

Primary lithium batteries

Selector guide



Saft lithium batteries

meeting your needs...

For more than 32 years, Saft has pioneered the development and production of primary lithium cells and battery packs in Europe, North America and Asia/Pacific.

Autonomy, power, voltage, shape, weight, service life, price... Saft knows how to tailor battery solutions you can count on.

Saft is a world specialist in the design and manufacture of high-tech batteries for professional, industrial, space and military uses. With approximately 3,900 employees worldwide, Saft is present in 18 countries and operates two R&D centers.

Five manufacturing sites and an extensive sales network enable the Saft Lithium Battery Division to serve its customers worldwide with a product range that covers the three main primary lithium chemistries of today.

Among recognized characteristics of the Saft spirit worldwide are quality, performance, reliability, openness and an ability to meet the most demanding challenges. Take advantage of them for your applications!

Lithium power at your service

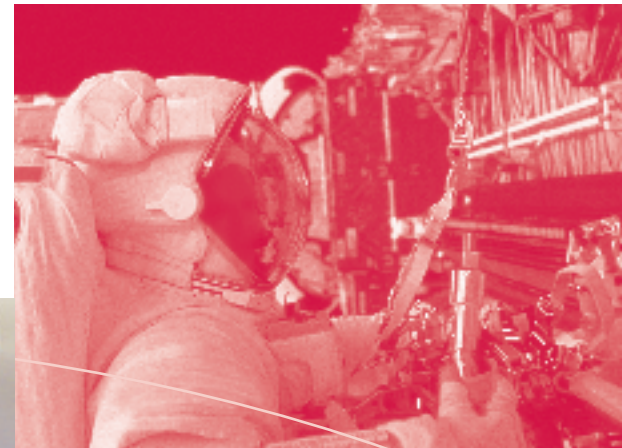
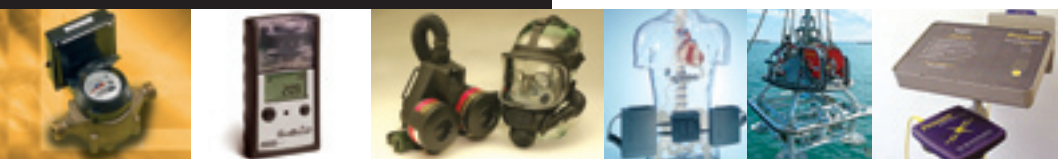
Lithium is a light metal which exhibits an exceptional specific capacity (3.86 Ah/gram) and unique electrochemical characteristics.

Combining lithium with manganese dioxide (MnO_2) powder or low-freezing point liquid cathode materials such as thionyl chloride ($SOCl_2$) or sulfur dioxide (SO_2), results in batteries with high energy, low weight, reduced self-discharge rate, and ability to operate under extreme conditions.

Saft's lithium products

Three lithium chemistries are currently available:

- Lithium-thionyl chloride ($Li-SOCl_2$) in *LS/LSH* 3.6 V cells,
- Lithium-sulfur dioxide ($Li-SO_2$) in *LO/G* 3.0 V cells,
- Lithium-manganese dioxide ($Li-MnO_2$) in *LM/M* 3.0 V cells.



...exceeding your expectations

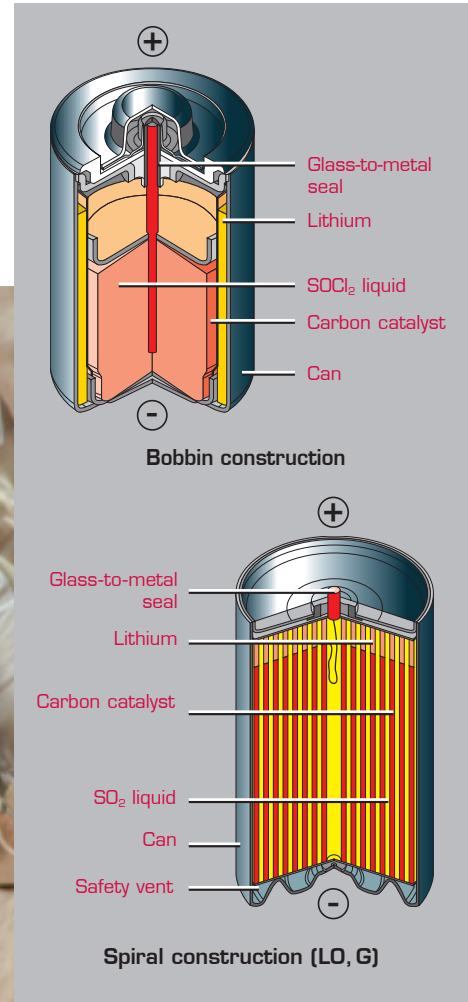
The LS cells are *cylindrical* and based on the high-energy concentric "bobbin" electrode configuration. They are available in *standard* and "W" versions according to the elevated temperature characteristics of the envisioned applications.

