

cNODE transponder battery



Battery safety data sheet

KONGSBERG

SECTION 1: Identification

The specification describes the technical parameters for the battery.

The transponder battery is custom made.

Battery name	Part number
L14.4 (48) Maxi	319554
L14.4 (48) Maxi Exd	355324
L14.4 (24) Midi	347563

- **Manufacturer:** Kongsberg Maritime AS
- **Address:** Strandpromenaden 50, 3190 Horten, Norway
- **Telephone:** +47 33 03 24 07 (24 h)
- **Telefax:** +47 33 04 29 87
- **Email address:** km.support.hpr@kongsberg.com
- **Website:** <https://www.kongsberg.com/maritime>

Note

The battery is a solid and sealed unit. The battery cannot be opened to reveal the individual cells.

SECTION 2: Hazards identification

The battery is not labelled with a hazmat label. It is not classified as dangerous or hazardous when undamaged and used as intended, and as such it is exempted from GHS (Globally Harmonized System of Classification and Labelling of Chemicals) classification and labelling.

Do not open, disassemble, crush or burn the battery. The battery contains dangerous ingredients. Exposure to the ingredients contained within the battery cells could be harmful. The battery cells include a barrier, preventing exposure to the user and environment. The battery cells are not classified as hazardous according to Regulation (EC) No. 1272/2008.

The chemicals in the battery cells are contained in a sealed enclosure. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by inhalation, ingestion, eye contact and skin contact. The electrolyte solution can be corrosive and may cause irritation and burns.

Other hazards

- **External fire:** Internal pressure and thermal runaway may be the consequences if the cells inside the battery are exposed to temperatures above 85 °C.
- **Internal short circuit:** Internal short circuit in a cell. Destruction of the separator can cause a short circuit between the anode and cathode. Thermal runaway and fire is possible.
- **Water ingress:** Internal pressure, thermal runaway and chemical reactions may be the consequence.

The transponder might be fitted with a pressure relief valve at the bottom of the unit. The relief valve prevents overpressure. Noxious gases and ingredients will then leak out of the transponder until the chemical reactions have stopped. Products generated by the chemical reactions during an emergency may however clog this pressure release valve.

SECTION 3: Composition

The battery is solid with a hard surface.

A battery pack consists of several individual cells that are electrically connected, both in series and parallel.

The battery packs have different number of cells and power capacity. All transponder batteries include protection against short circuits (circuit breakers) and reverse current (diodes).

The lithium metal cells have the following chemical formula:

Lithium thionyl chloride — Li/SOCl₂

- **Negative electrode:** Lithium
- **Positive electrode:** Carbon
- **Electrolyte:** A solution of lithium tetrachloroaluminate (LiAlCl₄) in thionyl chloride

Battery identification:

Battery name	Battery weight	Lithium weight	Part number
L14.4 (48) Maxi	6.5 kg	183 g	319554
L14.4 (48) Maxi Exd	6.5 kg	183 g	355324
L14.4 (24) Midi	3.0 kg	92 g	347563

In case of hazardous events, the noxious gases are:

- Thionyl chloride (SOCl₂)
- Sulphur dioxide (SO₂)
- Hydrogen sulphide (H₂S)
- Hydrogen chloride (HCl)
- Chlorine (Cl₂)

For additional information about the cells inside the sealed battery pack, see the safety data sheet provided by the cell manufacturer.

- **Manufacturer:** Saft
- **Cell type:** LSH 20
- **Manufacturer's website:** <https://www.saftbatteries.com/>

SECTION 4: First aid measures

The battery will release toxic fumes if burned or exposed to fire.

If subjected to gas from a burning battery, remove the source of contamination or move yourself and any victims to fresh air. Seek medical advice.

- **Inhalation:** The chemicals are lung irritant. Avoid inhaling any vented gases. Remove the victim and yourself from exposure. Rest and keep warm. If breathing is difficult, seek emergency medical attention.
- **Skin contact:** The chemicals are skin irritant. Rinse immediately with a lot of water and soap for at least 15 minutes. Wipe immediately away excess material with waterless hand cleaner. Remove contaminated clothing and wash it thoroughly before reuse.
- **Eye contact:** The chemicals are eye irritant. Flush immediately with a lot of clear tepid water for at least 15 minutes.
- **Ingestion:** Exposure to the chemicals may cause tissue damage to throat and gastro/respiratory tract if swallowed. If ingested, rinse mouth and surrounding area with tepid water. Dilute by drinking plenty of water. Seek medical advice.

SECTION 5: Firefighting measures

The transponder is designed to withstand damage to the internal battery pack. Non-flammable materials are used. In case of fire, move the battery away from the fire area if you can do it without compromising your own safety. Extreme mechanical abuse to the battery may result in a ruptured seal and exposure.

- 1 If possible, move the battery and/or the transponder away from the fire.
- 2 Cool it down using lots of cold water.
 - a Immerse the battery and/or the transponder in the sea for minimum 24 hours.
 - b If this method is impossible, it can be cooled down with a fire hose.

