

# Primary high temperature lithium battery

## LSH 20-150

3.6 V Primary lithium-thionyl chloride (Li-SOCl<sub>2</sub>)  
D-sized cell for operation up to 150°C  
in demanding environments

**Saft always supplies LSH 20-150 cells as complete battery assemblies**



### Benefits

- High energy
- Ability to perform safely and reliably up to 150°C with severe vibration/shock constraints
- Good voltage startup after exposure to high T followed by storage at room T
- Long shelf life
- Easy integration within multi-cell tubular cylindrical packs
- High and stable operating voltage

### Key features

- No swelling
- Sturdy and pressure resistant stainless steel envelope
- Hermetic and corrosion-proof glass-to-metal sealing
- Non-flammable electrolyte
- Ability to withstand at 150°C 750 G peak/0.5 msec shocks
- Ability to withstand at 150°C 20 G<sub>RMS</sub> random vibrations
- Ability to withstand at 150°C linear sine sweep at 30 G peak
- Automated production
- Compliant with IEC 60079-11 intrinsic safety standard
- Restricted for transport (Class 9)

### Main applications

- Oil drilling and all downhole high temperature environments
- Measure While Drilling (MWD)
- Oil and gas well monitoring
- Heat sterilizable applications
- Gas metering

### Cell size references

R20 - D

### Electrical characteristics

*(typical values relative to cells stored for one year at ambient T)*

|                                                                                                                                             |                        |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Open circuit voltage (at +20°C)                                                                                                             | 3.67 V                 |
| Nominal capacity                                                                                                                            | 14.0 Ah                |
| <i>(under 300 mA at +150°C 2.0 V cut-off. The capacity restored by the cell varies according to current drain, temperature and cut-off)</i> |                        |
|                                                                                                                                             | 13.5 Ah                |
| <i>(under 100 mA at +80°C to +150°C 2.0 V cut-off)</i>                                                                                      |                        |
|                                                                                                                                             | 10 Ah                  |
| <i>(under 100 mA at +20°C 2.0 V cut-off)</i>                                                                                                |                        |
| Nominal voltage (under 100 mA at +150°C)                                                                                                    | 3.6 V                  |
| Nominal energy                                                                                                                              | 50 Wh                  |
| Pulse capability                                                                                                                            | up to 2 A              |
| <i>(-20°C to +20°C)</i>                                                                                                                     | up to 500 mA           |
| <i>(+80°C to +150°C)</i>                                                                                                                    |                        |
| <i>(The voltage reading may vary according to the pulse characteristics and the temperature. Consult Saft)</i>                              |                        |
| Maximum recommended continuous current                                                                                                      | 300 mA                 |
| Storage prior to use (recommended)                                                                                                          | +30°C max.             |
| (possible)                                                                                                                                  | +150°C                 |
| Operating temperature range                                                                                                                 | -40/+150°C (-40/302°F) |

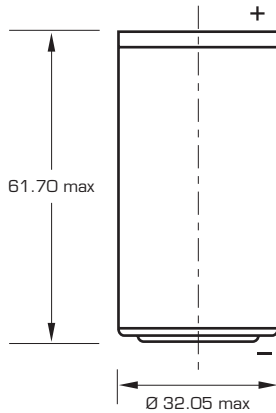
### Physical characteristics (unsleeved cells)

|                  |                     |
|------------------|---------------------|
| Diameter (max)   | 32.05 mm (1.262 in) |
| Height (max)     | 61.70 mm (2.429 in) |
| Typical weight   | 104.5 g (3.7 oz)    |
| Li metal content | approx. 4.1 g       |

*Consult Saft for specific single cell finishes*



# LSH 20-150



Dimensions in mm.

## Shocks and vibrations

- Ability to withstand in the entire operating temperature range 750 G peak/0.5 msec repetitive shocks on axial and radial axes (*undischarged and partially discharged cells*)
- Ability to withstand in the entire operating temperature range 20 G<sub>RMS</sub> random vibrations 2 to 4 hours along X, Y and Z axis  
< 30 Hz @ ≥ 6 dB/octave  
30-80 Hz @ 3 dB/octave  
80-300 Hz @ 0 dB/octave  
300-1000 Hz @ -3 dB/octave
- Ability to withstand in the entire operating temperature range 1 hour of linear sine sweep at 30 G peak, from 30 to 2000 Hz along X, Y and Z axis

## Saft Specialty Battery Group

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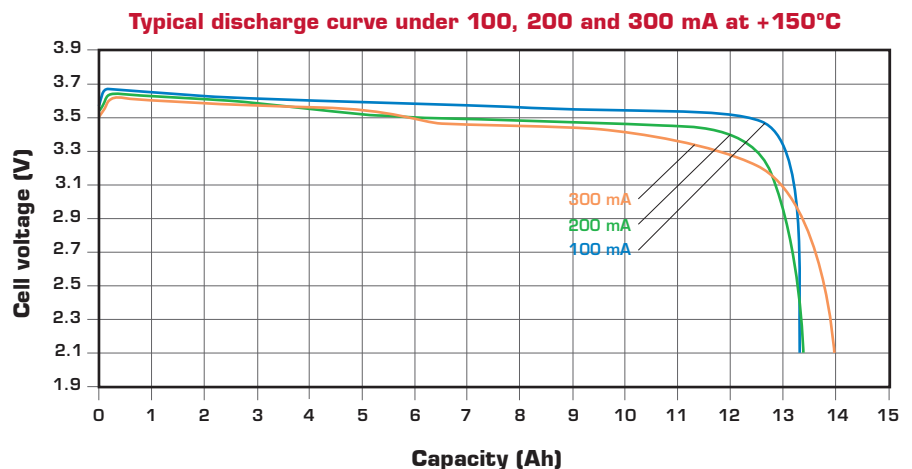
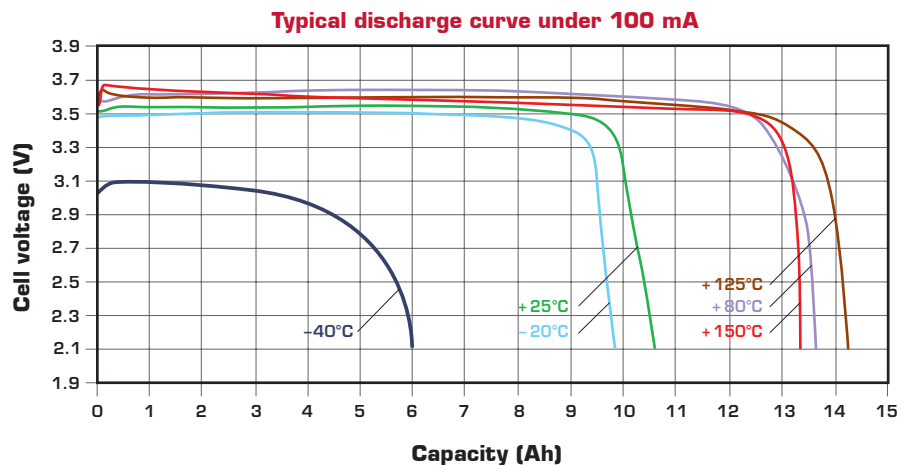
[www.saftbatteries.com](http://www.saftbatteries.com)

## Storage

- It is recommended to maintain the storage area clean, ventilated and preferably not exceeding 30°C

## Warning

- Fire, explosion and burn hazard
- Do not recharge, short circuit, crush, disassemble, heat above 150°C (302°F), incinerate, or expose contents to water



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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.

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