



Product Information Sheet STILL Li-Ion Standard

General information on the product information sheet

This product information sheet is intended solely as an information document to assist our customers.

According to Regulation (EC) No. 1907/2006 (REACH), a safety data sheet must only be provided for substances and preparations. Lithium-ion batteries are not subject to the requirements of this regulation.

1. Information about the product and manufacturer

Description:

Rechargeable industrial lithium-ion battery with integrated battery management system.

Scope:

For all industrial forklift lithium-ion batteries manufactured by the manufacturer specified in section 1 with the P/N designation: **50974209000** and the following battery groups (type):

Core battery (Type)	Nominal Battery Voltage [V]	Rated Capacity [Ah]	Installed Energy [kWh]	Usable Energy [kWh]	Weight [kg]	IP Protection Class
50.01	51,2	410	21.0	17.6	355	54
50.02		560	28.7	24.1		
50.03		460	23.6	19.8		
51.02	89,6	560	50,2	42,1	647	
51.03		460	41,2	34,6		
53.02	51,2	460	23,6	19,8	248	

Technical data: Core batteries BG50.XX, BG51.XX und BG53.XX



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Battery group	1	2	3	9
Nominal weight [kg ±5%] (Core battery + Additional weights)	708	856	856	1013
Dimensions: (L x H x D) [mm]	830 x 627 x 522	1030 x 627 x 529	830 x 627 x 630	830 x 627 x 738

Overview System weight: Weight core battery BG50.XX + combinable additional weight group

Battery group	5	6	7	10
Nominal weight [kg ±5%] (Core battery + Additional weights)	1210	1558	2178	1458
Dimensions: (L x H x D) [mm]	1026 x 627 x 708	1028 x 784 x 711	1028 x 784 x 999	1028 x 635 x 852

Overview System weight: Weight core battery BG51.XX + combinable additional weight group

Information about the manufacturer:

Name/Address: STILL GmbH
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22113 Hamburg

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2. Possible dangers

Lithium-ion batteries do not release any hazardous substances under normal conditions, and there is no risk of contact with toxic substances. A risk only exists if the batteries **are handled improperly** (under mechanical/thermal/electrical influences), which could lead to the activation of the safety valves or the rupture of the casing.

While handling Lithium-ion batteries, avoid the following:

- short-circuit them,
- squeeze or pierce them,
- throw them into fire or expose them to extreme external heat,
- dive them into the water,
- forcibly discharge or expose them to temperatures outside the recommended operating range.

Depending on the situation, this could lead to the following risk factors:

- Leakage of the electrolyte fluid.
- Reaction of the electrode materials with moisture or water.
- Degassing of lithium-ion batteries.
- Fire or explosion.
- Chemical injuries.

Possible hazards resulting from improper handling:

- Electric shock:
Contact with live parts can cause an electric shock, which can have thermal or muscle-paralytic effects. These can cause cardiac fibrillation, cardiac arrest, or respiratory paralysis, which can be fatal.
- Toxic smoke development:
When lithium-ion batteries catch fire, the smoke and vapor particles released can irritate the eyes, skin and respiratory tract.

Important: For proper handling of the lithium-ion battery and a comprehensive understanding of the product information sheet, it is essential that you read the operating instructions carefully.

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3. Information on ingredients

The components sealed in the lithium-ion cell are listed below:

Chemical Name	Chemical Formula	CAS Nr.	Concentration range [Weight %]
Polycarbonate	PC	25037-45-0	0,0 – 0,5
Polyurethane	(NHCOO) _n	9909-54-5	0,0 – 0,1
Manganese	Mn	7439-96-5	0,0 – 0,2
Iron	Fe	7439-89-6	0,0 – 1,3
Aluminium	Al	7429-90-5	12,4 – 16,0
Copper	Cu	7440-50-8	15,2 – 16,1
Ferrous lithium phosphate	LiFePO ₄	15365-14-7	28,0 – 30,0
Carbon	C	7782-42-5	12,5 – 13,5
Polypropylen	(C ₃ H ₆) _n	9003-07-0	3,6 – 3,9
Electrolyte	LiPF ₆ /EC+DEC	21324-40-3	22,5 – 24,1

4. First aid measures

When lithium-ion batteries are used as intended, there is no danger from chemical substances.

Improper use or an accident may result in the release of chemical components (see 3. Information on Components), which poses the risk of personal injury, environmental damage, or the outbreak of fire. This also applies if the lithium-ion batteries are opened or incinerated without permission. In these cases, observe the following points.

General instructions:

- In the event of an accident involving personal injury, always administer first aid and (regardless of the severity of the injury) always call the emergency services or seek medical attention immediately after administering first aid.
- In case of accidents involving chemical substances, please observe the following first aid measures.



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In case of eye contact:

The chemical content of lithium-ion batteries can cause eye irritation. Dust can cause inflammation of the eyelids.

- Rinse the affected eye(s) immediately and thoroughly with clear, clean water for at least 15 minutes.

In case of skin contact:

The chemical content of lithium-ion batteries can cause skin burns.