The LSH, LO/G and LM/M cells are also *cylindrical* but use the power-optimized "coiled" and "spiral" electrode constructions. The Li-SO₂ cells are available in several versions: "SX" and "G" series, "SHX" high pulse capability series and "SXC" high capacity series.

Corrosion-proof containers, hermetic sealing based on rugged glass-to-metal seals and TIG or laser welds, built-in safety vents and individual protection fuses are design features common to most of Saft's lithium cells.

The LS, LSH, LO/G and LM/M cells are available as single units (with different optional finishes) or assembled within battery packs.

Whatever your application, you will probably find a Saft lithium battery able to meet your particular requirements. If not, custom-made solutions can be developed within your time-to-market constraints.



Saft primary lithium batteries: applications

	Memory back-up	Real-time clocks	Utility metering AMR	Security Alarms	Electronic toll collection	Automotive electronics	Radio communication	Emergency location Buoys	Lighting Night vision	Medical defibrillators	Downhole logging	Meteorology Space	Professional electronics	GPS/GSM tracking
LM/M spirals			○	●		●	●	●	●	●		●	●	●
LS small bobbins (½ AA, AA, ¾ A, A)	●	●	●	●	●	●		●	●		●		●	●
LS large bobbins (C, D)	●		●	●		○		●				●	●	
LSH spirals			○	●		○	●	●	●		●	●	●	●
LO/G spirals			○	●		●	●	●	●	●		●	●	●

● recommended

○ possible

Key features

Primary cells and batteries are not rechargeable.

- **High and stable operating voltage**
 - Above 3 V for LS and LSH cells.
 - Above 2 V for LO/G and LM/M cells.
- **Wide current capability range**

From a few microamperes base current for the small LS cells to more than 10 A pulses for some LO/G and LM/M cells.
- **Wide operating temperature range**

From -60°C up to $+85^{\circ}\text{C}$ (Standard cells) depending on cell type, current drain and environment conditions.
- **High operating temperature – spiral cell series**

Operating safely and reliably up to 150°C .
- **Long shelf life**

Capacity loss in storage at $+20^{\circ}\text{C}$ below 1% (LS bobbins) and 3% (LSH, LO/G, LM/M spirals) per year.
- **Extended operating life**

Typically above 5 years, and up to 20 years for some applications.
- **High energy densities**

3-10 times greater than the non-lithium systems.
- **Excellent behavior in humid environments**

Corrosion-free stainless steel cell envelopes.
- **Disposal**

According to local regulations.
- **Adequate safety**

Most of Saft's lithium cells are UL (Underwriters Laboratories) and IEC 60086-4 recognized, and non-restricted for transport. Most battery packs comply with European and US Army standards. Several LS cell models comply with the IEC 60079-11 "Intrinsic Safety" specification for ATEX applications.
- **Storage**

The storage area should be clean, cool (preferably not exceeding $+30^{\circ}\text{C}$), dry and ventilated.
- **Logistic**

The small LS cells are manufactured in France, UK and China.