Cooling down the battery with a large amount of cold water is the only way to reduce or stop the internal chemical reactions, or to limit the fire/explosions to as few battery cells as possible. The chemical reactions/fire will continue without additional supply of oxygen, so an extinguisher such as Lith-X will not work properly.

Applying water directly onto a battery may develop hydrogen gas, due to the possible electrolysis if the battery terminals are exposed to water. Mixed with air, this gas is very inflammable/explosive. However, if the water cooling takes place on deck or in a storage room with good ventilation, there will never be enough hydrogen gas to exceed the lower explosive limit of hydrogen in air (about 4 %).

Note

In case of an external fire, always remove transponder units and lithium batteries.

SECTION 6: Accidental release measures

During normal operation, accidental release measures are not applicable. Extreme mechanical abuse to the battery may result in a ruptured seal and exposure.

As an immediate precautionary measure, isolate the spill or leak area at least 25 metres (75 feet) in all directions. Keep unauthorized personnel away. Stay upwind, and keep out of low areas. Ventilate closed areas before entering. Wear adequate personal protective equipment.

Prevent material from contaminating soil and from entering sewers or waterways. Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up the spills immediately.

Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of it according to relevant regulations. Scrub the area with detergent and water; collect all contaminated water for proper disposal.

SECTION 7: Handling and storage

Do not open, disassemble, crush or burn the battery.

- 1 Do not expose the battery to water, sea water or other high-conductivity liquids.
- 2 Avoid mechanical or electrical abuse.
- 3 Do not expose the battery to temperatures outside the range of -40 °C to +80 °C.
- 4 Store in a dry location.

Recommended relative air humidity is 40 to 70 %. To minimize any adverse effects on the battery performance it is recommended that it is kept at room temperature (25 °C ± 5 °C). Higher temperatures can result in shortened life.

- 5 Do not store the battery in direct sunlight.
- 6 Keep the battery out of reach of children.

The storage room must be properly ventilated. It must be provided with sturdy racks with dedicated cradles for the batteries, and allow for easy removal of batteries in case of fire. The room must be designated and clearly identified as a storage area, and entrance should be restricted. The room must not be used as a general rest or work area.

Note

The storage room must have a sprinkler system or a fire station. A suitable fire hose (with water) must be placed outside or in the proximity of the room.

SECTION 8: Exposure control and personal protection

Airborne exposures to hazardous substances are not expected when the battery is undamaged and used as intended. Personal protective equipment (PPE) is not required when the battery is undamaged and used as intended. Don personal protective equipment if the battery is damaged and you are at risk for exposure to the chemicals inside.

In the event of fire or physical damage to the battery, follow the mandatory rules for personal protection.

- **Fire or explosion:** Don a self-contained breathing apparatus (SCBA).
- **Exposure to noxious gas:** Use a full-face mask with minimum BE filter and protective equipment of rubber or plastic. (*B* refers to protection against inorganic gases and *E* refers to protection against sulphur dioxide.)

SECTION 9: Physical and chemical properties

The battery is solid with a hard surface. There is no risk for exposure to the chemicals inside an undamaged battery during normal operation and transportation.

The battery is a solid and sealed unit. The battery cannot be opened to reveal the individual cells.

For additional information about the cells inside the sealed battery pack, see the safety data sheet provided by the cell manufacturer.

Cell manufacturer

- **Manufacturer:** Saft
- **Manufacturer's website:** <https://www.saftbatteries.com/>

SECTION 10: Stability and reactivity

The battery is stable. No specific handling requirements apply.

In normal use, the battery pack is placed inside the sealed transponder.

Water ingress into the transponder can cause dangerous situations.

Short-circuiting, overheating, mechanical damage and exposure to water can start chemical reactions and cause high currents inside the lithium battery. This can generate noxious gases and/or cause danger of explosion. The chemical reactions will continue without additional supply of oxygen, as the battery cells contain the necessary ingredients for maintaining the chemical reactions.

- 1 Do not open, disassemble, crush or burn the battery.
- 2 Do not expose the battery to water, sea water or other high-conductivity liquids.
- 3 Avoid mechanical or electrical abuse.
- 4 Do not expose the battery to temperatures outside the range of -40 °C to +80 °C.
- 5 Store in a dry location.

Recommended relative air humidity is 40 to 70 %. To minimize any adverse affects on the battery performance it is recommended that it is kept at room temperature (25 °C ± 5 °C). Higher temperatures can result in shortened life.

- 6 Do not store the battery in direct sunlight.
- 7 Keep the battery out of reach of children.

SECTION 11: Toxicological information

Acute oral, dermal and inhalation toxicity data are not available for this battery.

Risk of irritation occurs only if the battery is abused to the point of breaking the container and opening it to reveal the individual cells. If this occurs, irritation to the skin, eyes and respiratory tract may occur.

SECTION 12: Ecological information

Provided that the battery pack is disposed of according to local regulations and/or law, it will not have any environmental impact.

SECTION 13: Disposal considerations

Dispose of the batteries in accordance with local, state and federal laws and regulations for batteries.

