

Primary lithium battery

LS 14250

3.6 V Primary lithium-thionyl chloride (Li-SOCl₂)

High energy density

½ AA-size bobbin cell



Benefits

- High voltage response, stable during most of the lifetime of the application
- Wide operating temperature range (-60°C/+85°C)
- Low self-discharge rate (less than 1 % per year of storage at +20°C)
- Easy integration into compact systems
- Superior resistance to atmospheric corrosion

Key features

- Stainless steel container and end caps (low magnetic signature)
- Hermetic glass-to-metal sealing
- Non-flammable electrolyte
- Compliant with IEC 60086-4 safety standard and IEC 60079-11 intrinsic safety standard (class T4 assignment)
- Underwriters Laboratories (UL) Component Recognition
- Non-restricted for transport/ Non-assigned to Class 9 according to the UN Recommendations on the transport of dangerous goods – Model Regulations
- Manufactured in France, UK, China

Main applications

- Utility metering
- Automatic meter reading
- Alarms and security devices
- Tollgate systems
- Memory back-up
- Computer real-time clocks
- Tracking systems
- Automotive electronics
- Professional electronics

Cell size references

½ R6 – ½ AA

Electrical characteristics

(typical values relative to cells stored for one year or less at +30°C max.)

Nominal capacity		1.20 Ah
(at 1 mA +20°C 2.0 V cut-off. The capacity restored by the cell varies according to current drain, temperature and cut-off)		
Open circuit voltage	(at +20°C)	3.67 V
Nominal voltage	(at 0.1 mA +20°C)	3.6 V
Nominal energy		4.32 Wh

Pulse capability: Typically up to 100 mA
(100 mA/0.1 second pulses, drained every 2 mn at +20°C from undischarged cells with 10 µA base current, yield voltage readings above 3.0 V. The readings may vary according to the pulse characteristics, the temperature, and the cell's previous history. Fitting the cell with a capacitor may be recommended in severe conditions. Consult Saft)

Maximum recommended continuous current		35 mA
(Higher currents are possible, consult Saft)		

Storage	(recommended)	+30°C (+86°F) max
		(for more severe conditions, consult Saft)

Operating temperature range		-60°C/+85°C
		(-76°F/+185°F)
(Operation above ambient T may lead to reduced capacity and lower voltage readings at the beginning of pulses. Consult Saft)		

Physical characteristics

Diameter (max)		14.55 mm (0.57 in)
Height (max)		25.15 mm (0.99 in)
Typical weight		8.9 g (0.3 oz)
Li metal content		approx. 0.3 g

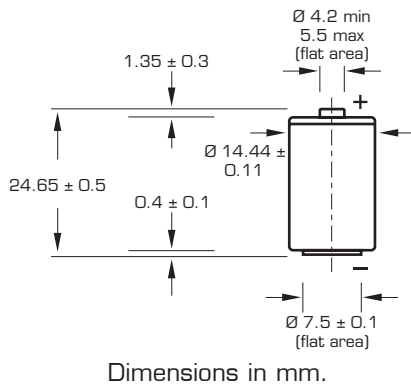
Available termination suffix

CN, CNR	radial tabs
2 PF, 3 PF, 3 PF RP, 4 PF	radial pins
CNA (AX)	axial leads
FL	flying leads...etc.