Saft primary lithium chemistries: specific qualities

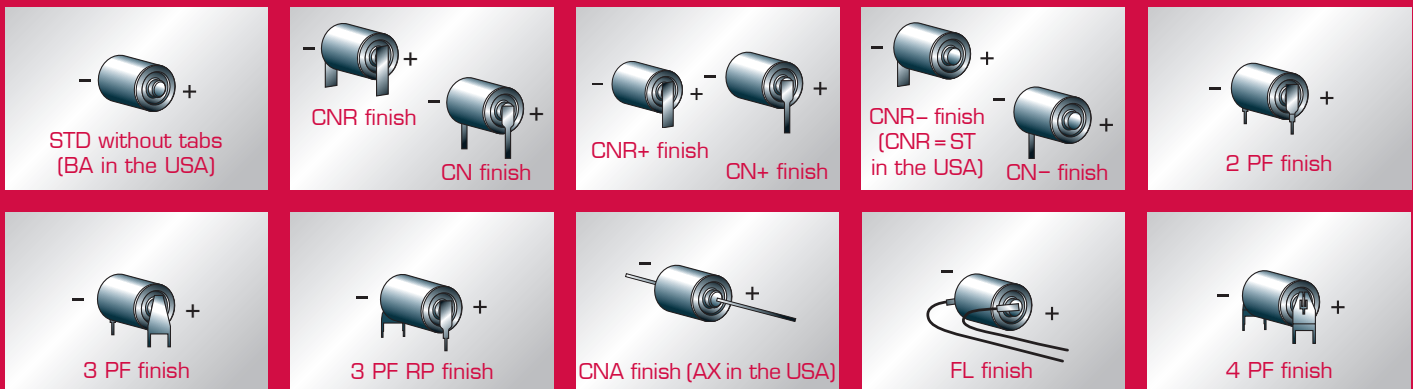
- **Li-SOCl₂**
(LS, LSH cell series)
 - Bobbin, coil or spiral construction
 - Operating voltage $> 3\text{ V}$
 - Ability to operate from -60 to $+85^{\circ}\text{C}$
 - Non-flammable electrolyte
 - Cells non-pressurized at room temperature
 - Hermeticity guaranteed up to $+120^{\circ}\text{C}$
 - Unrivaled nominal capacities (LS)
 - High temperature LSH cell series up to $+150^{\circ}\text{C}$
 - ▶ The LS "W" cell versions are recommended for use in applications with widely fluctuating temperature (up to $+95^{\circ}\text{C}$), such as electronic toll collection.
 - ▶ The LO "SHX" cell versions offer superior pulse capability for discharges not exceeding the declared voltage cut-off.
- **Li-SO₂**
(LO/G cell series)
 - Spiral construction
 - Non-flammable electrolyte
 - Superior pulse capability
 - Excellent capacity above 1 A
 - Superior power at -40°C
 - Hermeticity guaranteed up to $+95^{\circ}\text{C}$
 - Wide military acceptance
- **Li-MnO₂**
(LM/M cell series)
 - Spiral construction
 - Non-corrosive electrolyte
 - Cells non-pressurized at room temperature
 - Spiral cells with good pulse capability
 - Minimal voltage delay
 - Competitive capacity at high current and low temperature (-40°C)

Saft lithium cell series: performance data

Enclosed data relates to batteries aged up to 12 months and properly stored. Consult Saft regarding specific pulse conditions or usage following prolonged storage and/or exposure to extreme temperatures.

- Nominal capacity at +20°C and 2 V discharge cut-off (continuous current).
- Maximum recommended pulse current: varies according to pulse characteristics (duration, frequency), temperature conditions, cell storage conditions prior to usage and the application's acceptable minimum voltage. The use of parallel capacitor to enhance the voltage at the beginning of pulses might be recommended. Consult Saft.
- Transport status: according to UN Model Regulations Ref. ST/SG/AC.10/1 Revision 15 (2007) and Manual of Tests and Criteria Ref. ST/SG/AC.10/11 Revision 4, 2003.

Examples of standard individual cell tabbing arrangements



Other cell finishes are available upon request. Check availability and dimensions of tabbing arrangement for considered cell.

Examples of standard battery packs configurations



Primary lithium batteries

Li-SOCl₂ range



Li-SOCl₂ cells

Production site	Size	Open circuit voltage	Nominal voltage	Nominal capacity (drain) (2.0 V cut-off)	Maximum recommended continuous current	Operating temperature range	Outside diameter max.	Height max.	Typical weight	UL recognition	Transport status
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Small LS cells

LS 14250	UK-F-PRC	½ AA	3.67 V	3.6 V	1.2 Ah (1 mA)	35 mA	-60/+ 85°C*	14.55 mm	25.15 mm	8.9 g	yes	Non-restricted
LS 14250W	F-PRC	½ AA	3.67 V	3.6 V	1.2 Ah (1 mA)	20 mA	-60/+ 95°C*	14.55 mm	25.15 mm	8.9 g	yes	Non-restricted
LS 14500	UK-F-PRC	AA	3.67 V	3.6 V	2.6 Ah (2 mA)	50 mA	-60/+ 85°C*	14.55 mm	50.30 mm	16.7 g	yes	Non-restricted
LS 14500Ex	UK-PRC	AA	3.67 V	3.6 V	2.6 Ah (2 mA)	50 mA	-60/+ 85°C*	14.55 mm	50.30 mm	16.7 g	yes	Non-restricted
LS 14500W	F-PRC	AA	3.67 V	3.6 V	2.6 Ah (1 mA)	30 mA	-60/+ 95°C*	14.55 mm	50.30 mm	16.7 g	yes	Non-restricted
LS 17330	UK	¾ A	3.67 V	3.6 V	2.1 Ah (3 mA)	25 mA	-60/+ 85°C*	16.50 mm	33.40 mm	14.4 g	yes	Non-restricted
LS 17500	F	A	3.67 V	3.6 V	3.6 Ah (3 mA)	100 mA	-60/+ 85°C*	17.13 mm	50.90 mm	21.9 g	yes	Non-restricted

