Information Safety Sheet

Given that the provisions of Title IV of European regulation 1907/2006 (Information Within the Supply Chain; Article 31 - Requirements relating to safety data sheets) do not apply to articles as defined by regulation 1223/2009 EC (an object which during production is given a particular shape, surface or design that determines its function to a greater extent than its chemical composition), a Safety Data Sheet, as defined in Annex II of Regulation 830/2015 EC it is not required for this product.
However, information similar to that required by the aforementioned product regulation as supplied is provided below.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. *Product Identifiers*: **Rechargeable Lithium-Ion Battery N21700-CG 10S4P LH** (Ref. 3420007)

1.2. *Relevant identified uses of the substance or mixture*:: Lithium Ion Batteries

Uses advised against: Any use different from the ones listed in this Information Safety Data Sheet or in the applicable Technical Data Sheet

1.3. *Details of the supplier of the safety data sheet:*

Manufacturer: NRG Srl
Address: Via R.Lombardi 19/18, 20153 Milano (MI)
Phone: +39 02.33.50.2229
e-mail: nrg@nrgbatteries.com
Web site: www.nrgbatteries.com

1.4. *Emergency telephone number*: 82-2- 3773-0837

SECTION 2: Hazards identification

The lithium-ion battery described in this safety information sheet is sealed and does not present any dangers of any nature if it is used according to the prescriptions indicated in the technical specifications.

The material contained in this battery can represent a danger only if the integrity of the battery itself is compromised or if it is mechanically, thermally or electrically tampered with.

Warning: do not open or disassemble the battery, do not expose them to open flames.
Do not short-circuit, puncture, burn, break, overcharge, over-discharge or expose the battery to temperatures higher than those indicated. In these cases, there is a risk of explosion, fire or release of unpleasant odors and fumes.

2.1. Classification of the substance or mixture (classification according to Reg. 1272/2008): Not applicable

2.2. Label elements:

GHS Pictograms:	None
GHS Signal word:	None
GHS Hazard statements:	None
GHS Precautionary statements:	**P102:** Keep out of reach of children. **P103:** Read label before use. **P210:** Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. **P202:** Do not handle until all safety precautions have been read and understood. **P234:** Keep only in original container. **P251:** Do not pierce or burn, even after use

2.3. Other hazards: None under normal conditions of use

SECTION 3: Composition/information on ingredients

Components / substances sealed inside the battery (not releasable under standard conditions of use and maintenance)

Symbol or Chemical Name	% w/total w	CAS number
Carbon	10-30	7440-44-0
Metal oxide	20-50	
Electrolyte	10-20	
Polyvinylidene fluoride (PVDF)	<5	24937-79-9
Aluminium	2-10	7429-90-5
Copper	2-10	7440-50-8
Stainless steel, Nickel and inert materials	To 100	

Section 4: First aid measures

The dangerous components of this cell or battery are contained in a sealed unit. The measures below apply only if exposure to components has occurred when a cell or battery is leaking, or is exposed to high temperatures and / or is violated / damaged mechanically, electrically or physically. The dangerous contents are caustic alkaline electrolytes contained in cells with cathodes of lithium metal oxide, graphite and carbon anodes and polyvinylidene fluoride binders.

If in eyes:	Rinse cautiously with plenty of water for at least 15 minutes with the eyelid held wide open. Remove contact lenses, if present and easy to do. Continue rinsing.
If on skin:	Remove/Take off immediately all contaminated clothing. Rinse skin with soap and plenty of water for at least 15 minutes. Wash contaminated clothing before reuse. If skin looks altered or a large amount of product has been released, seek for medical attention.
If swallowed:	If the victim is conscious, make her drink plenty of water. Take the injured person to the hospital.
If inhaled:	*Move victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call the closest POISON CENTER or doctor/physician.*
Personal protective equipment for first aid responders:	Do not enter corrosive areas contaminated by vapour without a respirator or self-contained breathing. Wear appropriate personal protective equipment in accordance with Section 8.
Most important symptoms and effects, both acute and delayed:	Battery contents are classified as corrosive. Ingestion of the electrolyte can lead to severe irritation / corrosion of the gastrointestinal tract with nausea, vomiting and potential burns. Inhalation of vapors can lead to severe irritation / corrosion of the mouth and upper respiratory tract with a burning sensation, pain, burns and inflammation of the nose and throat; coughing or breathing difficulties may also occur. Contact with eyes can cause serious irritation and / or permanent damage to the eyes. Contact with skin can cause irritation and burns.

