

SAFETY DATA SHEET**1. Identification of the product and of the company/undertaking****Product identifier:** Lithium-Ion Battery Pack

Product No.:	Description
8991122111	Battery Pack BPA 10820 10.8 V 2.0 Ah

Specifications:

Lithium-ion rechargeable battery pack for power tools.

Rated voltage:	10.8 V d.c.
Rated capacity:	2000 mAh
Rated energy:	21.6 Wh
Number/type of cells:	3 / INR18650-20R M

Details of the supplier:

Company: KWH Mirka Ltd
Address: Pensalavägen 210
FI-66850 Jeppo, Finland
Phone: +358 20 760 2111 Fax: +358 20 760 2290
E-mail: sales@mirka.com

Emergency telephone number:

+358 20 760 2111
Opening hours: Monday – Friday, 08.00 a.m. – 04.00 p.m. (UTC/GMT +2.00/+3.00)

2. Hazards identification**Route(s) of entry** There is no hazard when the measures for handling and storage are followed.**Signs and symptoms of exposure:**

In case of cell damage, possible release of dangerous substances and a flammable gas mixture.

OSHA Hazard Communication: This material is not considered hazardous by the OSHA Hazard Communication Standard 29CFR 1910.1200.

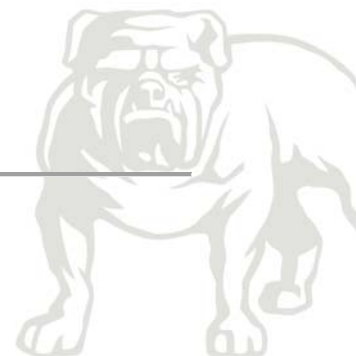
Carcinogenicity (NTP): Not listed

Carcinogenicity (IARC): Not listed

Carcinogenicity (OSHA): Not listed

Special hazards for human health and environment:

There is no hazard when the measures for handling and storage are followed. In case of cell damage, possible release of dangerous substances and a flammable gas mixture.



3. Composition/information on ingredients

Hazardous components

CAS No.	Chemical name	Quantity
1307-96-6	Cobalt oxide	< 30%
1313-13-9	Manganese dioxide	< 30%
1313-99-1	Nickel oxide	< 30%
7440-44-0	Carbon	< 30%
	Electrolyte (*)	< 20%
24937-79-9	Polyvinylidene fluoride (PVDF)	< 10%
7429-90-5	Aluminum foil	2–10%
7440-50-8	Copper foil	2–10%

Aluminum and inert materials 5–10 %

Full text of each relevant R phrase can be found in heading 16.

Further information

For information purposes:

(*) Main ingredients: Lithium hexafluorophosphate, organic carbonates

Because of the cell structure the dangerous ingredients will not be accessible if used properly.

During charge process a lithium graphite intercalation phase is formed.

Mercury content: Hg < 0.1 mg/kg

Cadmium content: Cd < 1 mg/kg

Lead content: Pb < 10 mg/kg

4. First aid measures

General information

The following first aid measures are required only in case of exposure to interior battery components after damage of the external battery casing.

Undamaged, closed cells do not represent a danger to health.

After inhalation

Ensure plenty of fresh air. Consult a physician.

After contact with skin

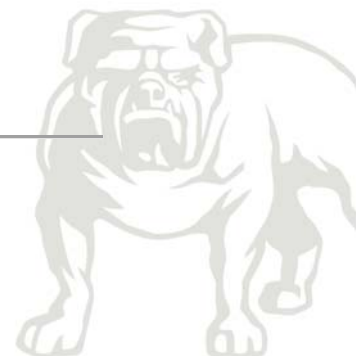
In case of contact with skin wash off immediately with plenty of water. Consult a physician.

After contact with eyes

Rinse immediately with plenty of water, including underneath the eyelids, for at least 15 minutes. Seek medical treatment by eye specialist.

After ingestion

Drink plenty of water. Call a physician immediately.



5. Fire-fighting measures

Suitable extinguishing media

Cold water and dry powder in large amounts are applicable.
Use metal fire extinguishing powder or dry sand if only a few cells are involved.

Special hazards arising from the chemical

May form hydrofluoric acid if electrolyte comes into contact with water. In case of fire, the formation of the following flue gases cannot be excluded: Hydrogen fluoride (HF), carbon monoxide and carbon dioxide.

Protective equipment and precautions for firefighters

Wear self-contained breathing apparatus and protective suit.