*Cells leakproof up to +120°C

Large LS cells

LS 26500	F	C	3.67 V	3.6 V	7.7 Ah (4 mA)	150 mA	-60/+ 85°C*	26.00 mm	49.1 to 50.4 mm***	48 g	yes	Class 9
LS 33600**	F	D	3.67 V	3.6 V	17.0 Ah (5 mA)	250 mA	-60/+ 85°C*	33.40 mm	60.2 to 61.6 mm***	90 g	yes	Class 9

*Cells leakproof up to +120°C

**Low Magnetic cell versions available

***Depending on cell finish

LSH spiral cells

LSH 14	F	C	3.67 V	3.6 V	5.8 Ah (15 mA)	1.3 A	-60/+ 85°C*	26.00 mm	50.40 mm	51 g	yes	Class 9
LSH 14 "light"	F	C	3.67 V	3.6 V	3.6 Ah (15 mA)	1.3 A	-60/+ 85°C	26.00 mm	50.40 mm	51 g	—	Non-restricted
LSH 20**	F	D	3.67 V	3.6 V	13.0 Ah (15 mA)	1.8 A	-60/+ 85°C*	33.40 mm	61.60 mm	100 g	yes	Class 9
LSH 20-150	F	D	3.67 V	3.6 V	14.0Ah(300 mA)***	300 mA	-40/+ 150°C	32.05 mm	61.70 mm	104.5g	—	Class 9
LSH DD-150	F	DD	3.67 V	3.6 V	28.0Ah(600 mA)***	600 mA	-40/+ 150°C	33.0 mm	125.5 mm	215 g	—	Class 9

*Cells leakproof up to +120°C

**LSH 20 HTS cell version available

***Nominal capacity at +150°C

All LSH cells are fitted with individual 5 Amp fuse protection

Primary cells and batteries are not rechargeable.

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Li-SOCl₂ Military battery packs

	Cell type construction*	Open circuit voltage	Nominal voltage	Voltage cut-off	Rated capacity	Maximum dimensions	Typical weight	Safety features	NATO Stock Number (NSN)	Typical applications
PS 40 A	4s1p LSH 14	14.7 V	14.0 V	10.0 V	4.6 Ah	108 x 65 x 49 mm	285 g	PTC 1.1 A**	6135-14-420-1760	Radiocommunication (TRPP 11/13)
PS 42 A	2s1p LSH 20	7.3 V	7.0 V	5.0 V	9.0 Ah	69.9 x 67.2 x 34 mm	230 g	PTC 3.5 A**	6135-14-434-0766	Radiocommunication (TRPP 39)
PS 48 B	5s2p LSH 20	18.3 V	17.5 V	12.6 V	18.0 Ah	212.4 x 72.7 x 68.5 mm	1150 g	PTC 1.85 A**	6135-14-451-7198	Radiocommunication (TRC 350)
PS 52 A	2s1p LSH 20	7.3 V	7.2 V	5.0 V	12.5 Ah	77.5 x 63.5 x 34.6 mm	225 g	PTC 2.0 A**	6135-14-459-9265	Radiocommunication (Portable PR4G)
PS 53 B	6s1p LSH 20	22.0 V	21.0 V	15.0 V	12.5 Ah	210.5 x 68.5 x 37.5 mm	720 g	PTC 2.5 A**	6135-14-459-9266	Radiocommunication (Portable PR4G)

* Xs Yp = Y parallel branches of X cells in series per branch

** Maximum hold current

Li-SOCl₂ Civil battery packs

	Cell type construction*	Open circuit voltage	Nominal voltage	Rated capacity	Maximum dimensions	Typical weight	Typical applications
LS 14250 MLB	1s1p LS 14250	3.67 V	3.6 V	1.2 Ah	16.8 x 28.6 mm	15 g	Metering, professional electronics
LS 9V	3s1p LS 14250	11.0 V	10.8 V	1.2 Ah	49.1 x 46.8 x 26.8 mm	29 g	Memory back-up, metering, smoke detectors, professional electronics
Lithopack	2s1p LS 14500	7.3 V	7.2 V	2.6 Ah	56.6 x 31.6 x 17.3 mm	34 g	Memory back-up, metering, professional electronics

Primary cells and batteries are not rechargeable.