SECTION 5: Firefighting measures

Extinguishing media: The recommended ones are dry fire extinguishers, sand, dolomite or metal powders, carbon dioxide should only be used in incipient fires.
Water and foam fire extinguishers can however be used in consideration of the little lithium contained in these lithium ion batteries. In case of ineffectiveness, allow the battery pack to wear out in a controlled and safe area.

Special hazards arising from the substance or mixture: Batteries may explode during a fire. In case of contact with water and with the electrolyte solution contained, the batteries can release hydrogen fluoride. The anode in contact with water can release hydrogen gas. In the event of overheating and / or fire, the formation of the following combustion gases cannot be excluded: hydrofluoric acid (HF), carbon monoxide and carbon dioxide, lithium oxide, nickel oxides, copper oxides and other metal oxides. Damaged and open batteries can quickly overheat and release flammable vapors. The vapors formed, being heavier than air, they will stratify along the floor.
Even if the fire is tamed, consider that the cells have different reaction times and can reactivate and ignite later. Keep the battery under control in an isolated area for a few hours.

Advice for firefighters: Wear self-contained breathing apparatus and protective clothing. If possible, remove cells from the burning area. If heated to temperatures above 125 ° C, cells can explode / release components. The cell is not flammable but the internal organic material can burn if the cell is involved in a fire.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation. Wear protective equipment according to section 8. Keep unprotected persons away and stay on the side protected from the wind.

For non-emergency personnel: In case of accidental release, avoid direct contact with the substance and move away from the contaminated area by at least 25 meters (75 feet). Remove any open flames present.

For emergency personnel: Keep untrained personnel away from the contaminated area. All people must move at least 25 meters (75 feet) away from the place where the accident occurred and return only after the escaping gases have dissolved. Wear suitable

clothing and protection to proceed with cleaning (see section 8 for individual protection).

Environmental precautions: Avoid material dispersion in sewers, drains and surface or underground waterways.

Methods and materials for containment and cleaning up:

Adequate containment techniques: Contain spilled material. Vacuum the material or collect the substance with an absorbent material and place it in drums or other suitable containers for disposal. Finish cleaning the surface contaminated with water.

Adequate recovery procedures: Wash the contaminated area with water. Avoid spills into drains.

Reference to other sections: Waste disposal: See Section 13.

SECTION 7: Handling and storage

Precautions for safe handling:: Under normal conditions of use, no particular rules are specified for handling cells or lithium-ion batteries.

Precautions

- Avoid short circuits;
- Use electrically insulated workbenches;
- Avoid working on wet surfaces;
- To detect the size of a lithium battery, use plastic gauges or insulate the metal surface of the same;
- Do not wear rings on your fingers; in case wear insulating gloves;
- Move the batteries in their original packaging;
- Do not disassemble the batteries, do not throw them in the fire, do not pierce them, do not overheat them or immerse them in water.

Conditions for safe storage, including any incompatibilities: : The area intended for the storage of lithium-ion cells or batteries must be fresh, dry, ventilated, away from flames and heat sources.

- The use of a non-combustible structure with an adequate space between the batteries and the wall is recommended.
- Store at room temperature (about 20 ° C) and at a relative humidity of 20 ~ 60%.
- Do not store at temperatures above 40 ° C or below 0°C.
- Prepare adequate protection to avoid possible shocks to the batteries.
- Keep the batteries in their original packaging until ready to use.
- Do not expose batteries to direct sunlight.
- Keep batteries away from strong oxidizing or acidic substances.
- Keep batteries away from food and drinks.

SECTION 8: Exposure controls / personal protection

8.1 Control parameters: In the standard use, there are no exposures to dangerous substances. Workplace exposure standards are not applicable to sealed items.