Additional information

If possible, remove cell(s) from fire-fighting area. If heated above 125°C, cell(s) can explode/vent. Cell is not flammable but internal organic material will burn if the cell is incinerated.

6. Accidental release measures

Personal precautions

Use personal protective clothing. Avoid contact with skin, eyes and clothing.
Avoid breathing fumes and gas.

Environmental precautions

Do not discharge into the drains/surface waters/groundwater. Methods for cleaning up/taking up. Take up mechanically and send for disposal.

7. Handling and storage

Handling, advice on safe handling

Avoid short circuiting the cell. Avoid mechanical damage to the cell. Do not open or disassemble. Advice on protection against fire and explosion.
Keep away from open flames, hot surfaces and sources of ignition.

Storage, requirements for storage rooms and vessel

Storage at room temperature (approx. 20°C) at approx. 20~60% of the nominal capacity (OCV approx. 3.6–3.9 V/cell). Keep in closed original container.



8. Exposure controls/personal protection

Ingredient	Risk Codes	Safety Description	Hazard	Exposure Controls/Personal Protection
Cobalt oxide	R22, R43, R50/53	S24, S37, S60, S61	Xn (Harmful) N (Dangerous for the environment)	0.1 mg/m ³ (TWA)
Manganese (VI) oxide	R20/22	S25	Xn (Harmful)	Airborne Exposure Limits: - OSHA Permissible Exposure Limit (PEL): 5 mg/m ³ Ceiling for manganese compounds as Mn - ACGIH Threshold Limit Value (TLV): 0.2 mg/m ³ (TWA) for manganese, elemental and inorganic compounds as Mn
Nickel oxide	R43, R49, R53	S45, S53, S61	T (Toxic)	Airborne Exposure Limits: For Nickel, Metal and Insoluble Compounds, as Ni: - OSHA Permissible Exposure Limits (PEL) - 1 mg/m ³ (TWA). For Nickel, Elemental / Metal: - ACGIH Threshold Limit Value (TLV) 1.5 mg/m ³ (TWA), A5 - Not suspected as a human carcinogen. For Nickel, Insoluble Compounds, as Ni: - ACGIH Threshold Limit Value (TLV) 0.2 mg/m ³ (TWA), A1 - Confirmed human carcinogen
Carbon	R36/37/38, R36/37, R20, R10	S22, S24/25	F (Highly Flammable) Xn (Harmful) Xi (Irritant)	Airborne Exposure Limits: - OSHA Permissible Exposure Limits (PELs): activated carbon (graphite, synthetic): Total particulate = 15 mg/m ³
Aluminium foil	R17, R15, R36/38, R10, R67, R65, R62, R51/53, R48/20, R38, R11	S7/8, S43, S26, S62, S61, S36/37, S33, S29, S16, S9	F (Highly Flammable) Xn (Harmful) Xi (Irritant)	Airborne Exposure Limits: - OSHA Permissible Exposure Limit (PEL): 15 mg/m ³ (TWA) total dust and 5 mg/m ³ (TWA) repairable fraction for Aluminum metal as Al - ACGIH Threshold Limit Value (TLV): 10 mg/m ³ (TWA) Aluminum metal dusts
Copper foil	R11, R36, R37, R38	S5, S26, S16, S61, S36/37	F (Highly Flammable) N (Dangerous for the environment) Xn (Harmful) Xi (Irritant)	Copper Dust and Mists, as Cu: - OSHA Permissible Exposure Limit (PEL) - 1 mg/m ³ (TWA) - ACGIH Threshold Limit Value (TLV) - 1 mg/m ³ (TWA) Copper Fume: - OSHA Permissible Exposure Limit (PEL) 0.1 mg/m ³ (TWA) ACGIH Threshold Limit Value (TLV) 0.2 mg/m ³ (TWA)
Polyvinylidene fluoride (PVdF)		S22, S24/25		

Additional advice on limit values

Occupational exposure controls
Protective and hygiene measures

Respiratory protection
Hand protection
Eye protection
Skin protection

During normal charging and discharging there is no release of product.

No specific precautions necessary.
When using do not eat, drink or smoke. Wash hands before breaks and after work.

No specific precautions necessary.
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No specific precautions necessary.



9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Solid
Form	Irregular
Colour	Various
Odour	Odourless
Voltage	10.8 V DC
Capacitance	2000 mAh

Important health, safety and environmental information

Test method	
pH value	N/A
Flash point	N/A
Lower explosion limits	N/A
Vapour pressure	N/A
Density	N/A
Water solubility	Insoluble
Auto-ignition temperature	N/A

10. Stability and reactivity (USA, EU)

Stability Stable

Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition. Do not puncture, crush or incinerate.

