

# MP 176065 xc

## Rechargeable Li-ion cell

3.65 V high energy Li-ion cell for extremely cold environments

Saft's MP 176065 xc cell is ideally suited for applications requiring high level of performances even when exposed to extremely cold environments.

### Benefits

- High energy and high operating voltage under negative temperatures
- Long cycle life
- Unrivalled operating temperature range from  $-50^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$
- Charge capability down to  $-30^{\circ}\text{C}$
- Long shelf life with extremely low capacity loss under storage
- Easy integration
- Smaller environmental footprint than other technologies

### Key features

- High energy density (303 Wh/l, and 174 Wh/kg)
- Aluminium casing
- Hermetically sealed
- Operates in any orientation
- Maintenance free
- No memory effect
- Manufactured in EU

### Designed to meet all major quality, safety and environmental standards

- Safety: UL 1642 (File MH 12609)
- Transport: UN 3480
- Quality: ISO 9001, Saft World Class continuous program
- Environment: ISO 14001, RoHS and REACH compliant

### Typical applications

- Portable radios
- Future soldier equipment
- Defence systems
- Professional portable tools
- Oil & Gas applications



### Electrical characteristics

|   |   |                  |
|---|---|------------------|
| Typical capacity (at C/5 rate, $+25^{\circ}\text{C}$ , 2.5V cut-off) <sup>(1)</sup> | 6.4 Ah  |                  |
| Nominal voltage   | 3.65 V  |                  |
| Nominal energy  | 23.4 Wh   |                  |
| Recommended maximum discharge current <sup>(1)</sup>                                | From $+60^{\circ}\text{C}$ to $0^{\circ}\text{C}$   | 13 A (~2C rate)  |
|   | From $0^{\circ}\text{C}$ to $-40^{\circ}\text{C}$   | 6.4 A (1C rate)  |
|   | From $-40^{\circ}\text{C}$ to $-50^{\circ}\text{C}$ | 1.3 A (C/5 rate) |

### Physical characteristics (sleeved cell)

|                              |             |
|------------------------------|-------------|
| Thickness <sup>(2)</sup>     | 18.65 mm    |
| Width                        | 60.5 mm     |
| Height (including terminals) | 68.7 mm     |
| Typical weight               | 134 g       |
| Volume (including terminals) | 0.077 l     |
| IEC cell designation         | INP19/61/69 |

### Operating conditions

|  |   |  |
|--|---|--|
| Typical cut-off voltage                          | 2.5 V   |  |
| Charging method                                  | Constant current/Constant voltage                 |  |
| Charging voltage                                 | 4.2 V   |  |
| Maximum continuous charge current <sup>(3)</sup> | From $0^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ | 6.5 A (~1C rate)                               |
|  | From $-30^{\circ}\text{C}$ to $0^{\circ}\text{C}$ | 1.3 A (C/5 rate)                               |
| Operating temperatures                           | Charge  | $-30^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ |
|  | Discharge   | $-50^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ |
| Storage & transportation temperatures            | Recommended                                       | $+15^{\circ}\text{C}$ to $+30^{\circ}\text{C}$ |
|  | Allowable   | $-50^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ |

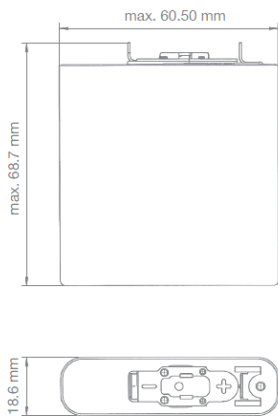
<sup>(1)</sup> Can vary depending on temperature and discharge rate

<sup>(2)</sup> At beginning of life. Can increase with temperature and during battery life.