Biological limits: Not applicable.

Information on the procedures of recommended monitoring: Follow the standard monitoring procedures foreseen by the legislation applicable in the workplace.

Derived No Effect Level (DNEL): Not applicable.
Derived minimal effect level (DMEL): Not applicable.
Predicted No Effect Concentration (PNEC): Not applicable.

8.2 Exposure controls

In normal use conditions, there are no exposures to dangerous substances. Only in case of breakage and therefore release of liquids and vapors, follow the instructions below:

Appropriate engineering controls: Provide comprehensive general and / or local ventilation. Avoid inhalation of vapors of the heated substance, if necessary through the use of masks. Make running water and eye wash stations available.

Eye protection: The equipment should comply with EN166: wear protective glasses and, if there is a reasonable risk of splashing on the face, also face protection.

Skin protection: Wear suitable protective clothing (in accordance with the directive (see 89/686 EC and the EN ISO 20344 standard) commensurate with the potential exposure during the manufacturing process so as to minimize the danger of contact with the skin.

Hand protection: Wear suitable protective gloves with protection level 6 according to EN 374. Examples are: nitrile rubber gloves with a thickness of 0.55mm, breakthrough time> 480min or polyvinyl chloride or nitrile rubber gloves with a thickness of 0.9 mm, penetration > 480 min. Depending on the work carried out, homologation to EN 388 may be required.

Respiratory protection: Wear appropriate masks with type "A" filter for gases and organic substances (EN 143 and EN 140 or EN 136 approved) if vapors develop during processing.

Only in case of cell breakage, fire, follow the instructions below:

	Professional exposure rules	
	**Respiratory protection**	**In all fire situations, use a mask protective.**
	**Hands protection**	**In the event of internal components leaking.**
	**Eyes protection**	**The use of safety glasses is recommended in case of cell breakage.**
	**Other**	**In case of cell leakage or breakage, wear appropriate clothing**

Environmental exposure control: Do not release to the environment

SECTION 9: Physical and chemical properties

Physical state: Solid

Appearance: Parallelepiped with plastic covering

Odour: None

pH: Not applicable

Flash point Not applicable

Relative density: Not applicable

Solubility:	Not soluble in water
Other information:	
Battery type:	Lithium-ion (Li-ion)
Nominal voltage:	36 V
Capacity:	20 Ah
Wh rating:	720 Wh
Battery pack weight:	Gr 3500 ± 50
Dangerous component weight:	Gr 2800 max
Anode (negative electrode):	Graphite
Cathode (positive electrode):	Lithium metal oxide

SECTION 10: Stability and reactivity

Reactivity:	Stable under normal storage conditions.
Chemical stability:	Stable under normal storage conditions.
Possibility of hazardous reactions:	Not expected in normal storage and use conditions.
Conditions to avoid:	Flames, heat sources during storage. Battery ruptures and deformations.
Incompatible materials:	Water, acid alkaline solutions, strong oxidizing agents.
Hazardous decomposition products:	Hydrofluoric acid and Carbon oxides following combustion.

SECTION 11: Toxicological information

Effects and symptoms:	None except in case of cell breakage. If exposed to the internal components of the cells, corrosive vapors are irritating to the skin, eyes and mucous membranes. Over-exposure can trigger symptoms of non-fibrotic lung injury and membrane irritation.
Inhalation:	Exposure to vapors released in accidental conditions could cause lung irritation.
If on the skin:	Exposure to spilled liquids in accidental conditions could cause skin irritation / corrosion.
If on the eyes:	Exposure to spilled liquids / vapors in accidental conditions, may cause eye irritation / corrosion.

If swallowed: The ingestion of spilled liquids in accidental conditions, could cause damage to the tissues of the throat and gastro-respiratory tract.

Physical conditions generally aggravated by exposure:
Eczema, skin allergies, lung injury, asthma and other respiratory disorders may occur if exposed to internal components..

SECTION 12: Ecological information

Eco-toxicity: No known risk if this product is used and disposed of properly in accordance with local legislation.

