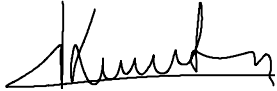







## STANDARD SPECIFICATION

Non-rechargeable Li-SO<sub>2</sub> cell

G 26 Type

	Name	Position	Date	Signature
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Issued by	A. Kerouanton				
Date	03/2006				
Edition Nr	1				





## 1. Subject

This specification presents typical and guaranteed ex-works values for the Lithium-Sulfur Dioxide (Li-SO<sub>2</sub>) cell type G 26 (IEC standard R 20, ANSI standard D).

## 2. Typical values

### A. Désignation

G 26

### B. Nominal voltage

2.8 V (on 28  $\Omega$ /0.1A at + 20°C).

### C. Nominal capacity

7.75 Ah (on 0.25A, at + 20°C, cut-off voltage 2.0 Volt).

*Warning: the cell capacity varies according to the current drain, to the temperature and to the voltage cut-off.*

### D. Maximum recommended continuous current

2.5 A

*(in order not to activate the cell's safety vent at the end of discharges conducted at constant current or constant power in the declared -60/+70°C operation temperature range).*

### E. Pulse current capability

Typically up to 5 A (5 A/0.1 second pulses, drained every 2 mn at + 20°C from undischarged cells with 10  $\mu$ A base current, yield voltage readings above 2.5 Volts).



## F. Temperature range

- 60/+ 70°C in operation

*(excursions up to + 85°C are possible for individual cells).*

*(the maximum recommended 70°C takes into account heat dissipation factors within battery packs discharged at high current).*

## G. Nominal weight

85 grams.

### 3. Construction and visual aspect

#### A. Construction

The G 26 cell is constructed according to the spiral electrodes technology.

A glass-to-metal seal ensures the hermeticity of the cell ( $\leq 10^{-7}$  atm.cc/sec under 1 atm He).

The G 26 cell is usually finished with a white PVC external sleeve and may come with Nickel-plated steel end-caps or radial tabs.

The G 26 cell does not contain any of the substances (such as lead, etc.) that are mentioned as banned by the European Directive 2002/95/EC known as "Restriction of Hazardous Substances" (RoHS).

#### B. Visual aspect

When inspected with naked eyes, the G 26 cell should not show any trace of dents, swelling, corrosion or electrolyte leakage. Marking should be readable.

### 4. Environment and mechanical tests

#### A. Altitude simulation

The G 26 cell complies with the UN\*\* and IEC\*\*\* tests which consist in a storage at + 20°C during at least 6 hours under an absolute pressure of 11.6 kPa ( $\approx 15,240$  m altitude) without any leakage, fire, vent or explosion.

#### B. Free fall

The G 26 cell complies with the IEC\*\*\* test which consists in 2 drops/plane (6 in total, samples randomly oriented) onto a concrete floor from an height of 1.0 m without any any leakage, fire, vent or explosion.



### C. Vibration

The G 26 cell complies with the UL\* and IEC\*\*\* tests which consist in performing the following:

- Frequency span : 10 to 55 Hz.
- Peak to peak amplitude : 1.6 mm.
- Test duration :  $95 \pm 5$  mm per axis.

Test carried out on three perpendicular axes. The cell must retain its operational characteristics and normal visual aspect.

### D. Mechanical shock

The G 26 cell complies with the UL\* and IEC\*\*\* tests which consist in performing the following:

- Average acceleration : 75 g.
- Maximum acceleration : 125 - 175 g.

Shock applied to each to the three perpendicular axes. The cell must retain its operational characteristics and normal visual aspect.

#### Safety standards mentioned:

- \*UL Underwriters Laboratories Inc.  
"Standard for Lithium Batteries" – UL 1642 – Third Edition – 1995
- \*\*UN Secretariat of the United Nations  
"Model Regulations on the Transport of Dangerous Goods"  
Ref. ST/SG/AC.10/1 – Revision 13 – 2003  
+ "Manual of Tests and Criteria"  
Ref ST/SG/AC.10/11 – Revision 4 – 2003
- \*\*\*IEC International Electrotechnical Commission  
International safety standard for lithium batteries  
"IEC 60086-4" – Second Edition – 2000

## 5. Storage

Before use, the G 26 cell should be stored in dry and cool conditions, at a temperature preferably not exceeding + 30°C.

*Storage at higher temperature is possible without leakage up to 85°C, but may affect later the cell capacity and its ability to exhibit good start up voltage characteristics.*



## 6. Safety

We advise, during usage of the G 26 cell, to observe the following precautions:

- a) Do not remove the cells from their original packing before use.
- b) Do not store the cells in bulk in order to avoid accidental short circuiting.
- c) Do not heat above 85°C or incinerate.
- d) Do not disassemble.
- e) Do not recharge.
- f) Do not solder directly on the cell. (*use tabbed cell finish versions instead*).
- g) Do not mix new and used cells or cells from different origins.
- h) Respect the polarities of the cell.
- i) Do not short circuit.