This data sheet is an insert part of the Primary lithium batteries Selector Guide (ref 31048-2), where complementary information and data on features, safety and storage can be found.

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Société anonyme au capital de 31 944 000 €
 RCS Bobigny B 383 703 873
 Produced by Arthur Associates Limited.



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Primary lithium batteries

Li-SO₂ range



Li-SO₂ cells

Production site	Size	Open circuit voltage	Nominal voltage	Nominal capacity (drain) (2.0 V cut-off)	Maximum recommended continuous current	Operating temperature range	Outside diameter max.	Height max.	Weight	UL recognition	Transport status
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G/LO spiral cells

G 04/3	UK	½ AA	3.0 V	2.8 V	0.45 Ah (50 mA)	0.25 A	-60/+ 70°C*	14.2 mm	27.9 mm	8 g	—	Non-restricted
G 06/2	UK	AA	3.0 V	2.8 V	0.95 Ah (80 mA)	0.5 A	-60/+ 70°C*	14.2 mm	50.3 mm	15 g	—	Non-restricted
G 32/3	UK	⅔ A	3.0 V	2.8 V	0.8 Ah (80 mA)	0.75 A	-60/+ 70°C*	16.3 mm	34.5 mm	12 g	—	Non-restricted
G 36/2	UK	"long" A	3.0 V	2.8 V	1.7 Ah (80 mA)	1.5 A	-60/+ 70°C*	16.3 mm	57.7 mm	18 g	—	Non-restricted
LO 34 SX	USA	⅓ C	3.0 V	2.8 V	1.0 Ah (80 mA)	1.0 A	-60/+ 70°C*	25.9 mm	20.3 mm	16 g	yes	Non-restricted
LO 35 SX	USA	⅔ C	3.0 V	2.8 V	2.2 Ah (650 mA)	2.0 A	-60/+ 70°C*	25.9 mm	35.9 mm	30 g	yes	Non-restricted
G 52/3	UK	C	3.0 V	2.8 V	3.2 Ah (1.0 A)	2.5 A	-60/+ 70°C*	25.6 mm	49.5 mm	47 g	—	Class 9
LO 29 SHX	USA	C	3.0 V	2.8 V	3.75 Ah (0.25 A)	2.5 A	-60/+ 70°C*	25.6 mm	50.4 mm	40 g	yes	Class 9
G 54/3	UK	¾ C	3.0 V	2.8 V	5.0 Ah (0.2 A)	2.5 A	-60/+ 70°C*	25.6 mm	60.2 mm	58 g	—	Class 9
LO 43 SHX	USA	¾ C	3.0 V	2.8 V	5.0 Ah (0.2 A)	2.5 A	-60/+ 70°C*	26.0 mm	59.2 mm	53 g	yes	Class 9
LO 40 SX	USA	⅔ "Thin" D	3.0 V	2.8 V	3.5 Ah (0.12 A)	2.0 A	-60/+ 70°C*	28.95 mm	42.29 mm	40 g	yes	Class 9
LO 30 SHX	USA	"Thin" D	3.0 V	2.8 V	5.75 Ah (0.2 A)	3.0 A	-60/+ 70°C*	29.1 mm	59.9 mm	63 g	yes	Class 9
G 26	UK	D	3.0 V	2.8 V	7.75 Ah (0.25 A)	2.5 A	-60/+ 70°C*	34.5 mm	59.8 mm	85 g	—	Class 9
LO 26 SX	USA	D	3.0 V	2.8 V	7.75 Ah (0.25 A)	2.5 A	-60/+ 70°C*	34.2 mm	59.3 mm	85 g	yes	Class 9
LO 26 SXC	USA	D	3.0 V	2.8 V	9.2 Ah (0.25 A)	2.5 A	-60/+ 70°C*	34.2 mm	59.3 mm	85 g	—	Class 9
LO 26 SHX	USA	D	3.0 V	2.8 V	7.5 Ah (1.0 A)	4.0 A	-60/+ 70°C*	34.2 mm	59.3 mm	85 g	yes	Class 9
LO 25 SX	USA	"Fat" D	3.0 V	2.8 V	8.0 Ah (0.27 A)	2.5 A	-60/+ 70°C*	39.5 mm	50.3 mm	96 g	yes	Class 9
LO 39 SHX	USA	F	3.0 V	2.8 V	11.5 Ah (1.0 A)	3.0 A	-60/+ 70°C*	31.9 mm	100.3 mm	125 g	yes	Class 9
G 22/6	UK	DD	3.0 V	2.8 V	16.5 Ah (0.5 A)	3.0 A	-60/+ 70°C*	33.3 mm	120.6 mm	175 g	—	Class 9
G 62/1	UK	"Long Fat DD"	3.0 V	2.8 V	34.0 Ah (1.0 A)	3.0 A	-60/+ 70°C*	41.7 mm	141.0 mm	300 g	—	Class 9