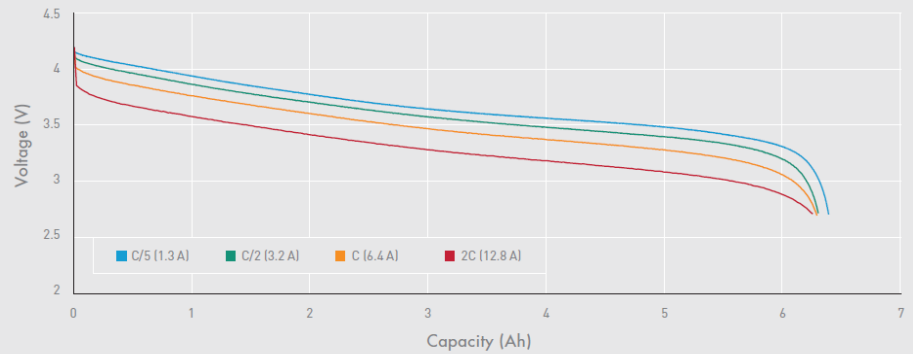
<sup>(3)</sup> For optimized charging below  $0^{\circ}\text{C}$ , consult Saft



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Capacity versus current at + 20°C



## Battery assembly

Individual lithium-ion cells need to be mechanically and electrically integrated into battery systems to operate properly. The battery system includes electronic devices for performance, thermal and safety management specific to each application. Please contact Saft for your specific applications requirements.

## Battery-level features

- Saft provides complete battery system designs
- Incorporating several levels of redundant safety features to prevent abuse conditions such as over-charge, over-discharge, and short circuits
- Incorporating electronics for performance and efficiency:
  - charge/floating/discharge management
  - cell balancing
  - temperature monitoring
- Battery protection controller at system level
- Communication for State-of-Charge and State-of-Health

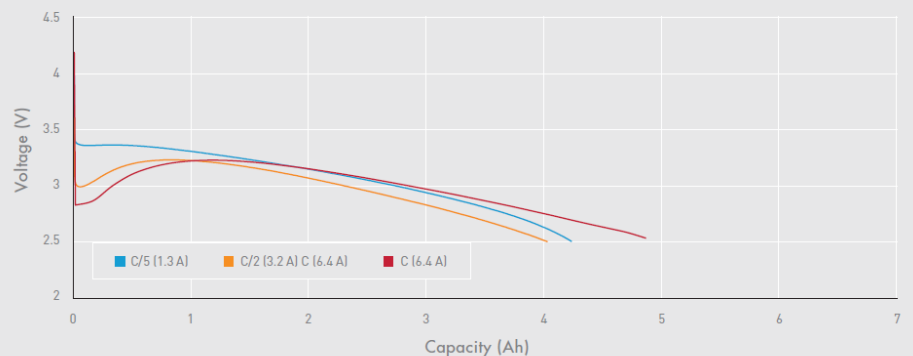
## Storage

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

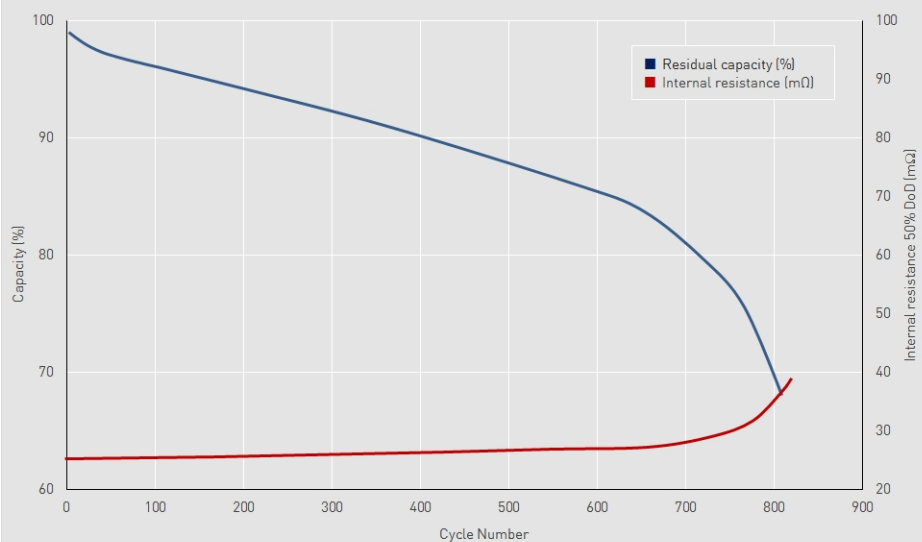
## Warning

- Do not crush, short-circuit, incinerate, dismantle, immerse in any liquid, heat above + 60°C
- Observe charging conditions

Capacity versus current at - 40°C



MP 176065 xc (%) of rated capacity versus 100% DoD cycling C-C/2 rate at 20%



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