



Safety Data Sheet

1. Identification

- **Product Name:** Linde ION Technology – 24V – BG22.1 (H9) & BG22.2 (H12)
- **Battery Type:** Lithium Nickel Manganese Cobalt Battery
- **Product Use:** Energy Storage System for Powered Industrial Lift Trucks
- **Supplier:** KION North America Corporation
2450 W 5th North Street
Summerville, SC 29483
- **Telephone:** 843-875-8000
- **Website:** www.kion-na.com
- **Email:** energysolutions.na@kiongroup.com
- **24-Hour Emergency:** Chemtrec: 800-424-9300

2. Hazard Identification

Hazard Statements:

Lithium-ion batteries may present a risk of fire or explosion or chemical burn when mistreated. Do not short circuit, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Read instructions carefully.

Under normal conditions of use, the chemicals and metals are contained in a sealed can and are not exposed to the outside. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery housing. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/fire/explosion may follow, depending on the circumstances.

Touching live parts may cause electrical shock which may result in thermal heating or muscle paralyzing effects. The latter may cause ventricular fibrillation, sudden cardiac arrest or respiratory paralysis with fatal ending.



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3. Composition/information on ingredients

The following components are found inside the sealed Li-ion battery

Chemical name	CAS number	EC#	%
Aluminium Foil	7429-90-5	231-072-3	4
Cobalt Lithium Manganese oxide	182442-95-1	-	37
Polyvinylidene difluoride (PVdF)	24937-79-9	24937-79-9	1
Copper foil	7440-50-8	231-159-6	8
Carbon (proprietary)	7440-44-0	231-153-3	25
Electrolyte (proprietary)	21324-40-3	-	11
Steel	65997-19-5	266-048-1	14

4. First aid measures

General

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused.

Inhalation

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.

Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.

Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.

Ingestion

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.

5. Fire-fighting measures

Extinguishing media

General Hazard

- Cell is not flammable but internal organic material will burn if the cell is incinerated or exposed to high temperatures.

Suitable extinguishing media

- Use fire extinguishers Class ABC Dry powder.

Special hazards arising from the substance or mixture

Hazardous combustion products

- Combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

Advice for firefighters

- If possible, remove cell(s) from fire fighting area. If heated above 257°F (125°C), cell(s) may explode/vent.

6. Accidental release measures

Accidental release measures

- Notify safety personnel of large spills. Irritating vapors and flammable may be released from leaking or ruptured batteries. Eliminate all ignition sources. Evacuate the area and allow the vapors to dissipate.
- Clean - up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapors or fumes. Increase ventilation. Carefully collect batteries and place in an appropriate container for disposal. Remove spilled liquid with absorbent and contain for disposal.

Personal Precautions, protective equipment and emergency procedures

For non-emergency personnel

- Protective equipment: Wear proper protective equipment.
- Emergency procedures: Not applicable
- If required, notify relevant authorities according to all applicable regulations.

For emergency responders

- Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.



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- Must work against the wind, let the upwind people to evacuate.
- Move container to safe area from the leak area.

Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.
- Avoid dispersal of spilt material and runoff and contact with waterways, drains and sewers. If large spills, advise emergency services.

Methods and material for containment and cleaning up

For containment

- Clear spills immediately
- Clean up all spills immediately.
- Control personal contact by using protective equipment.
- Prevent, by any means available, spillage from entering drains or water course.

For cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notify the central and local government if the emission reach the standard threshold.
- Disposal of waste shall be in compliance with the Wastes Control Act
- Appropriate container for disposal of spilled material collected.

Other information

- Slippery when spilt.

7. Handling and storage

Precautions for safe handling

- Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode, pyrolize or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with battery and truck user manual.
- Avoid contact with incompatible materials.
- Read battery and truck user manual before use.
- Do not handle until all safety precautions have been read and understood.



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Conditions for safe storage, including any incompatibilities

- Store in a cool, dry place with humidity 0 % to 80 %
- Do not apply any physical shock to container.
- Avoid direct sunlight.
- Keep in the original container.
- Pay attention to incompatibilities materials and conditions to avoid.

8. Exposure controls/personal protection

Exposure controls/Personal protection

Appropriate engineering controls

- Keep away from heat and open flame. Store in a cool dry place.

Individual protection measures, such as personal protective equipment

Hand protection

- Wear appropriate glove made out of rubber, neoprene, vinyl coated, PVC.

Eye protection

- Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
- Provide an emergency eye wash station and quick drench shower in the immediate work area.

Respiratory Protection

- Respiratory protection is ranked in order from minimum to maximum.
- Consider warning properties before use.

Skin protection

- Wear appropriate clothing.

Others

- It is necessary to wear protective clothes and other protection equipment. Cover your face, head and neck.
- Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.
- Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely.

Thermal hazards

- Not available

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance(State)	Other	Vapour pressure	Not available
Appearance(Color)	Not available	Vapour density	Not available
Odor	Not available	Relative density	Not available
Odor threshold	Not available	Solubility	Insoluble
pH	Not available	Partition coefficient of n-octanol/water	Not available
Melting point/Freezing point	Not available	Autoignition temperature	Not available
Initial boiling point and boiling range	Not available	Decomposition temperature	Not available
Flash point	Not available	Viscosity	Not available
Evaporation rate	Not available	Explosive properties	Not available
Flammability(solid, gas)	Not available	Oxidising properties	Not available
Upper/Lower Flammability or explosive limits	Not available		

Other information

- Not available

10. Stability and reactivity

Reactivity

- None

Chemical Stability

- This product is stable under recommended storage and handling conditions.

Conditions to avoid

- Avoid exposure to heat and open flame.
- Do not puncture, crush or incinerate.

Incompatible materials

- Not available

Hazardous decomposition products

- None during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.

11. Toxicological information

Toxicological information

- This product does not elicit toxicological properties during routine handling and use.
- If the cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

16. Other information, including date of preparation or last revision

Revision	Section(s)	Description	Date
Draft 0.1	All	First draft release	Nov 19 th 2024
0.2	All	Updated/amended with new supplier data	Nov 20 th 2024

Additional data source(s)

Battery cell manufacturers SDS Version: R0001.0001 V05 Date: June 14th 2024