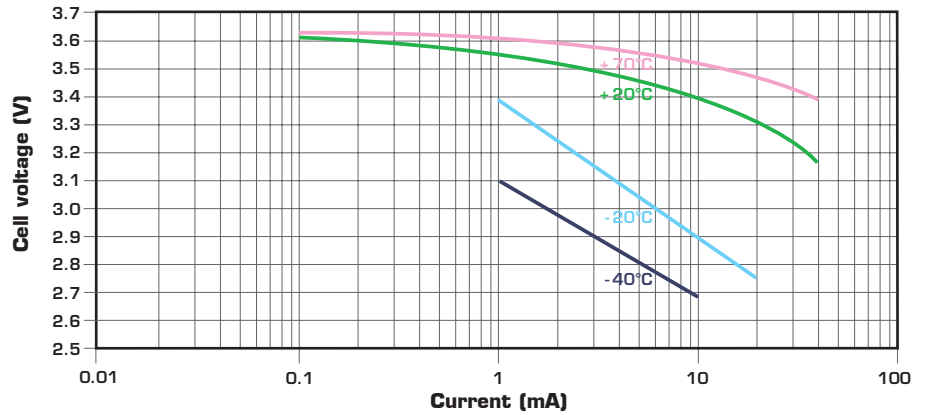


saft

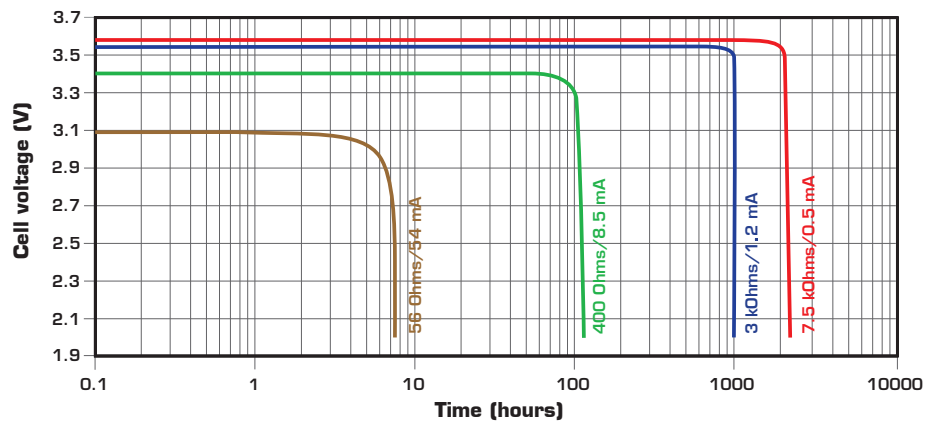
LS 14250



Voltage plateau versus Current and Temperature (at mid-discharge)



Typical discharge profiles at +20°C



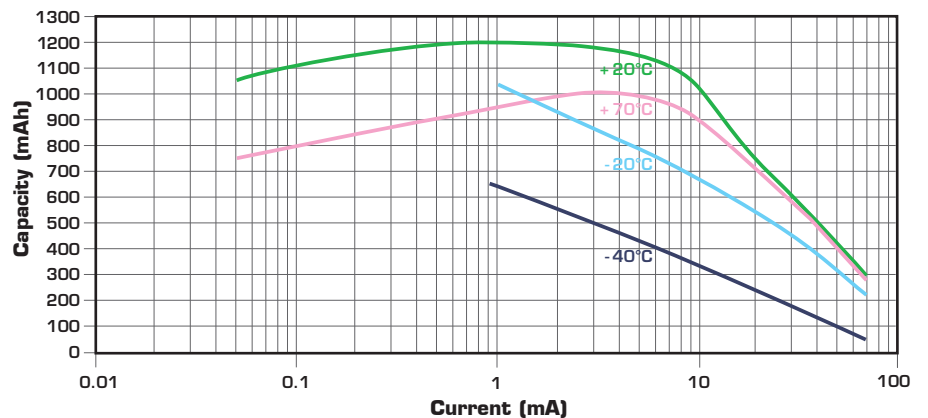
Storage

- The storage area should be clean, cool (*preferably not exceeding +30°C*), dry and ventilated.

Warning

- Fire, explosion and burn hazard.
- Do not recharge, short circuit, crush, disassemble, heat above 100°C (212°F), incinerate, or expose contents to water.
- Do not solder directly to the cell (*use tabbed cell versions instead*).

Restored Capacity versus Current and Temperature (2.0 V cut-off)



Saft

Specialty Battery Group

12, rue Sadi Carnot
93170 Bagnolet - France
Tel.: +33 (0)1 49 93 19 18
Fax: +33 (0)1 49 93 19 69

www.saftbatteries.com

Doc. N° 31072-2-0909

Information in this document is subject to change without notice and becomes contractual only after written confirmation by Saft.

