Material Safety Data Sheet

VERSION 1.1 EN| 11 July 2023

Section 1 - Identification of the product and of the Company

Product Name	OX Battery Range
Product code	BP80
Product use	Energy storage; Battery packs
Synonyms	LFP Battery, Lithium Iron Phosphate Battery
Manufacturer	OX Power B.V.

Phone number	(+31) 0 342 219 058
E-mail address	info@oxpower.nl
Location	Koningsbergenweg 12-03 3771 NS Barneveld The Netherlands

Section 2 – Hazards identification

Protective clothing	NFPA Code	GHS Hazard symbol
Not required with normal use and if undamaged.		

Other hazards	Not dangerous in case of normal use, and if undamaged. Do not expose the batteries to fire or open flame. Do not connect or mix batteries of varying sizes, chemistries, or types. Do not short circuit, puncture, incinerate, crush, over-charge, over discharge, or expose the batteries to temperatures above or below the declared limit. Damage to the batteries may result in the risk of fire or explosion, which could release dangerous hydrogen fluoride gas and exposure to the ingredients contained within the cells of the battery or their combustion products could be harmful.
Health effects in case of damage.	If the structural integrity of the battery is damaged; electrolyte contained in cells is corrosive and may cause burning to skin, eyes, lungs (in case of inhalation), mouth and other digestive canals (in case of swallowing).
Battery specific hazards	Not dangerous in case of normal use, and if undamaged. The battery pack should not be serviced or opened, except by qualified personnel. The battery does contain dangerous current capacity. The battery belongs to class 9 dangerous goods.

Section 3 – Information of composition

Chemical composition	Chemical formula	CAS No.	Percent of content (%)
Steel	N/A	12597-69-2	15-20
Copper	Cu	7440-50-8	5-10
Lithium Iron Phosphate	$LiFePO_4$	15365-14-7	35-40
Graphite	C	7782-42-5	15-20
Polyethylene	$[-CH2-CH2-]_n$	9002-88-4	1-2
Lithium Hexafluorophosphate	$LiPF_6$	21324-40-3	2-3
Polymethylmethacrylaat	$C_5O_2H_8$	9011-14-7	1-2
Acetylene black	C	1333-86-4	0.5-1
Ethyl Methyl Carbonate	$C_4H_8O_3$	623-53-0	8-13
Ethylene Carbonate	$C_4H_5O_4$	96-49-1	4-6

Section 4 – First aid measures

Electric shock and/or burn	Use standard high voltage shock treatment. Contact a doctor.
Skin contact	Contact with internal contents of the component cells may cause burns. If skin contact with internal contents occurs, remove affected clothing. Wash affected skin area with lukewarm water for at least 30 minutes. If irritation or pain persists, contact a doctor. Decontaminate affected clothing before reuse or discard.
Eye contact	Contact with internal contents of the component cells may cause burns. If eye contact with internal contents occurs, wash out the affected eye with gentle flowing lukewarm water while holding eyelids open for at least 30 minutes. Rinse with neutral saline solution if possible. Use caution not to rinse contaminated water into the unaffected eye, nose, mouth, or onto the face. Contact a doctor in all cases of eye contact.
Inhalation	If internal content of the component cells is inhaled, move victim away from the source to fresh air. Contact a doctor for medical advice.
Ingestion	Do not induce vomiting if ingestion occurs. If vomiting occurs normally, have victim lean forward. Avoid contact of vomit with skin as much as possible. Rinse mouth with thoroughly with water, also after and during vomiting. Contact a doctor immediately.
Others	In all cases; contact a doctor.

Section 5 – Fire-fighting measures

Extinguishing media:	Water (submerge if possible), carbon dioxide, dry chemical powder and foam.
Unsuitable extinguishing media	N/A
Firefighting procedure	A self-contained breathing apparatus is highly advised. Wear fully protective gear, goggles, fireproofing jacket and gloves. Caution is advised during application of water because burning particles may be ejected from the fire.
Unusual fire behavior	Exposing battery cell to excessive heat, fire or over voltage condition may cause a leak, fire, hazardous vapors and hazardous decomposition products. Damaged or opened cells or batteries can result in rapid heating and the release of flammable vapors and potentially dangerous gases that may be heavier than air and could travel along the ground or be moved by ventilation to an ignition source.
Hazardous combustion products	The interaction of water or water vapor and exposed lithium hexafluorophosphate (Li PF6) may result hydrogen and hydrogen fluoride (HF) gas. Contact with battery electrolyte may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. Fumes may cause dizziness or suffocation.

Section 6 – Accidental release measures

Steps to be taken in case material is spilled or released. Please note: internal material will only occur if the battery is damaged or abused.

Personal precautions	If an accidental release occurs, personnel in the immediate vicinity should ensure containment measures. Evacuation procedures should be performed rapidly before any clean up. All non-required personnel for containment and clean up should observe the evacuation procedures.
Evacuations procedures	If an accidental release occurs, evacuate the area, except for required containment and clean up personnel. Maintain a minimum clearance of approximately 25 meters (75 feet) in all directions. Stay upwind of the release, keep out of low areas, and ventilate closed areas thoroughly until the fumes have dissipated before re-entering.
Environmental Precautions:	Prevent released material from contaminating soil or entering sewers or waterways by capping drains or placing up barriers.
Containment procedures	Stop the release if safe to do so. Contain any spilled liquid with dry sand, earth, or vermiculite. Move the damaged object to an isolated area, containment chamber, or cover with a fire proof containment blanket if safe to do so. Clean up spills immediately.
Clean up procedures	Wear adequate personal protective equipment as indicated in Section 8. Absorb spilled liquid material with an inert absorbent (dry sand, earth, or vermiculite) material. Collect all debris and contaminated absorbent into a suitable waste container and dispose of according to directions in Section 13. Scrub the spill area with detergent and water; collect all contaminated wash water for proper disposal.
Disposal procedures	If an accidental release occurs, clean op spilled liquid with absorbent. Avoid skin or eye contact or inhalation of vapors. Contain the absorbent in a metal container for disposal according to local guidelines and regulations. Offer all used and damaged batteries for recycling according to the local guidelines and regulations. If not recycled, see Section 13 for disposal considerations.