* Cells leakproof up to +85°C

Primary cells and batteries are not rechargeable.

Their internal impedance may rise versus time, especially in case of exposure at elevated temperature.



saft

Li-SO₂ Military battery packs

	Cell type construction*	Open circuit voltage	Nominal voltage	Voltage cut-off	Rated capacity	Maximum dimensions	Typical weight	NATO Stock Number (NSN)	Typical applications
BA 5112 A/U	4s1p LO 35 SX	12.0 V	11.2 V	8.0 V	2.3 Ah	77.8 x 57.2 x 39.1 mm	180 g	6135-01-235-4168	Radiocommunication (PRC 112)
BA 5557 A/U	5s1p x 2 LO 35 SX	15.0 V/ 30.0 V	14.0 V/ 28.0 V	10.0 V/ 20.0 V	4.4 Ah/ 2.2 Ah	100.1 x 106.3 x 37.3 mm	500 g	6135-01-088-2707	Radiocommunication
BA 5567 A/U	1s1p LO 34 SX	3.0 V	2.8 V	2.0 V	1.0 Ah	25.9 x 19.9 mm	20 g	6135-01-090-5363	Night vision
BA 5588 A/U	5s1p LO 40 SX	15.0 V	13.5 V	11.0 V	3.5 Ah	96 x 90 x 31 mm	295 g	6135-00-088-2708	Radiocommunication (AN/PRC 128)
BA 5590 A/U	5s1p x 2 LO 26 SX	15.0 V 30.0 V	13.5 V 27.0 V	10.0 V 20.0 V	15.0 Ah 7.5 Ah	127 x 111.8 x 62.2 mm	1020 g	6135-01-523-3037	Radiocommunication (with SOCI**) (AN/PRC/104/113/117/119)
BA 5590 B/U (2 sets of terminals)	5s1p x 2 LO 26 SX	15.0 V 30.0 V	13.5 V 27.0 V	10.0 V 20.0 V	15.0 Ah 7.5 Ah	127 x 111.8 x 62.2 mm	1020 g	6135-01-036-3495	Radiocommunication (AN/PRC 104/119)
BA 5590 HC	5s1p x 2 LO 26 SX	15.0 V 30.0 V	13.5 V 27.0 V	10.0 V 20.0 V	18.2 Ah 9.1 Ah	127 x 111.8 x 62.2 mm	1020 g	TBD	Radiocommunication (AN/PRC 104/113/117/119)
BA 5598 A/U	5s1p LO 25 SX	15.0 V	13.5 V	10.0 V	7.5 Ah	120.7 x 92 x 54 mm	680 g	6135-01-034-2239	Radiocommunication (PRC 25/74/77)
BA 5599 A/U	3s1p LO 26 SX	9.0 V	8.1 V	6.0 V	7.5 Ah	152 x 38 x 64 mm	450 g	6135-01-069-8575	Radio tester
BA 5600 A/U	3s1p LO 26 SX	9.0 V	8.1 V	6.0 V	7.5 Ah	185.9 x 39.4 mm	360 g	6135-01-168-2944	Communication terminal AN/PSC 2/cap
BA 5800 A/U	2s1p LO 26 SX	6.0 V	5.3 V	4.0 V	7.5 Ah	128.5 x 35.5 mm	220 g	6135-99-798-9851	Compact Air Supply Unit (CASU), GPS
BA 5847 B/U	2s1p LO 26 SX	6.0 V	5.3 V	4.0 V	7.5 Ah	95 x 64.8 x 38 mm	220 g	6135-01-090-5364	Radiocommunication Mine detector
BT 5313	9s1p LO 26 SHX	27.0 V	25.2 V	18.0 V	7.2 Ah	Special	1100 g	N/A	Missile launcher
BT 5790	5s1p LO 26 SX	15.0 V	14.0 V	10.0 V	7.5 Ah	186.5 x 35.7 x 66.7 mm	630 g	N/A	Radiocommunication
BT 5791	5s2p LO 26 SX	15.0 V	14.0 V	10.0 V	15.0 Ah	186.5 x 70.0 x 65.3 mm	1200 g	N/A	Radiocommunication
G 6-104 (C,D,E,F,G,H)	2s1p G20	6.0 V	5.6 V	4.0 V	7.5 Ah	128.5 x 35.5 mm	200 g	–	CAM
G 6-105	2s1p G52	6.0 V	5.6 V	4.0 V	3.2 Ah	55 x 28.1 x 56 mm	110 g	6135-99-658-9085	Aircraft probe
G 9-124	3s1p G20	9.0 V	8.4 V	6.0 V	7.5 Ah	110 x 42 x 83 mm	370 g	6135-14-383-9768	Missile
G 15-114	5s2p G06	15.0 V	14.0 V	9.6 V	1.9 Ah	90.6 x 40.3 x 71 mm	270 g	6135-99-795-4351	Radiocommunication + other applications
G 15-127	2 x 5s1p G62	2x15.0 V	2x14.0 V	2x10.0 V	34 or 68 Ah	216 x 152 x 92 mm	3500 g	6135-99-794-2896	Special forces
G 18-115	6s1p G20	18.0 V	16.8 V	12.0 V	7.5 Ah	131.6 x 66.8 x 128 mm	850 g	6135-99-795-4350	Radiocommunication + other applications
G 30-101	10s1p G20	30.0 V	28.0 V	20.0 V	7.5 Ah	184.5 x 73.5 x 80 mm	1500 g	6135-99-747-4430	Radiocommunication + other applications
G 30-102/B	10s1p G22	30.0 V	28.0 V	20.0 V	16.0 Ah	184 x 72.5 x 133 mm	2500 g	6135-99-840-0109	Radiocommunication + other applications
Li/3	3s1p LO 26 SX	9.0 V	8.4 V	6.0 V	7.5 Ah	110 x 42 x 81 mm	450 g	6135-14-383-9768	Missile launcher