For more details on primary lithium technologies please refer to Primary Lithium Batteries Selector Guide Doc N° 31048-2.

Published by the Communications Department.

Photo credit: Saft

Société anonyme au capital de 31 944 000 €
RCS Bobigny B 383 703 873

Produced by Arthur Associates Limited.



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

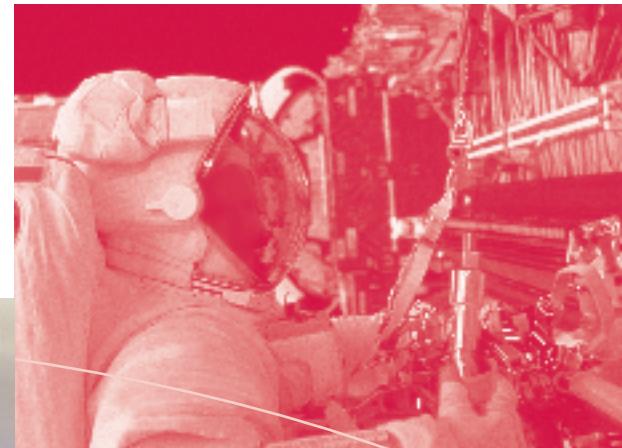
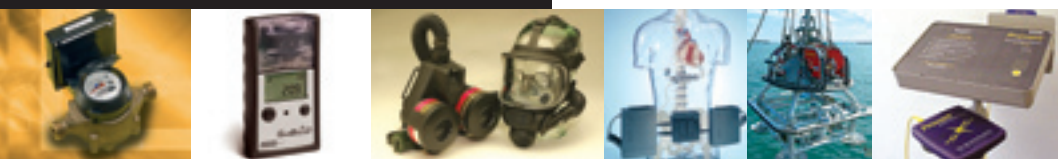
Lithium is a light metal which exhibits an exceptional specific capacity (3.86 Ah/gram) and unique electrochemical characteristics.

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

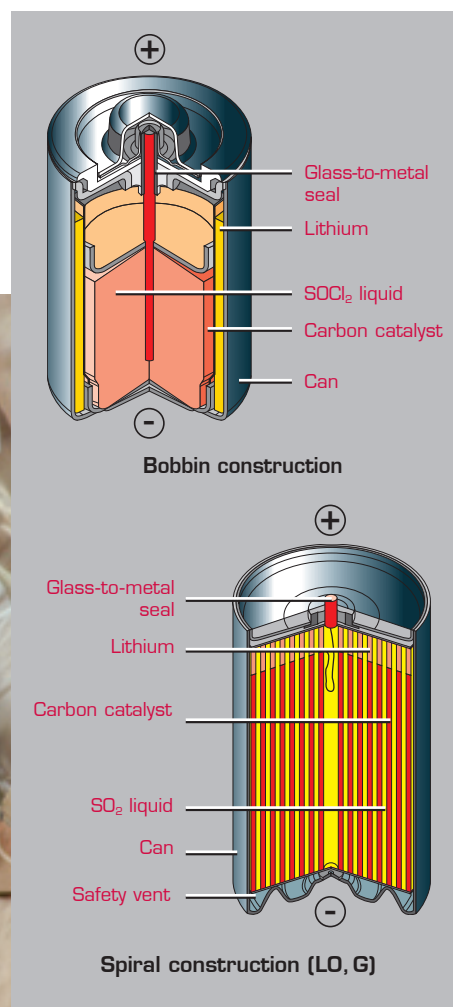
The LS cells are *cylindrical* and based on the high-energy concentric “*bobbin*” electrode configuration. They are available in *standard* and “*W*” versions according to the elevated temperature characteristics of the envisioned applications.