Materials to avoid No materials to be especially mentioned.

Hazardous decomposition products

In case of open cells, there is the possibility of hydrofluoric acid and carbon monoxide release.

Possibility of hazardous reactions

Will not occur.

Additional information No decomposition if stored and applied as directed.

11. Toxicological information

Empirical data on effects on humans

If appropriately handled and if in accordance with the general hygiene rules, no damages to health have become known.



12. Ecological information

Further information Ecological injuries are not known or expected under normal use. Do not flush into surface water or sanitary sewer system.

13. Disposal considerations

Advice on disposal For recycling consult manufacturer.

Contaminated packaging Disposal in accordance with local regulations.

14. Transportation information

The rechargeable Lithium-Ion battery packs as stated in Appendix are made in compliance with the requirements stated in the latest edition of the IATA Dangerous Goods Regulations Packing Instruction 965 section II, such that they can be transported as a NOT RESTRICTED (non-hazardous/non-dangerous) goods. However, if these lithium-ion battery packs are packed with or contained in equipment, then it is the responsibility of the shipper to ensure that the consignment is packed in compliance with the latest edition of the IATA Dangerous Goods Regulations section II of either Packing Instruction 966 or 967 in order for that consignment to be declared as NOT RESTRICTED (non-hazardous/non-dangerous).

With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions, Packing Instruction 965 Section II (2013–2014 Edition),
- The International Air Transport Association (IATA) Dangerous Goods Regulations, Packing Instruction 965 Section II (55th Edition, 2014),
- The International Maritime Dangerous Goods (IMDG) Code (2012 Edition),
- US Hazardous Materials Regulations 49 CFR (Code of Federal Regulations) Sections 173–185 Lithium batteries and cells,
- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 Lithium batteries, Rev. 5, Amend. 1
- UN No. 3480.

Our products are properly classified, described, packaged, marked, and labelled, and are in proper condition for transportation according to all the applicable international and national governmental regulations, not limited to the above-mentioned. We further certify that the enclosed products have been tested and fulfilled the requirements and conditions in accordance with UN Recommendations (T1–T8) on the Transport of Dangerous Goods Model Regulations and the Manual of Tests and Criteria that can be treated as "Non-Dangerous Goods".



Test results of the UN Recommendation on the Transport of Dangerous Goods

Manual of Test and Criteria (38.3 Lithium battery)	Test results	Remark
No	Test item	
T1	Altitude Simulation	Pass
T2	Thermal Test	Pass
T3	Vibration	Pass
T4	Shock	Pass
T5	External Short Circuit	Pass
T6	Impact	Pass
T7	Overcharge	Pass
T8	Forced Discharge	Pass

For pack and single cell battery only

15. Regulatory information

U.S. Regulations

Inventory TSCA

All of the components are listed on the TSCA inventory.

SARA

To the best of our knowledge this product contains no toxic chemicals subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act (SARA/EPCRA) and the requirements of 40 CFR Part 372.

Regulatory information EU

Labeling**Hazardous components which must be listed on the label**

As an article the product does not need to be labelled in accordance with EC directives or respective national laws.

EU regulatory information

1999/13/EC (VOC): 0%

16. Other information**Hazardous Materials Information****Label (HMIS)**

Health: 0

Flammability: 0

Physical Hazard: 0

NFPA Hazard Ratings

Health: 0

Flammability: 0

Reactivity: 0

Unique Hazard: 0



**Full text of R-phrases
referred to under sections
2 and 3**

R10 Flammable.
R20/22 Harmful by inhalation and if swallowed.
R22 Harmful if swallowed.
R34 Causes burns.
R40 Limited evidence of a carcinogenic effect.
R43 May cause sensitization by skin contact.

R48/23 Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R49 May cause cancer by inhalation.
R50 Very toxic to aquatic organisms.
R53 May cause long-term adverse effects in the aquatic environment.

Further information

Data in sections 4 to 8, as well as 10 to 12, do not necessarily refer to the use and the regular handling of the product (in this sense consult package leaflet and expert information), but to release of major amounts in case of accidents and irregularities. The information describes exclusively the safety requirements for the product(s) and is based on the present level of our knowledge. This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations. "(n.a. = not applicable; n.d. = not determined)"
The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.