Section 7 – Handling and storage

Handling precautions	Do not expose battery or cell to extreme temperatures or fire. Do not disassemble, crush or puncture battery, since they may leak or rupture. Do not overcharge or forced over-discharge the battery. Do not mix batteries of varying types or sizes. Do not connect (short circuit) positive and negative terminals or place the batteries on conductive metal.
Durable storage recommendations	Insulate positive and negative terminals, when not in use, to avoid short circuit. Ensure sufficient clearance between batteries and other surfaces. Store in a dry, cool (25°C +/-5°C, 10-50% RH) and well-ventilated area, which is subject to little temperature change. Elevated temperatures can result in reduced battery life and venting of flammable liquid and gases. Keep batteries away from strong oxidizers and acids. Keep out of reach of children. Do not place near heating equipment.

Section 8 – Exposure controls and personal protection

Personal protection

Respiratory protection	Not necessary under normal use. In case of battery or cell rupture, use a self-contained full face respiratory mask.
Skin protection	Not necessary under normal use. Wear rubber apron and Viton rubber gloves if handling a ruptured or leaking battery cell.
Eye protection	Not necessary under normal use. Wear safety goggles if handling a ruptured or leaking battery cell.
Engineering controls	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fume and vapor.
Exposure limits	Exposures to hazardous substances are not expected when product is used for its intended purpose. In the event of cell rupture or disassembly the following exposure limits apply.

Common chemical name	ECHA	OSHA-PEL TWA
Lithium Iron Phosphate	N/A	10.0 mg/m^3 (as fumes)
Carbon, as graphite	N/A	5.0 mg/m^3 (as fumes)

Section 9 – Physical and chemical properties

Appearance	Black box, made of sheet metal steel.
Color	Black
Odor	Normally odorless. If leaking, smells of medical ether.
pH	N/A
Flash point	N/A
Flammability	N/A
Relative density	N/A
Solubility (water)	N/A
Solubility (other)	N/A

Section 10 – Stability and reactivity

Reactivity	N/A
Chemical stability	Stable under normal use and undamaged. See also Section 7.
Possibility of hazardous reactions	Hydrogen fluoride gas may be produced in case of damage and contact with water.
Conditions to avoid	Avoid heating to temperatures above 70°C, incineration, deformation, mutilation, crushing, disassembly, overcharging or short circuit.
Materials to avoid	Under normal use: water. If damaged or leaking: strong oxidizers, mineral acids, strong alkalis or halogenated hydrocarbons.
Hazardous decomposition products	Toxic fumes may form peroxides, possibly combustible.

Section 11 – Toxilogical information

Inhalation	Not toxic. Unless damaged, it may irritate respiratory systems.
Skin contact	Not toxic. Unless damaged, it may irritate the skin.
Eye contact	Not toxic. Unless damaged, it may irritate the eyes.
Ingestion	Not toxic. Unless damaged, it may irritate the digestive canals.
Sensitization	Not toxic. Unless damaged, the nervous system and organs may be sensitized by exposure.

Section 12 – Ecological information

No ecological effects unless damaged or leaking. Follow recommendations described in Section 13 to prevent any ecological influences.

Section 13 – Disposal considerations

Waste disposal method	Recycling of worn out or damaged batteries is highly recommended. Do NOT dump into water or sewage. Dispose in accordance with local guidelines and regulations.
Precautions	Discharge batteries completely and cap the terminals before disposal. Do not expose battery or cell to extreme temperatures or fire. Do not disassemble, crush or puncture battery, since they may leak or rupture. Do not connect (short circuit) positive and negative terminals or place the batteries on conductive metal.

Section 14 – Transport information

Transport hazard class	Class 9 Lithium Battery hazard label, Cargo Aircraft Only Label.
UN Number	UN3480 UN3481 if contained in equipment or packed with equipment. UN38.3 Doc nr. *BU-202200269-B1_Test Report Summary_OX power_ 24S1P 72 Ah*
UN proper shipping name	LITHIUM ION BATTERIES
Marine pollutant	No
EmS No.	F-A, S-I
Packing group	Packing instructions depend on applicable UN number and way of transport. Follow applicable packing instructions and subsequent packing group. By road: ADR By ship: IMDG By air: IATA DGR

Section 15 – Regulatory information

The internal lithium cells comply with the following regulations:

- Dangerous Goods Regulation
- Recommendations on the Transport of Dangerous Goods Model Regulations
- International Maritime Dangerous Goods
- Technical Instructions for the Safe Transport of Dangerous Goods
- Classifications and code of dangerous goods
- Occupational Safety and Health Act (OSHA)
- Toxic Substance Control Act (TSCA)
- Superfund Amendments and Reauthorization Act Title III (302/311/312/313) (SARA)
- California Proposition 65
- Code of Federal Regulation (CFR)

Section 16 – Other information

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