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

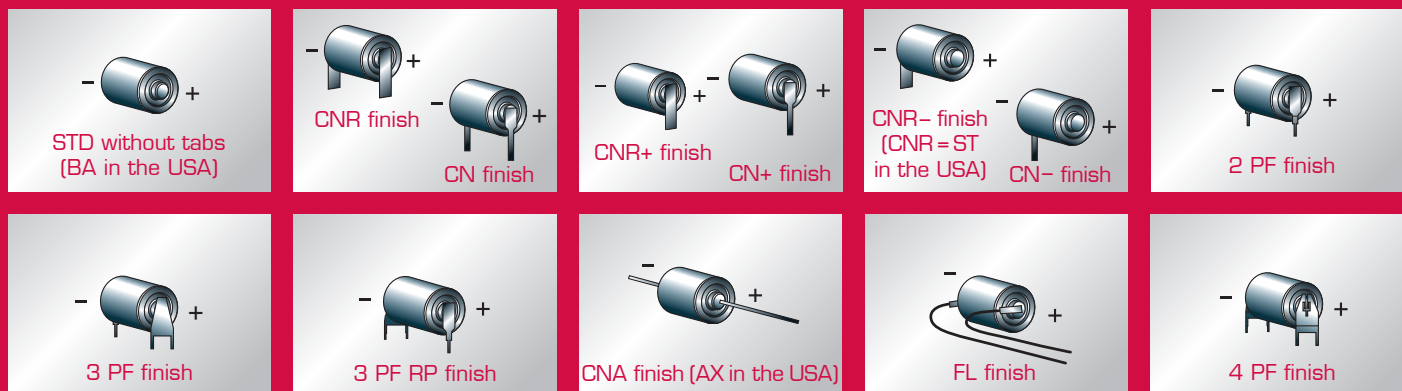
- **Li-SOCl₂**
(LS, LSH cell series)
 - Bobbin, coil or spiral construction
 - Operating voltage $> 3\text{ V}$
 - Ability to operate from -60 to $+85^{\circ}\text{C}$
 - Non-flammable electrolyte
 - Cells non-pressurized at room temperature
 - Hermeticity guaranteed up to $+120^{\circ}\text{C}$
 - Unrivalled nominal capacities (LS)
 - High temperature LSH cell series up to $+150^{\circ}\text{C}$
 - **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)
- 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.

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
-----------------	------	----------------------	-----------------	--	--	-----------------------------	-----------------------	-------------	----------------	----------------	------------------

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	14.0 Ah (300 mA)***	300 mA	-40/+ 150°C	32.05 mm	61.70 mm	104.5 g	—	Class 9
LSH DD-150	F	DD	3.67 V	3.6 V	28.0 Ah (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.

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



saft

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.

Saft
Specialty Battery Group
 12, rue Sadi Carnot
 93170 Bagnolet – France
 Tel.: +33 (0)1 49 93 19 18
 Fax: +33 (0)1 49 93 19 69

www.saftbatteries.com

Doc N° 31049-2-0710
 Edition: July 2010

Data in this document is subject to change without notice and becomes contractual only after written confirmation. Single cells mentioned in this document may have their own specific data sheet with complementary data. Please check website.

Published by the Communications Department.

Photo credit: Saft.

Société anonyme au capital de 31 944 000 €

RCS Bobigny B 383 703 873

Produced by Arthur Associates Limited.



saft

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
-----------------	------	----------------------	-----------------	--	--	-----------------------------	-----------------------	-------------	--------	----------------	------------------

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**)
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 SXC	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.

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.

Saft

Specialty Battery Group

12, rue Sadi Carnot
93170 Bagnole - France
Tel.: +33 (0)1 49 93 19 18
Fax: +33 (0)1 49 93 19 69

www.saftbatteries.com

Doc N° 31050-2-0909

Edition: September 2009

Data in this document is subject to change without notice and becomes contractual only after written confirmation. Single cells mentioned in this document may have their own specific data sheet with complementary data. Please check website.

Published by the Communications Department.

Photo credit: Saft.

Société anonyme au capital de 31 944 000 €

RCS Bobigny B 383 703 873

Produced by Arthur Associates Limited.