* Xs Yp = Y parallel branches of X cells in series per branch

** SOCI: State of Charge Indicator

Primary cells and batteries are not rechargeable.

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Société anonyme au capital de 31 944 000 €

RCS Bobigny B 383 703 873

Produced by Arthur Associates Limited.



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Primary lithium batteries

Li-MnO₂ range



Li-MnO₂ cells

Production site	Size	Open circuit voltage	Nominal voltage	Nominal capacity (drain) (2.0 V cut-off)	Maximum recommended continuous current	Operating temperature range	Outside diameter max.	Height max.	Weight	UL recognition	Transport status
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LM spiral cells

LM 17130	USA	1/3 A	3.2 V	3.0 V	0.5 Ah (4.5 mA)	0.3 A	-40/+ 70°C	16.7 mm	16.6 mm	8.0 g	—	Non-restricted
LM 22150	USA	1/3 sub-C	3.2 V	3.0 V	0.9 Ah (40 mA)	0.4 A	-40/+ 70°C	22.8 mm	17.3 mm	15.0 g	—	Non-restricted
LM 33550	USA	D	3.2 V	3.0 V	12 Ah (250 mA)	4.0 A	-40/+ 70°C	34.2 mm	61.4 mm	120 g	—	Class 9
M 49	Germany*	3/4 sub-C	3.2 V	3.0 V	1.6 Ah (80 mA)	0.3 A	-40/+ 70°C	22.5 mm	32.0 mm	24.0 g	—	Class 9
M 52 HR	Germany*	C	3.2 V	3.0 V	4.8 Ah (150 mA)	2.0 A	-40/+ 70°C	26.2 mm	51.5 mm	59.0 g	—	Class 9
M 56	Germany*	5/4 C	3.2 V	3.0 V	6.7 Ah (150 mA)	2.5 A	-40/+ 70°C	26.2 mm	61.5 mm	70 g	—	Class 9
M 19	Germany*	"Short" D	3.2 V	3.0 V	9.5 Ah (150 mA)	3.0 A	-40/+ 70°C	33.5 mm	58.5 mm	105 g	—	Class 9
M 20	Germany*	D	3.2 V	3.0 V	12.6 Ah (150 mA)	3.5 A	-40/+ 70°C	34.2 mm	61.5 mm	117 g	—	Class 9
M 20 HR	Germany*	D	3.2 V	3.0 V	11.5 Ah (0.5 A)	4.0 A	-40/+ 70°C	34.2 mm	61.5 mm	117 g	—	Class 9
M 24 HR	Germany*	DD	3.2 V	3.0 V	20.0 Ah (2.0 A)	6.0 A	-40/+ 70°C	33.5 mm	110.5 mm	201 g	—	Class 9
M 62	Germany*	"Big" DD	3.2 V	3.0 V	33.0 Ah (1.6 A)	6.0 A	-40/+ 70°C	42.5 mm	133 mm	355 g	—	Class 9

* FRIWO cell series

Primary cells and batteries are not rechargeable.

