tips to charge to lithium-ion batteries…

From basics to advanced technical topics, we are sharing with you all the resources you need to master the battery power topic and make the most of your Saft batteries

Access here to read the blog Energizing IoT | Saft | Batteries to energize the world (saft.com)

IoT Smart Tools

Looking for the best battery to match your use case? Whether you are at the beginning or at an advanced stage of your smart device development, our tools will help you find the right battery for your project. If you are at an early stage of your project, the **Smart Selector** can help you —in just seven steps— discover which batteries match your use case, how much space you need to leave in your product design to accommodate them, an average estimation of their lifetime, and their price level. You can then edit the parameters of your application to find out in real time their impact on your battery choice. You can download a customized report, for free, at the end of the process.

IoT Smart Tools

Meter Life Analysis

Meter Life Analysis is an innovative service that enables utilities to take the guesswork out of their IoT tools asset-management decision-making processes. By drawing on real-life information, on the field, gathered by Saft from batteries installed in their fleet of connected tools, utilities from IoT market can take fully-informed decisions. They are able to manage their fleet by keeping meters in service for an extended period of time or bringing forward a planned replacement program.

Access here to explore our Meter Life Analysis I Saft4U (saft.com)

Additional information on primary and rechargeable cells

Whether you choose from one of our three primary lithium technologies or from our rechargeable lithium-ion range, Saft has the right lithium cell or battery for your industrial application.

The Saft Li-$SOCl_2$ product range offers high energy and a high open circuit voltage, with the spiral cells offering high pulse capability coupled with a long life and a wide temperature range. Want to know more? Scan the QR Code or click on the link.

The Saft Li-SO_2 products feature a very high surface area with spiral electrodes, offering high power and maximum current pulse capability with excellent functionality in extreme cold environments. Want to know more? Scan the QR Code or click on the link.

The Saft Li-MnO_2 products feature a very high surface area with spiral electrodes, offering high power and maximum current pulse capability with excellent functionality in extreme cold environments. Want to know more? Scan the QR Code or click on the link.

The Saft Li-ion MP and VL products boast strong nominal capacities with a long cycle-life, and a wide operational temperature range, with multiple built-in safety features at the cell level. Want to know more? Scan the QR Code or click on the link.

Transportation

Wondering where you can find out how to ship your products containing Lithium batteries or to ship Lithium batteries as spare parts? Look no further, batteriestransport.org is an industry initiative designed to make this task as easy as possible. Want to know more? Scan the QR Code or click on the link.

Environmental Responsibility

Respect for the environment is a Saft priority. Our batteries are emissions-free and we are reducing their entire environmental footprint. We take legal requirements on health and safety and environmental protection as a minimum.

PLATINUM Top 1%
2023
ecovadis
Sustainability Rating

Saft has launched a sustainability initiative, Program Net Zero, consisting of 5 pillars:

Goal

The sustainable and ethical supply of minerals (e.g. nickel, cobalt, cadmium & lithium).

Saft does everything it can to avoid including any unethically mined minerals in the manufacture of its electrodes and batteries and has developed a Code of Conduct to this end.

To ensure that our suppliers and subcontractors share our values, we ask that they sign and return a formal agreement (referred to as 'Ethics Letter') that summarizes the Code's principles. We also ask that they do the same for their own suppliers and subcontractors. The agreement covers three areas - social responsibility, ethics and environmental responsibility.

Ethics letter

Environmental responsibility

We energize the world.

On land, at sea, in the air and in space.

Saft

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