SAFT

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
-----------------	------	----------------------	-----------------	--	--	-----------------------------	-----------------------	-------------	--------	----------------	------------------

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.



saft

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
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 (SINCGARS)
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.

Saft
Specialty Battery Group
 12, rue Sadi Carnot
 93170 Bagnolet – France
 Tel.: +33 (0)1 49 93 19 18
 Fax: +33 (0)1 49 93 19 69

www.saftbatteries.com

Doc N° 31051-2-1109
 Edition: November 2009

Data in this document is subject to change without notice and becomes contractual only after written confirmation. Single cells mentioned in this document may have their own specific data sheet with complementary data. Please check website.

Published by the Communications Department.
 Photo credit: Saft.

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



saft

Serving your needs around the world

Saft Specialty Battery Group sales network

Australia

Saft Batteries Pty Ltd.
Unit 18/167 Prospect Highway
Seven Hills, NSW 2147
Tel.: +61 2 9674 0700
Fax: +61 2 9620 9990
david.anderson@saftbatteries.com.au
gary.piper@saftbatteries.com.au

China

Saft Hong Kong Ltd.
Unit 1107-9, 11/F, Westin Centre
26 Hung To Road,
Kwun Tong, Kowloon
Tel.: +852 3568 7066
Fax: +852 2798 0619
ivan.lam@saftbatteries.com

Saft Zhuhai Shanghai Office
Room 2408, Lucky Mansion
No. 660 Shangcheng Road
Shanghai 200120, P. R. China
Tel.: +86 21 5866 6405
Fax: +86 21 5866 6403
ben.li@saftbatteries.com

France

Saft
12, rue Sadi Carnot
93170 Bagnolet
Tel.: +33 (0)1 49 93 19 18
Fax: +33 (0)1 49 93 19 69
lithiumsales.fr@saftbatteries.com

Germany

Saft Batterien GmbH
Löffelholz Strasse, 20
90441 Nürnberg
Tel.: +49 911 94174 20
Fax: +49 911 94174 25
ecaterina.hauser@saftbatteries.com

Israel

Saft
Vita Towers
11 Ben Gurion Street
Bnei Brack 51260
Tel.: +972 3 6160633
Fax: +972 3 6160635
amnon.dor@saftbatteries.com

Italy

Saft Batterie Italia S.r.l.
Palazzo Cimabue, Via Cassanese, 224
20090 Segrate - Milano
Tel.: +39 02 89 28 07 45
Fax: +39 02 89 28 07 62
cesare.giuggioli@saftbatteries.com

Netherlands

Saft Batterijen B.V.
Achtseweg Zuid 151
5651 GW Eindhoven
Tel.: +31 40 272 1902
Fax: +31 40 272 1904
guido.jasper@saftbatteries.com

Norway

Saft AS
Grini Naeringspark 1
N-1361 Osteraas
Tel.: +47 6716 4161
Fax: +47 6716 4170
trond.beyer@saftbatteries.com

Russian Federation

ZAO Ancor (Saft)
21/3 Stanislavskogo St.
Business Center "Stanislavkiy"
109004 Moscow
Russia
Tel.: +7495 788 52 04
Fax: +7495 788 52 04
dmitry.lozin@saftbatteries.com

Spain (+ Portugal)

Saft Baterias S.L.
Avda. Fuente Nueva 12, Nave 15
San Sebastian de los Reyes
28700 Madrid - Spain
Tel.: +34 916 593 482
Fax: +34 916 593 490
javier.sanchez@saftbatteries.com

Sweden

Saft AB (Civil Sales)
Jungnergatan - Box 709
SE-572 28 Oskarshamn
Tel.: +46 491 681 04
Fax: +46 491 680 85
christer.steen@saftbatteries.com

Saft AB (Military Business)

Illervägen 6
SE-35245 Växjö
Tel.: +46 470 452 47
Fax: +46 470 452 57
bengt.bengtsson@saftbatteries.com

UK (+ Ireland)

Saft Ltd.
River Drive
South Shields, Tyne & Wear
NE33 2TR-UK
Tel.: +44 191 497 4703
Fax: +44 191 456 8256
lesley.lyons@saftbatteries.com

