Material Safety Data Sheet

1. Identification of the Substance/Preparation and the Company/Undertaking

Substance or preparation trade name: Lithium Ion Battery pack
Unique reference numbers(s): XR266, XR276, XR680
Company/undertaking name & address: PARWELD lTD,
Long Bank, Bewdley, WORC, DY12 2TZ, UK

Telephone:01299 266800
Emergency telephone number: 01299 266800

2. Composition

Substance:
Steel, Copper, Aluminum: 31%
Polypropylene: 10%:
Lithium cobaltite: 29%
Organic solvents: 13%
Salts: 1%
Lithium metal: 0%

Electrochemical system:
Negative Electrode: Carbon Positive
Electrode: Lithium cobaltite (LiCoO2)
Electrolyte: Solution of lithium hexafluorophosphate (LiPF6) in a mixture of organic solvents
Nominal Voltage: 4.7 V
No more than 0.5g/pc lithium is contained.

3. Hazards Identification

The Lithium-Ion batteries described in this Material Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the Manufacturer. Under normal conditions of use, the solid electrode materials and liquid electrolyte they contain are non-reactive provided the battery integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) leading to the rupture of the battery containers. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/explosion/fire may follow, depending upon the circumstances.

Chemical: Classification of Dangerous Substances Contained into the Product as per Directive

Substance		Melting Point	Boiling Point	Classification			
CAS N°	Chemical symbol			Exposure limit	Indication of danger	Special risk (1)	Safety advice (2)
12190-79-3	$LiCoO_2$	> 1000°C	N/A	0.1 mg/m3 OSHA		R22 R43	S2 S22 S24 S26 S36 S37 S43 S45
EC : 96-49-1 DMC : 616-38-6 DEC : 105-58-8 EA : 141-78-6	Organic solvents (DC-DMC DEC-EA)	EC : 38°C DMC : 4 °C DEC : -43°C EA : -84°C	EC : 243°C DMC : 90°C DEC : 127°C EA : 77°C	None established OSHA	Flammable	R21 R22 R41 R42/43	S2 S24 S26 S36 S37 S45
21324-40-3	$LiPF_6$	N/A (decomposes at 160°C)	N/A	None established OSHA	Irritant Corrosive	R14 R21 R22 R41 R43	S2 S8 S22 S24 S26 S36 S37 S45

1. Risk Phrases:
R 14 Reacts with water
R 21 Harmful in contact with skin
R 22 Harmful is swallowed
R 41 Risk of serious damage to the eye
R 42/43 May cause sensitization by inhalation and skin contact
R 43 May cause sensitization by skin contact

2. Safety Phrases:
S 2 Keep out of reach from children
S 8 Keep away from moisture
S 22 Do not breathe dust
S 24 Avoid contact with skin
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical attention
S 36 Wear suitable protective clothing
S 37 Wear suitable gloves S 45 In case of incident, seek medical attention. S45 In case of incident, seek medical attention

4. First aid measures

In case of battery rupture or explosion, evacuate personnel from contaminated area and provide maximum ventilation to clear out corrosive fumes/gases and pungent odour. In all case, seek immediate medical attention.
Eye contact: Flush with plenty of water (eyelids-held open) for at least 15 minutes.

Skin contact: Remove all contaminated clothing and flush affected areas with plenty of water and soap for at least 15 minutes. Do not apply greases or ointments.

Ingestion: Dilute by giving plenty of water and get immediate medical attention. Assure that the victim does not aspirate vomited material by use of positional drainage. Assure that mucus does not obstruct the airway. Do not give anything by mouth to an unconscious person.

Inhalation: Remove to fresh air and ventilate the contaminated area. Give oxygen or artificial respiration if needed.

5. Fire fighting measures

Fire and explosion hazard: The battery can leak and/or spout vaporized or decomposed and combustible electrolyte fumes in case of exposure above 70°C resulting from inappropriate use or the environment. Possible formation of hydrogen fluoride (HF) and phosphorous oxides during fire. Li PF6 salt contained in the electrolyte releases hydrogen fluoride (HF) in contact with water.