## 7. Transportation

The G 26 has demonstrated an ability to pass the safety tests listed in the United Nations "Recommendations on the Transport of Dangerous Goods – Manual of Tests and Criteria" Ref. ST/SG/AC.10/11 – Revision 4 – 2003.

Hence, and in accordance with the United Nations "Model Regulations on the Transport of Dangerous Goods" Ref. ST/SG/AC.10/1 – Revision 13 – 2000, the G 26 cell, which contains 2.4 gram of lithium, above the 1 gram limit, is declared as restricted to transport, that is assigned to class 9.

This class 9 assignment also applies to all battery packs assembled from G 26 component cells.



## 8. Guaranteed minimum values

	Initial *	Up to 12 months storage** in the recommended - 60/+ 30°C max. conditions
<b>Open Circuit Voltage (OCV)</b> <i>(Voltmeter with 10 Megohm impedance and <math>\pm 1</math> mV precision)</i>	2.90 V	2.95 V
<b>Voltage on load</b> <i>(after 15 seconds 1.54 <math>\Omega</math> at + 20°C) (I <math>\approx</math> 1.5 A)</i>	2.35 V	TBD V
<b>Capacity</b> <i>(on 0.25 A at + 20°C 2 V cut-off)</i>	6.95 Ah	6.75 Ah

## 9. Incoming inspection

Prior to release from factory, the G 26 cell is 100 % inspected in Open Circuit Voltage (OCV) and On Load Voltage.

The capacity, visual aspect and dimensions are checked by sampling.

In case of incoming inspection, Saft recommends the following:

### A. Sampling standards

French	British	German	American	ISO
NFX 06-022 NFX 06-023	BS 6001 BS 6002	DIN 40080 DIN ISO 3951	MIL STD 10 5D MIL STD 414	2859 3951

\* Initial : Within one month following the date code printed on the sleeve.

\*\* Following the date code printed on the sleeve.

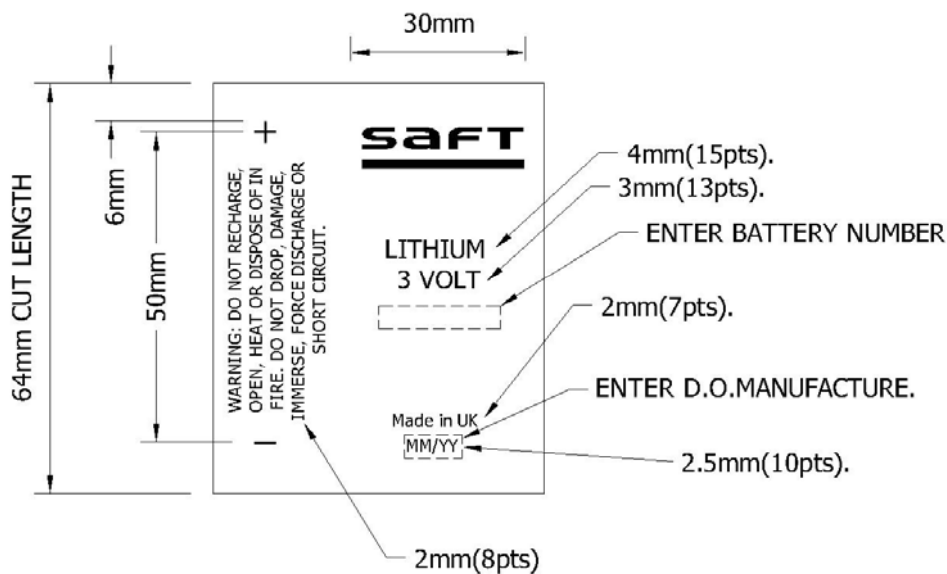


## B. Acceptable Quality Levels (AQL)

- Visual inspection (§ 3.B) : 1.00 %
- Electrical inspection (§ 8) : 0.40 %
- Dimensional inspection (§ 10) : 1.00 %

## 10. Labelling

The sleeve of the G 26 cell displays the following:



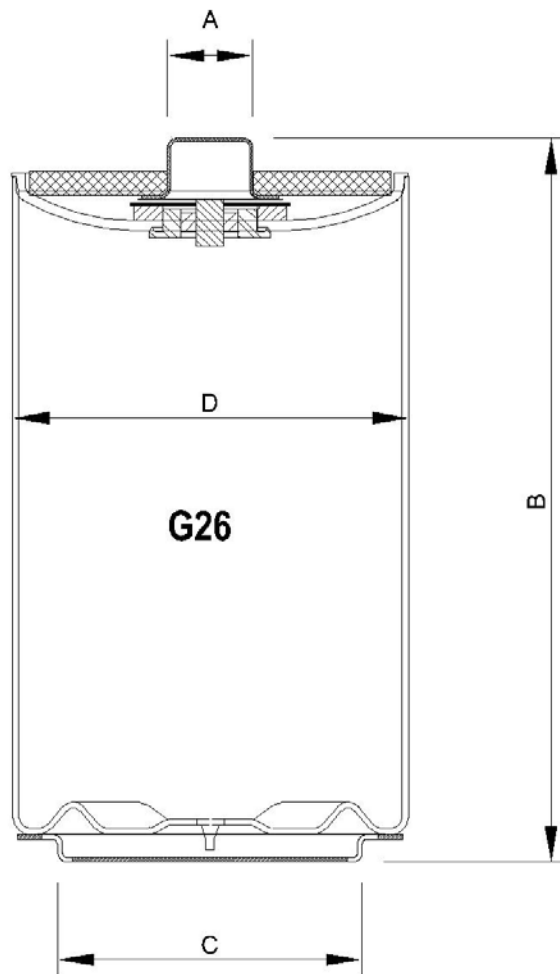




G 26 cell finish version with end caps

P/N G 26/2.1

(dimensions in mm)