USA (+ Canada/Mexico)

Saft America Inc.
313, Crescent Street
Valdese, NC 28690 - USA
Tel.: +1 (828) 874 4111
Fax: +1 (828) 874 2431
lithiumsales.us@saftbatteries.com

Saft Specialty Battery Group manufacturing sites

China

Saft (Zhuhai Free Trade Zone)
Batteries Co. Ltd
Lianfeng Rd
Zhuhai 519030, Guangdong Province
Tel.: +86 756 881 9318
Fax: +86 756 881 9328
William.Fa@saftbatteries.com

France

Saft
Rue Georges Leclanché
B.P. N° 1039
86060 Poitiers Cedex 09
Tel.: +33 (0)5 49 55 48 48
Fax: +33 (0)5 49 55 48 50
lithiumsales.fr@saftbatteries.com

Germany

FRIWO
Industriestrasse 22
D-63654 Büdingen
Tel.: +49 911 94 174 22
Fax: +49 911 94 174 25
susan.mehnert@saftbatteries.com

United Kingdom

Saft Ltd.
River Drive
South Shields, Tyne & Wear
NE33 2TR
Tel.: +44 191 497 4703
Fax: +44 191 456 8256
lesley.lyons@saftbatteries.com

USA

Saft America Inc.
313, Crescent Street
Valdese
NC 28690
Tel.: +1 (828) 874 4111
Fax: +1 (828) 874 2431
lithiumsales.us@saftbatteries.com



saft

Saft Specialty Battery Group sales agents and distributors

Argentina

CH Sistemas Electronicos S.A.
Riobamba 350
1025 Ciudad Autónoma de Buenos Aires
Tel.: +54 11 4954 7200
Fax: +54 11 4954 7200
pilasch@ch-sistemas.com.ar
ch@ch-sistemas.com.ar

Probattery

Baires Full Trading
Paz Soldán 4960 C1427DSF
Buenos Aires
Tel.: +54 11 45 14 68 68
Fax: +54 11 45 14 68 66
gfreund@probattery.com.ar

Austria

Otto Sauseng GmbH
Lienfeldergasse 32
A-1160 Wien
Tel.: +43 1 485 86 11 0
Fax: +43 1 485 86 11 21
vlado.bera@sauseng.at

Belgium (+ Luxembourg)

Helpelek
Avenue du Couronnement, 11
B-1200 Brussels - Belgium
Tel.: +32 2 7 62 33 38
Fax: +32 2 7 62 37 01
joel.vanlooche@helpelek.be

Brazil

Barasch Sylmar
R. Guaicurus 345
Agua Branca - Sao Paulo
SP 05033-000
Tel.: +55 11 3864 63 66
Fax: +55 11 3864 63 66
barasch@barasch.com.br

Czech Republic

BATTEX spol.s.r.o.
Politických vězňů 1337
274 01 Slaný
Tel.: +420 312 520116
Fax: +420 312 520117
vesely@battex.cz

Denmark

Scansupply Energy A/S
Topstykke 25
3460 Birkerød
Tel.: +45 45 82 50 90
Fax: +45 45 82 54 40
flemming@scansupply.dk

Egypt

Elmetra
47, Ahmed Taysir St.
Ramo Tower B#104
Heliopolis, 11341 Cairo
Tel.: +20 2 2621864
Fax: +20 2 4031195
info@elmetra-eg.com

Finland & Baltic countries

HansaBattery Oy
Kilonkallio 3A
02610 Espoo
Tel.: +358 207 631 880
Fax: +358 207 631 889
hans.sandstrom@hansabattery.fi
jon.sandstrom@hansabattery.fi

Hungary

Kapacitas
Szentpetery u. 24-26
H-1115 Budapest
Tel.: +36 1 463 08 80
Fax: +36 1 463 08 99
varga@akku.hu

Japan

Sumitomo Corporation
Harumi Triton Square Office Tower Z 21F
1-8-12 Harumi, Chuo-Ku
Tokyo, 104-6222
Tel.: +81 3 5144 9081
Fax: +81 3 5144 9267
takahiro.shoji@sumitomocorp.co.jp