A lithium thionyl chloride battery does not contain any heavy metals, and is therefore not regarded as special waste (contains only biodegradable parts).

A used lithium battery can contain a significant amount of residual energy. It is the danger of explosion that presents a problem when disposing a battery. Used batteries must therefore be handled with the same care as new ones.

Note

For safe disposal, contact the nearest local company that has been approved to collect and dispose of lithium batteries.

SECTION 14: Transport information

Transportation must be performed in accordance with rules and regulations stated for transportation of dangerous goods in the applicable countries.

Certification: UN 38.3

Transport identification codes:

- **Aircraft:** IATA DGR
- **Sea transport:** IMDG
- **Railway:** RID
- **Road transport:** ADR

Original shipping boxes must be used for all transport.

Air transport of all units with new lithium batteries, and new separate lithium batteries, is only permitted on board cargo aircraft. The goods must be clearly labelled: CARGO AIRCRAFT ONLY.

The transponders with batteries or batteries must be shipped in accordance with the prevailing national regulations.

- Separate lithium batteries
 - UN 3090 PI 968, Section IA
- Lithium batteries contained in equipment
 - UN 3091 PI 970, Section I

Note

During transport a lithium battery must always be disconnected from the electronics.

SECTION 15: Regulatory information

Not applicable.

SECTION 16: Other information

The battery manufacturer's safety datasheet is available on their website.

Saft: <http://www.saftbatteries.com/>

Emergency procedures

Follow these procedures for transponders with lithium batteries with unknown or failing status. Always read these procedures before handling any lithium batteries.

Recovering a failing transponder

Always read the emergency procedures before handling lithium batteries.

Prerequisites

Handle a failing transponder as a possible water ingress.

Procedure

- 1 Evacuate all unnecessary people.
- 2 Recover the transponder with great caution using a crane.
No people should be near the transponder when it is lifted up on deck.
- 3 Place the transponder in a safe place out on deck, shielded from people and vital equipment.
- 4 Fasten the transponder in a crane, ready to lower it into the sea again.
- 5 Control the transponder for minimum two hours.
- 6 Check for damages that could involve a water leakage and check the housing temperature for a possible temperature increase in the lithium battery.
- 7 For batteries with normal temperature: Take out the battery, see the emergency procedure for opening a transponder with a possible defect battery.
- 8 For batteries with increasing temperature: See the emergency procedure for handling a heated or self-heated transponder.

Handling a heated or self-heated transponder

Always read the emergency procedures before handling lithium batteries.

Procedure

- 1 Evacuate all unnecessary people.
- 2 Fasten the transponder to a rope or a crane and immerse in the sea for 24 hours or permanent. If this method is impossible, the unit can be cooled with copious amounts of cold water using a fire hose.
- 3 Recover the transponder and control the temperature.
- 4 Repeat this until the temperature is low and stable.
- 5 Take out the battery, see the emergency procedure for opening a transponder with a possible defect battery.

Handling a transponder with an open relief valve

Always read the emergency procedures before handling lithium batteries.

Procedure

- 1 Evacuate all unnecessary people.
- 2 Use a full face mask with minimum BE-filter, and protective equipment made of rubber or plastic.
- 3 Fasten the transponder to a rope or a crane and immerse in the sea for 24 hours or permanent. If this method is impossible, the unit can be cooled with copious amounts of cold water using a fire hose.
- 4 Repeat this until no gases come out the relief valve and the temperature is low and stable.
- 5 Take out the battery, see the emergency procedure for opening a transponder with a possible defect battery.
- 6 Wash out the residues from the chemical reaction with water.

Opening a transponder with defect/possibly defect battery

Always read the emergency procedures before handling lithium batteries.

Procedure

- 1 Evacuate all unnecessary people.
- 2 Use a full face mask with minimum BE-filter, and protective equipment made of rubber or plastic.

WARNING

You must never stand in front of, or at the back of the unit, when you open it.

- 3 Open the transponder in a safe place out on the deck, shielded from people and vital equipment.
- 4 If there has been water ingress and the battery is still warm, disconnect the battery from the transponder electronics and study the procedure for handling a heated or warm separate battery.
- 5 Wash out the residues from the chemical reaction with water.

Handling heated or warm batteries

Always read the emergency procedures before handling lithium batteries.

Procedure

- 1 Evacuate all unnecessary people.
- 2 Fasten the battery to a rope or a crane and immerse in the sea for 24 hours or permanent. If this method is impossible, the unit can be cooled with copious amounts of cold water using a fire hose.
- 3 Wash out the residues from the chemical reaction with water.

Handling transponder and separate transponder batteries in case of an external fire

Always read the emergency procedures before handling lithium batteries.

Procedure

- 1 If possible, move the battery and/or the transceiver away from the fire.
- 2 Cool it down using lots of cold water.

Cooling down the battery with a large amount of cold water is the only way to reduce or stop the internal chemical reactions, or to limit the fire/explosions to as few battery cells as possible. The chemical reactions/fire will continue without additional supply of oxygen, so an extinguisher such as Lith-X will not work properly.