- Remove/take off contaminated clothing immediately.
- Rinse the affected skin areas immediately and thoroughly with clean, clear water for at least 15 minutes.
- Wash the affected skin areas thoroughly with soap and water.

If swallowed:

- Rinse your mouth immediately and thoroughly with clean, clear water.
- No food or drinks: Do not give anything to eat or drink unless instructed by medical personnel.
- Do not induce vomiting.

If inhaled:

Leaking chemical substances from damaged or open lithium-ion batteries can cause irritation of the respiratory tract and mucous membranes.

- Immediately remove the affected person to fresh air.

5. Firefighting measures

Never expose lithium-ion batteries to excessive mechanical stress (dropping, strong impact, compression, etc.) or moisture. This could damage lithium-ion batteries and cause them to catch fire.

Danger: In the event of a fire, there is a risk of death or serious injury!

In case of fire, follow these instructions:

- In the area of application of lithium-ion batteries, install suitable fire extinguishing agents (A/B/C fire extinguishers, extinguishing water or sand) for lithium-ion battery fires.
- Regardless of the size of the fire, a safety zone must be established around burning lithium-ion batteries – recommendation > 5 m.
- Alert emergency services and inform them that it is a fire involving lithium-ion batteries.
- Only attempt to extinguish the fire when there is no danger to the people involved – personal protection takes priority over property protection.
- When trying to extinguish the fire, stand upwind of the fire.
- When attempting to extinguish the fire, use self-contained breathing apparatus.
- Do not leave extinguished lithium-ion batteries unattended until emergency services arrive. This may cause them to re-ignite.
- In the event of a major fire, leave the area immediately
- Do not breathe toxic fumes.

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6. Measures in case of accidental release

Damaged lithium-ion batteries pose a risk of various types of personal injury.

Danger:

- Never touch damaged lithium-ion batteries with bare hands.
- Leave the danger zone or evacuate people from the danger zone.
- For your own protection, use personal protective equipment (see operating instructions).

Take the following personal precautions:

- Avoid the danger area until fumes have dissipated.
- Do not inhale vapors produced when chemical substances are released.
- Avoid contact with skin, eyes and mucous membranes.
- First aid measures (as described in section 4).

Important: When transporting damaged lithium-ion batteries, please contact customer service beforehand (as described in section 14).

7. Handling and storage

General instructions:

The lithium-ion batteries must not be opened, destroyed or burned!

Intended Use:

- The lithium-ion battery must be used in accordance with the specifications in the operating instructions for the industrial truck.
- Observe the information on which battery types are permitted for which industrial trucks.

Any use of the lithium-ion battery other than that described in these operating instructions is not in accordance with the intended use and is therefore prohibited. The lithium-ion battery complies with the state of the art and recognized safety regulations. If the lithium-ion battery is used in a manner other than that intended, hazards may arise.

Only use the lithium-ion battery in accordance with the following documents:

- These operating instructions for the lithium-ion battery
- Operating instructions for the industrial truck
- Operating instructions for the charger used

Only use and charge the lithium-ion battery if it is in perfect condition and meet the following conditions:

- The lithium-ion battery is undamaged and functional
- The cables and connectors to the charger are undamaged
- The cables to the industrial truck are undamaged

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Only use the lithium-ion battery in industrial trucks designed for this purpose with the operating voltage specified on the type plate.

Only charge the lithium-ion battery with chargers that have been approved by the manufacturer of the lithium-ion battery.

Only use the lithium-ion battery in accordance with the approved environmental conditions.

Storage instructions:

Lithium-ion batteries should be stored in a cool, dry, and well-ventilated location. Observe the specified ambient temperatures during use and storage.

The following table shows the operating conditions and the corresponding ambient temperature ranges for which these lithium-ion batteries were designed:

Operating states	Ambient temperature [°C]
Operation	-20 to +45
Load	-20 to +45
Storage	-20 to +50

Important: For further information regarding the proper handling of lithium-ion batteries at low temperatures, it is essential that you carefully read the operating instructions.

Danger:

- Store lithium-ion batteries in a place where they are protected from external influences (water, condensation, damage from impact, temperature, direct sunlight).
- Do not store deeply discharged lithium-ion batteries.
- Storing lithium-ion batteries outdoors is not permitted.

8. Monitoring stored goods and protective equipment

The following applies to storage:

- The storage instructions as described in section 7 must be observed.
- The specified storage temperatures must be checked regularly.
- Ensure that the storage area is adequately ventilated.

The following applies to protective equipment:

- No protective equipment is required for the proper handling of lithium-ion batteries
- When handling lithium-ion batteries, personal protective equipment must be used depending on the activity.
- The user must provide sufficient protective equipment for their staff and ensure its proper use is supervised.

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9. Physical and chemical properties

The lithium-ion batteries described in this product information sheet are sealed units at the time of their placement on the market. When used as intended, lithium-ion batteries do not pose any chemical hazards.

Type	Characteristic
Condition	solid
Odor	-
vapor pressure	-
Water vapor density	-
boiling point	-
Water solubility	insoluble
Specific gravity	-
density	-

10. Stability and reactivity

Lithium-ion batteries are a stable system when handled and stored according to section 7. Unusual aging phenomena – such as capacity loss – are to be expected if they are stored for too long or used outside of their intended purpose.