Korea

Cellcom Co Ltd.
1707, East Bldg, Hanshin Cylux
716, Suseo-Dong, Kangnam-Gu
135-884 Seoul
Tel.: +82 2 2149 0765
Fax: +82 2 2149 0766
djkim127@hotmail.com

Poland

Wamtechnik Sp. z o.o.
ul. Czajewicza 19
05-500 Piaseczno
Tel.: +48 22 75 02 142
Fax: +48 22 75 02 139
p.wlodarczyk@wamtechnik.pl

Romania

Sprinter 2000 S.A.
60, Calea Feldioarei
Brasov, 500483
Tel.: +40 268 472 333
Fax: +40 268 472 334
dan.chirila@sprinter-distribution.ro

Saudi Arabia & Arabic Gulf Countries

Dar Al Fursan
PO Box 16221, Riyadh 11464
Tel.: +966 1 462 08 16
Fax: +966 1 462 08 16
nader.altaher@daralfursan.com

Singapore

Powerpack Industries Pte Ltd
194 Pandan Loop 04-23
Singapore 128383
Tel.: +65 6872 0526
Fax: +65 6872 3041
sales@powerpack.com.sg

South Africa

Just Batteries
14, Railway Avenue
Benoni 1501
Tel.: +27 11 421 7981
Fax: +27 11 421 7986
malcolm@justbatteries.co.za

Switzerland

Leclanché SA
Avenue des Sports 42
1400 Yverdon-les-Bains
Tel.: +41 24 424 6513
Fax: +41 24 424 6520
integration@leclanche.ch

Tunisia & Maghreb

SEEEP
46 Av. de Madrid
Tunis
Tel.: +216 71 342 602
Fax: +216 71 353 523
seep@gnet.tn

For other countries, please send your battery requests to lithiumsales.fr@saftbatteries.com

Saft

Specialty Battery Group

12, rue Sadi Carnot
93170 Bagnolet - France
Tel.: +33 (0)1 49 93 19 18
Fax: +33 (0)1 49 93 19 69

www.saftbatteries.com

Doc N° 31052-2-0909

Edition: September 2009

Data in this document is subject to change without notice and becomes contractual only after written confirmation.

For more details on primary lithium technologies please refer to Primary Lithium Batteries Selector Guide Doc N° 31048-2.

Published by the Communications Department.

Société anonyme au capital de 31 944 000 €
RCS Bobigny B 383 703 873

Produced by Arthur Associates Limited.



SAFT



Saft is committed to the highest standards of environmental stewardship.

Implementing this commitment to minimise the impact of its products and operations on the environment means that Saft gives priority to recycled over unrecycled raw materials, reduces its plant releases into the environment year after year, minimizes water usage, and ensures that its customers have recycling solutions for their batteries at the end of their lives. Regarding industrial Ni-Cd batteries, Saft has had partnerships for many years with collection companies in most EU countries as well as in North America. This collection network receives and dispatches our customers' batteries at the end of their lives to fully approved recycling facilities, in compliance with the Laws governing transboundary waste shipments. Saft offers these services free of charge to its customers.

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.

Saft
Specialty Battery Group
12, rue Sadi Carnot
93170 Bagnolet – France
Tel.: +33 (0)1 49 93 19 18
Fax: +33 (0)1 49 93 19 69

www.saftbatteries.com

Doc N° 31048-2-0909
Edition: September 2009

Data in this document is subject to change without notice and becomes contractual only after written confirmation.

Published by the Communications Department.

Photo credit: ACR Electric, Berlin Heart AG, Creatas, Industrial Scientific, © S. Laval, © Lockheed Martin, © MG International 2006, PhotoDisc, Program Executive Officer Soldier, © Courtesy of U.S. Army, Saft.

Société anonyme au capital de 31 944 000 €
RCS Bobigny B 383 703 873

Produced by Arthur Associates Limited.



SAFT