

MATERIAL SAFETY DATA SHEET

Section 1. Product Identification

Product Name:	Hacker TopFuel Lithium Polymer Battery
Company of Producing:	Hacker Motor GmbH
Models:	Rechargeable Lithium Polymer Battery over 100Wh
Address:	Schinderstraßl 32, 84030 Ergolding, Germany
Tel:	+49-871-953628-0
Fax:	+49-871-953628-29

Section 2. Composition, Information on Ingredients

Composition	Chemical Formula	CAS No	Weight (%)
Lithium Cobalt Oxide	LiCoO ₂	12190-79-3	27.5-42.5%
PVDF	(CH ₂ -CF ₂) _n	24937-79-9	0.5-1.5%
Graphite	C	7782-42-5	14-22%
(EC)	C ₃ H ₆ O ₃	96-49-1	3.712%
(EMC)	C ₄ H ₈ O ₃	623-53-0	2.784%
(DMC)	C ₃ H ₆ O ₃	616-38-6	7.425%
(PC)	C ₃ H ₆ O ₃	108-32-7	1.670%
(VC)	C ₃ H ₂ O ₃	872-36-6	0.185%
Lithium Hexafluorophosphate	LiPF ₆	21324-40-3	2.785%
CMC	Carboxymethylcellulose	9004-32-4	0.25-0.35%
Polypropylene	(C ₂ H ₄) _n	9002-88-4	2.0-4.2%
Copper	Cu	7440-50-8	10-20%
Aluminum	Al	7429-90-5	5-10%
Nickel	Ni	7440-02-0	0.2%

SBR	(C ₈ H ₈ C ₄ H ₆) _x	9003-55-8	0.6-1.0%
Carbon Black	C	1333-86-4	1.0-1.8%

Section 3. Hazards Identification

Explosive risk	This article does not belong to the explosion dangerous goods
Flammable risk	This article does not belong to the flammable material
Oxidation risk	This article does not belong to the oxidation of dangerous goods
Toxic risk	This article does not belong to the toxic dangerous goods
Radioactive risk	This article does not belong to the radiation of dangerous goods
Mordant risk	This article does not belong to the corrosion of dangerous goods
other risk	This article is Lithium-ion Cell Watt hour rate is $\geq 100\text{Wh}$

Section 4. First Aid Measures

Description of first aid measures

General information No special measures required.

After eye contact

Flush eyes with plenty of water for several minutes while holding eyelids open. Get medical attention if irritation persists.

After skin contact

Remove contaminated clothing and shoes. Immediately wash with water and soap and rinse thoroughly. Wash clothing and shoes before reuse. If irritation occurs, get medical attention.

After inhalation

Remove victim to fresh area. Administer artificial respiration if breathing is difficult. Seek medical attention.

After swallowing

Do not induce vomiting. Get medical attention.

Information for doctor:

Indication of any immediate medical attention and special treatment needed

No further relevant information available.

Section 5. Fire Fighting Measure

Suitable extinguishing media:

Use extinguishing agent suitable for local conditions and the surrounding environment
Such as dry powder , CO₂.

Special hazards arising from the substance or mixture

Battery may burst and release hazardous decomposition products when exposed to a fire situation. Lithium- ion batteries contain flammable electrolyte that may vent, ignite and produce sparks when subjected to high temperature(>150°C(302°F)), when damaged or abused (e.g. mechanical damage or electrical overcharging); may burn rapidly with flare-burning effect; may ignite other batteries in clothes proximity.

Specific protective actions for fire-fighters:

Protective equipment: Wear self-contained respirator. Wear fully protective impervious suit.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide, lithium oxide fumes.

Section 6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation

Environmental precautions

Do not allow material to be released to the environment without proper governmental permits.

Steps to be taken in case material is spilled or released

Remove ignition sources, evacuate area. Sweep up using a method that does not generate dust. Collect as much of the spilled material as possible, placed the spilled material into a suitable disposal container. Keep spilled material out of sewers, ditches and bodies of water.

Waste disposal method

All waste must refer to the United Nations, the national and local regulations for disposal.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

Section 7. Handling and storage

Specific and use

The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

Precautions to be taken in handling and storing

Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

Other Precautions

The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Section 8. Exposure Controls, Person Protection

Respiratory Protection

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use.

Ventilation

Not necessary under conditions of normal use.

Protective Gloves

Not necessary under conditions of normal use.

Other Protective Clothing or Equipment

Not necessary under conditions of normal use.

Personal Protection is recommended for venting battery

Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

Section 9. Physical and Chemical Properties

Appearance: Quadrate shape

Ref, No.: GRP190102 002

Odour: If leaking, smells of medical ether.

pH: Not applicable as supplied.

Flash Point: Not applicable unless individual components exposed.

Flammability: Not applicable unless individual components exposed.

Relative density: Not applicable unless individual components exposed
Solubility (water): Not applicable unless individual components exposed
Solubility (other): Not applicable unless individual components exposed

Section 10. Stability and Reactivity

Stability: Product is stable under conditions described in Section 7.
Conditions to Avoid : Heat above 70°C or incinerate. Deform. Mutilate. Crush. Disassemble. Overcharge. Short circuit. Expose over a long period to humid conditions.
Materials to avoid: Oxidising agents, alkalis, water.
Hazardous Decomposition Products : Toxic Fumes, and may form peroxides.
Hazardous Polymerization : N/A.
If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated hydrocarbons.

Section 11. Toxicological Information

Signs & symptoms: None, unless battery ruptures.
In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.
Inhalation: Lung irritant.
Skin contact: Skin irritant.
Eye contact: Eye irritant
Ingestion: Poisoning if swallowed..
Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to server irritation, burning and dryness of the skin may occur, Target QJ/11.4393-2011.05 organs nerves, liver and kidneys.

Section 12. Ecological Information

Mammalian effects: None known at present.
Eco-toxicity: None known at present.
Bioaccumulation potential: Slowly Bio-degradable.

Section 13. Disposal Considerations

Waste treatment methods
Recommendation:
Consult state, local or national regulations to ensure proper disposal.
Uncleaned packaging
Recommendation: Disposal must be made according to official regulations.

Section 14. Transport Information

Individual Lithium-polymer cells and battery packs or packed with or in equipment with respectively more than 20Wh (Cell) or 100Wh (Battery)

UN-Number:

ADR UN3480/UN3481

RID UN3480/UN3481

IMDG UN3480/UN3481

Proper Shipping name:

ADR/RID/IMDG LITHIUM-ION BATTERY

Transport hazard class 9 (M4 Lithium Battery)

Packing Instruction P903

Special shipping information:

This battery has been tested to Section 38.3 of 'UN Manual of Tests and Criteria'.
These must be signed with the following label 9A:



Section 15. Additional Information

Abbreviations and acronyms

CLP:	EU regulation (EC) No 1272/2008 on classification, labelling and packaging of chemical substances and mixtures.
CAS:	Chemical Abstracts Service (Division of the American Chemical Society).
ACGIH:	American Conference of Governmental Industrial Hygienists
TLV:	Threshold Limit Value
IATA:	International Air Transport Association
IMDG:	International Maritime Dangerous Goods
LC50:	lethal concentration, 50 percent kill
LD50:	lethal dose, 50 percent kill
TWA:	Time Weighted Average
TSCA:	United States Toxic Substances Control Act Section 8(b) Inventory
EINECS:	European Inventory of Existing Commercial Chemical Substances
Model:	Recommendations on the Transport of Dangerous Goods Model
Regulations:	Regulations

Declare to reader

The above information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

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End of report