Their internal impedance may rise versus time, especially in case of exposure at elevated temperature.



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Li-MnO₂ Military battery packs

Cell type construction*	Open circuit voltage	Nominal voltage	Voltage cut-off	Nominal capacity	Maximum dimensions	Weight	NATO Stock Number (NSN)	Typical applications
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BA 5368/U	4s1p LM 22150	12.8 V	12.0 V	9.0 V	0.9 Ah	76.2 x 26.9 mm	145 g	6135-01-455-7947	Radiocommunication (PRC-90-103-106-195)
BA 5372/U	2s1p LM 17130	6.4 V	6.0 V	4.0 V	0.5 Ah	16.5 x 33.0 mm	20 g	6135-01-214-6441	Radiocommunication (SINGARS)
BA 5390/U	5s1p x 2 LM 33550	16.5 V/33 V	15 V/30 V	10 V/20 V	24 Ah/12 Ah	127x111.8x62mm	1.41 kg/3.10 kg	6135-01-036-3495	Radiocommunication (AN/PBC 104/113/117/119)
3.M20**	3s1p M20	9.9 V	9.0 V	6.0 V	10.5 Ah	65 x 64 x 69 mm	360 g	—	EPIRB
4.M52 HR**	4s1p M52 HR	13.2 V	12.0 V	8.0 V	4.5 Ah	40x58.5x105 mm	270 g	6135-12-322-9102	ABC protective equipment
5.M20**	5s1p M20	16.5 V	15.0 V	10.0 V	10.5 Ah	100 x 110 mm	740 g	6135-12-310-5164	ABC protective equipment
6.M20**	6s1p M20	19.8 V	18.0 V	12.0 V	10.5 Ah	124 x 64 x 69 mm	710 g	6135-12-346-1035	EPIRB
6.M20**	6s1p M20	19.8 V	18.0 V	12.0 V	10.5 Ah	80 x 90 x 125 mm	950 g	—	Military use
10.M20**	10s1p M20	33.0 V	30.0 V	20.0 V	10.5 Ah	162 x 68 x 109 mm	1500 g	6135-12-339-0295	ABC protective equipment
MIRA**	10s1p M24 HR	33.0 V	30.0 V	20.0 V	20.0 Ah	133 x 72 x 184 mm	2500 g	6135-12-329-3740	Thermal sight system MIRA (for missile system MILAN)
MR 506**	6s1p M49	19.8 V	18.0 V	12.0 V	1.8 Ah	37 x 56 x 78 mm	200 g	6135-12-339-9599	Emergency radio
MR 509**	3s1p M52 HR	9.9 V	9.0 V	6.0 V	4.5 Ah	54 x 37 x 75 mm	180 g	6135-12-353-2558	Emergency radio
SEM 52**	3s1p M52 HR	9.9 V	9.0 V	6.0 V	4.5 Ah	65 x 33 x 78.5 mm	208 g	6135-12-308-9723	Radiocommunication (SEM 52)
SEM 70**	6s1p M20	19.8 V	18.0 V	12.0 V	10.5 Ah	38 x 72 x 191 mm	750 g	6135-12-309-8604	Radiocommunication (SEM 70)
SEM91/93**	3s1p M52 HR	9.9 V	9.0 V	6.0 V	4.5 Ah	65 x 33 x 78.5 mm	208 g	6135-12-355-0737	Radiocommunication (SEM 91/93)

* Xs Yp = Y parallel branches of X cells in series per branch

** FRIWO batteries

Primary cells and batteries are not rechargeable.

This data sheet is an insert part of the Primary lithium batteries Selector Guide (ref 31048-2), where complementary information and data on features, safety and storage can be found.

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Please find a list of our collection points on our web site: www.saftbatteries.com

In other countries, Saft assists its customers in finding environmentally sound recycling solutions. Please contact your sales representative for further information.

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