Bioaccumulative potential: No known risk if this product is used and disposed of properly in accordance with local legislation.

Risks for the environment: No known risk if this product is used and disposed of properly in accordance with local legislation.

SECTION 13: Disposal considerations

Dispose residues and packaging in accordance with local and state laws. Dispose of hazardous products according to European Waste Catalogue (EWC).

SECTION 14: Transport information

UN Number: UN3480

UN proper shipping name:
ADR/RID/ADN: LITHIUM ION BATTERIES
IMDG Code: LITHIUM ION BATTERIES
ICAO-IT/IATA DGR: LITHIUM ION BATTERIES

Transport hazard class(es):
ADR/RID/ADN: Class 9
IMDG Code: Class 9
ICAO-TI/IATA DGR: Class 9

Packing group: Not applicable

Environmental hazards: None

Special precautions for users: *ADR/RID/ADN*: Label 9A; Tunnel Restriction Code: E; exempt and limited quantity: 0 and E0.

ADR packing instruction P903 applies.
Applicable Special Provisions: 188, 230, 310, 348, 376, 377, 387, 636.

IMDG code: label 9A; EmS: F-A, S-I; exempt and limited quantity: 0 and E0.
Packing instruction P903 of the IMDG code applies.
Applicable Special Provisions: 188, 230, 310, 348, 376, 377, 384, 387.
Stowage class: A, SW19.
Segregation: none.

ICAO-TI/IATA DGR: Label 9A - Lithium Batteries.
Lithium-ion cells and batteries must be offered for transport with a state of charge not exceeding 30% of their nominal capacity. Cells and / or batteries with a state of charge greater than 30% can only be shipped with the approval of the State of Origin and the State of the Operator in accordance with the written conditions established by these authorities.
Transport allowed only on “Cargo Aircraft Only”.
Packing Instruction 965.
Applicable Special Provisions: A88, A99, A154, A164, A183, A201, A206, A213, A331, A334, A802.
ERG Code: 12FZ.
Segregation: no other dangerous goods are allowed in the same package.
Overpack segregation: incompatible with classes 1 (except 1.4S), 2.1, 3, 4.1 and 5.1.

During transport, avoid exposure to high temperatures and prevent the formation of condensation. Arrange the cartons in order to avoid accidental falls. Prepare a cover that will protect them from the rain.

Transport in bulk according to Annex II of Marpol 73/78 and the IBC code: Not applicable according to the product as supplied

Additional information for transport:
If these lithium ion batteries are contained in an appliance or packed with an appliance, it is responsibility of the shipper to ensure that the shipment is packed in accordance with the latest edition of the IATA section on dangerous goods and the applicable packaging instructions 966 or 967 to be able to declare that shipment compliant. In this case the applicable UN number is UN3481 (IONIC LITHIUM BATTERIES CONTAINED IN A DEVICE or IONIC LITHIUM BATTERIES PACKED WITH A DEVICE).

SECTION 15: Regulatory information

Health, safety and environmental laws and regulations specific for the substance or mixture:

Reg. 1907/2006/CE (REACH):	All components of this article are in compliance with this regulation;
Reg. 1872/2008/CE (CLP):	Not applicable to articles that do not intentionally release substances;
Reg. 528/2012/CE (BPR):	Not applicable to articles that do not intentionally release substances.

SECTION 16: Other information

Lithium-ion cells or batteries should only be handled by experienced personnel. Furthermore, they must be used in compliance with the relevant Technical Specifications, without ever exceeding the values indicated in them.

DISCLAIMER:

The herein opinions and information are the result of our investigations and are given in good faith but no warranty, express or implied, is made. The information refers to the batteryt as delivered by NRG srl. Since the use of these opinions and information and the conditions of use of the product are not under the control or supervision of NRG srl, it is the user's responsibility to determine the safety and suitability for his own use of the product described herein. To this purpose the recipient is invited to consider the present Safety Information Sheet in the context of the applicable laws and regulations of the country and area where the product is to be used. The product must be handled only by trained personnel.

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The Product Manager

Massimo Oliva