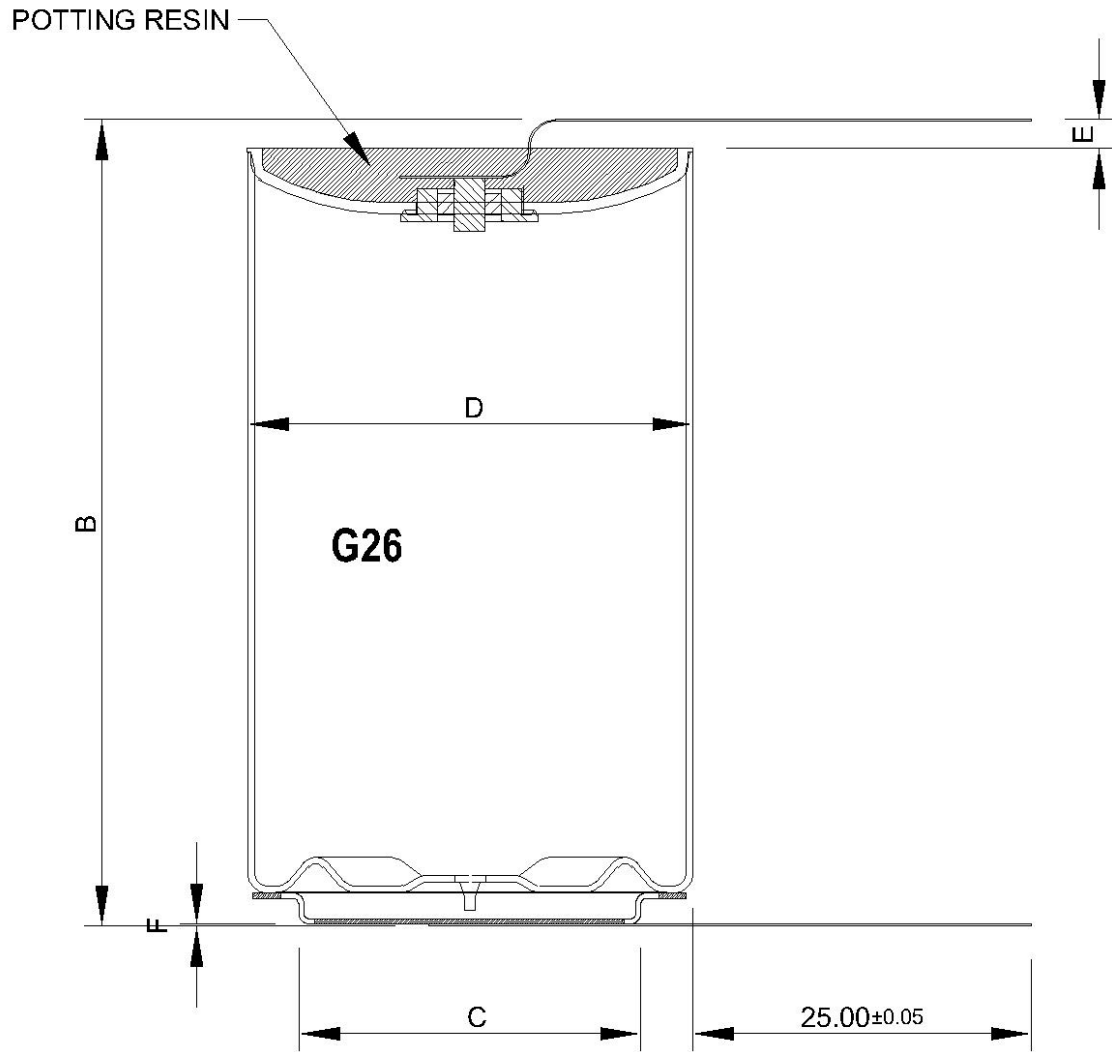


G26 WITH END CAPS	A	B	C	D	E	F
	7.08 $\pm 0.03$	61.11 $\pm 0.5$	25.40 $\pm 0.13$	33.3 $\pm 0.13$	2.35 $\pm 0.06$	N/A



**G 26 cell finish version with radial tabs**

**G 26/2.10**  
(dimensions in mm)



G26 WITH RADIAL TABS	A	B	C	D	E	F
	N/A	59.62 <sup>+0.3</sup>	25.40 <sup>+0.13</sup>	33.3 <sup>+0.13</sup>	2.12 <sup>+0.06</sup>	0.12