Extinguishing media: Suitable : CO2, Dry chemical or Foam extinguishers Not to be used : Type D extinguishers

Special exposure hazards: Following cell overheating due to external source or due to unproper use, electrolyte leakage or battery container rupture may occur and release inner component/material in the environment.
Eye contact : The electrolyte solution contained in the battery is irritant to ocular tissues.

Skin contact : The electrolyte solution contained in the battery causes skin irritation.

Ingestion : The ingestion of electrolyte solution causes tissue damage to throat and gastro/respiratory tract.
Inhalation : Contents of a leaking or ruptured battery can cause respiratory tract, mucus, membrane irritation and edema.

Special protective equipment: Use self-contained breathing apparatus to avoid breathing irritant fumes. Wear protective clothing and equipment to prevent body contact with electrolyte solution.

6. Accidental release measures

The material contained within the batteries would only be expelled under abusive conditions. Using shovel or broom, cover battery or spilled substances with dry sand or vermiculite, place in approved container (after cooling if necessary) and dispose in accordance with local regulations.

7. Handling and storage

Handling/Storage

When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals.
●Use strong material for packaging boxes so that they will not be damaged by vibration , impact, dropping and stacking during their transportation.
●Do not let water penetrate into packaging boxes during their storage and transportation.
●The batteries will be stored at room temperature, charged to about 30-50% of capacity.
●Do not store the battery in places of the high temperature exceeding 35deg.C or under direct sunlight or in front of a stove. Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, water drop of not to store it under frozen condition.
●Batteries are sure to be packed in such a way as to prevent short circuits under conditions normally encountered in transport
●Please avoid storing the battery in the places where it is exposed to the static electricity so that no damage will not be caused to the protection circuit of the battery pack. The batteries should not be opened, destroyed nor incinerated since they may leak or rupture and release in the environment the ingredients they contain.

Handling Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder.

Storage Store in a cool (preferably below 30°C) and ventilated area away from moisture, sources of heat, open flames, food and drink. Keep adequate clearance between walls and batteries. Temperature above 70°C may

result in battery leakage and rupture. Since short circuit can cause burn, leakage and rupture hazard, keep batteries in original packaging until use and do not jumble them.

8. Exposure Controls

Respiratory protection: Not necessary under normal use. In case of battery rupture, use self contained full-face respiratory equipment.
Hand protection: Not necessary under normal use. Use gloves if handling a leaking or ruptured battery.
Eye protection: Not necessary under normal use. Wear safety goggles or glasses with side shields if handling a leaking or ruptured battery.
Skin protection: Not necessary under normal use Use rubber protective working in case of handling of a ruptured battery

9. Physical and chemical properties

Appearance: Black moulded plastic housing with 2 terminal on the side and a female charging socket

Odour: None
pH: Neutral as supplied
Boiling point: N/A
Melting point: 105 Deg
Flashpoint: N/A

10. Stability and reactivity

Conditions to avoid: Heat above 70°C or incinerate. Deform, mutilate, crush, pierce, disassemble. Short circuit. Prolonged exposure to humid conditions.

Materials to avoid: N/A

Hazardous decomposition products: Corrosive/Irritant Hydrogen fluoride (HF) is produced in case of reaction of lithium hexafluorophosphate (LiPF6) with water.. Combustible vapors and formation of Hydrogen fluoride (HF) and phosphorous oxides during fire.

11. Toxicological information

Lithium-Ion batteries do not contain toxic materials.:

12. Ecological information

When properly used or disposed, the Lithium-Ion batteries do not present environmental hazard.

13 Disposal Considerations

Dispose in accordance with applicable regulations which vary from country to country. (In most countries, the trashing of used batteries is forbidden and the end-users are invited to dispose them properly, eventually through not-for-profit profit organizations, mandated by local governments or organized on a voluntary basis by professionals). Lithium-Ion batteries should have their terminals insulated and be preferably wrapped in plastic bags prior to disposal.

14. Transport information

Restrictions may apply for air transportation refer to current IATA regulations:

15. Regulatory information

UN CLASS: UN 3480, Lithium ion batteries when supplied on its own
UN 3481, Lithium ion batteries when packed packed with equipment.

16. Other Information

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable. However, no representation, warranty (either or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein. This information relates to the specific materials designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use. Parweld does not accept liability for any loss or damage that may occur, whether direct, indirect, incidental or consequential, from the use of this information.