11. Toxicological information

When used as intended, no hazardous substances escape from the lithium-ion batteries, so there is no contact with toxic substances.

Danger:

- The risk of irritation only exists if the lithium-ion batteries are subjected to severe mechanical, thermal or electrical stress and the casing is damaged.
- In this case, skin, eyes and respiratory tract may be irritated.
- Contact with internal cell materials due to damage or fire may cause eye irritation from electrolyte fluid as well as skin and mucous membrane irritation.
- In addition, the nervous system of the respiratory tract may be irritated.

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12. Environmental information

When used as intended, there is no environmental damage.

Environmental notice:

If the lithium-ion batteries are not used as intended and chemical substances leak out, they pose a threat to the environment.

Precautions to avoid environmental damage:

- Avoid contamination of surface water, wastewater and groundwater.
- In the event of major leaks, have trained personnel contain the fluid escaping from the lithium-ion batteries with absorbent materials (special binding agents, sand, earth) and, if necessary, notify the emergency services.

13. Information on disposal

Lithium-ion batteries are hazardous waste and must be disposed of properly in accordance with applicable regulations. Lithium-ion batteries must never be disposed of with household waste.

The following applies to disposal:

- Lithium-ion batteries that need to be disposed of for various reasons (age, damage, etc.) may only be disposed of at an appropriate disposal site.
- Always contact the manufacturer/producer customer service before disposal.
- The disposal of lithium-ion batteries is carried out by the manufacturer/producer or, at their instruction, by an appropriate disposal company (information on the transport of lithium-ion batteries in section 14).

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14. Transport information

The transport, preparation for transport, and packaging of lithium-ion batteries are subject to the regulations governing the transport of dangerous goods and may only be carried out by persons who have been appropriately trained or qualified for the respective task. Currently applicable legal regulations must be observed at all stages of the transport of dangerous goods. If necessary, inform yourself about the current status of the regulations and contact customer service.

Basic information about the transport guidelines:

- The specific rules and regulations of the chosen mode of transport (including ADR for road transport; IMDG Code for maritime transport; IATA-DGR for air freight) must be strictly observed.
- When transporting the lithium-ion battery alone (without it being installed in the industrial truck), the **UN number: 3480, UN shipping name: LITHIUM ION BATTERIES (IMDG code; IATA-DGR)** may be used.
- The transport of the installed lithium-ion battery in the industrial truck must be in accordance with the rules of **UN number 3557, UN shipping name: VEHICLE, LITHIUM METAL BATTERY POWERED (IMDG Code; IATA-DGR)** .

Notes:

- The condition of the lithium-ion batteries must be checked before and after transport.
- If you are transporting damaged lithium-ion batteries, please contact customer service beforehand.
- lithium-ion batteries described in this document have been tested according to the requirements of UN 38.3. The relevant document is available upon request from Customer Service.
- The packaging, labelling and necessary accompanying documents must be designed and used in accordance with the regulations of the chosen mode of transport and the applicable special provisions.

Example documentation basis for transport:

ADR

UN number:	3480 LITHIUM-ION BATTERIES
Class:	9
Packaging group:	-
Danger label:	9a
Transport category:	2
Tunnel restriction code:	(E)

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15. Fire loads

A measure of the fire load of an object is the calorific value of the combustible materials in kWh.

Data basis:

- The following calorific values result from fire load tests at battery cell level:
 - for the 205 Ah cell = 0.735 kWh
 - for the 280 Ah cell = 1.007 kWh
 - for the 230 Ah cell = 0,927 kWh

In addition to the battery cells, which represent the main fire load, installed plastics and other components also contribute to the fire load of the entire lithium-ion battery system. To determine these calorific values, theoretical values are used and a flat rate of 50 kWh is estimated.

Calculation method:

The fire load of lithium-ion batteries is calculated by multiplying the calorific value of the individual battery cells by the maximum number of cells. The total calorific value of the plastics and other components is also added to this.

The following table shows the determined calorific values of the corresponding battery groups:

Battery group	Calorific value Battery cells in total [kWh]	Calorific value Plastics/other components flat rate [kWh]	Calorific value Lithium-ion battery in total [kWh]
50.01	24	50	74
50.02	33	50	83
50.03	30	50	80
51.02	57	50	107
51.03	52	50	102
53.02	30	50	80

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16. Statement on the gas leak

The manufacturer named in section 1 hereby declares,
that the product specified in section 1 does not emit any gas when in proper operating or storage condition.

17. Possible error states and their handling

The operating instructions contain a description of possible error conditions and how to correct them.

18. Legislation

For the product specified in point 1, a conformity assessment procedure was carried out by the manufacturer specified in point 1 and a declaration of conformity was issued.

19. Other Information

This information has been carefully compiled to the best of our knowledge and belief. The manufacturer listed in section 1 disclaims any liability for the accuracy, reliability, and completeness of the information provided.

It is the user's responsibility to check the adequacy and completeness of this information in relation to his or her particular intended use.