1-Product and Supplier Identification

1.1	**Product name**	XOLTA BAT-79 rechargeable battery module
1.2	**Type**	Rechargeable and laminated Li-ion battery module
1.3	**Company**	Xolta Mileparken 1, 2740 Skovlunde Denmark +45 70 60 20 17 Support@xolta.com
1.4	**Nominal Capacity**	110 Ah
1.5	**Nominal Energy**	78.71 kWh
1.6	**Nominal voltage**	700.8 V
1.7	**Maximum Voltage**	797V
1.8	**Battery weight (batteries only)**	422Kg
1.9	**Battery Cells manufacturer**	NISSAN MOTOR CO., LTD. 1-1, Morinosatoaoyama, Atsugi-shi Kanagawa 243-0123, Japan Phone +81-50-3751-7533 Fax. +81-46-290-098
1.10	**Emergency contact**	**112** Available (24/7)
1.11	**Legal remarks**	
	Legal remarks (EU)	These batteries are not “substances” or mixtures according to Regulation (EC) No190772006 EC. Instead, they must be regarded as “articles”. No substances are intended to be released during handling.
	General remarks	This information is provided as a service to our customers. The details presented are in accordance with our present knowledge and experience. They are not contractual assurances of product attributes.

2-Hazard Identification

2.1 Hazard classification and Hazard Statement:

The battery system is installed inside a protective case and is not expected to expose users to hazards under normal use conditions. The risk of exposure occurs only if the protective chassis and battery are mechanically, thermally, or electrically abused and compromised. If this occurs, exposure to spontaneously released gases, Graphite, Cobalt Lithium Manganese Nickel oxide and electrolyte solutions contained within the cells may occur due to contact with eyes, skin, and ingestion. Also, can be a risk of electric shock in the event of a short circuit.

- H226- Flammable Liquid and vapor (Category 3)
- H315-Causes Skin irritation (Category 2).
- H319-Causes serious eye irritation (Category 2A).

2.2	**GHS Label Elements**	
2.2.1	**Pictogram**	
2.2.2	**Signal Word**	WARNING
2.2.3	**Precautionary**	If medical advice need, have the product container, label, or this document in hand.
2.2.4	**Statment**	Keep out of reach of children. Read the MSDS before use. Wear protective gloves/eye and face protection. In case of fire: Use ABC dry chemicals to extinguish. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources.
2.2.5	**PPE**	Always use the proper equipment for the situation. 

3-Composition /information on ingredients

Hazardous Ingredients	%	CAS Number	LD50(mg/kg) (oral-rat)	LC50 (mg/L)
Electrolyte	5～20 w/w	-	2000	N/AV
Graphite, powder	5～25 w/w	7782-42-5	N/AV	N/AV
Cobalt lithium manganese nickel Oxide	20～40w/w	182442-95-1	>5000	N/AV
others	15～70 w/w	-	-	-

4- First-aid Measures

Our Energy Systems has a lithium-ion battery pack that contains organic electrolyte and is contained in a protective case. Risk of exposure occurs only if the cell is mechanically, thermally, or electrically abused to the point of compromising the enclosure. If the battery is physically damaged can result in gases or electrolyte leakage, the following initial care measures should be taken if a person is exposed to the gases or electrolyte.

4.1 Description of First-aid Measures

Exposure		First aid measures
4.1.1	**General Advice**	Show this safety data sheet to the medical professional in attendance
4.1.2	**Eye contact**	Irrigate thoroughly with water for at least 15 minutes. Obtain medical attention. Remove contact lenses.
4.1.3	**Skin contact**	Remove contaminated clothes and rinse skin with plenty of water for 15 minutes. Obtain medical attention.
4.1.4	**Inhalation**	Remove from exposure and move to fresh air immediately. Use oxygen if available. Obtain medical attention.
4.1.5	**Ingestion**	Wash out mouth with water and give plenty water to drink. Obtain medical attention.

5-Fire Fighting Measures

In cases of a battery fire, immediately contact must be made with the relevant fire department informing them on the involvement of a High voltage EV Lithium-Ion battery.

5.1	**Extinguishing media** ABC dry chemical fire extinguisher. *Copious amounts of cold water* are an effective extinguishing medium for lithium batteries. Dry powder, sand, earth may be used.
5.2	**Hazardous Combustion Products**
	Hydrogen Fluoride, Carbon Monoxide, Carbon Dioxide, Lithium Hydroxide, possible fluoro-compounds
5.3	**Fire protection equipment**
	The firefighter should wear a gas mask and full fire-fighting suit.

6-Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Evacuate personnel to a safe area and give first aid to injured victims.

Eliminate all ignition sources (no smoking, sparks, flames, hot equipment) in the immediate area around the spill.

Always ensure there is no electrolyte leaking from the battery pack/module before removal and/or transportation takes place. Do not touch or walk-through spilled material.

1-In case of leaking electrolytic solution, please wear protective personal equipment (PPE). Face screen, insulated safety shoes, protective clothing, insulated gloves, and wipe up leaked electrolytic solution with a cloth. The used cloth must be disposed using the same disposal method as for normal organic solvent.

2- In cases where white smoke is visible, please extinguish the fire using large amounts of water from a permanent source or use an adequate fire extinguisher.

3- Li-ion battery electrolytic solution is neutral, clear, and colorless. The degree of viscosity is the same as water. Though it smells sweet and looks harmless, do not touch the electrolyte with your bare hand.

4- Leaking Li-ion battery electrolytic solution is flammable. In case of any leaks being evident please ensure that the site is properly ventilated and keep away from fire.

5- In case of skin and/or eye contact with the electrolyte rinse skin or eye using copious amounts of water and seek immediate medical attention Avoid breathing vapors. Ensure adequate ventilation. Do not crush, puncture, incinerate, immerse in water or heat over 70 ℃. Module casing will slowly dissolve in strong mineral acids.
6.2 Environmental Precautions Absorb spilled material with non-combustible, non-reactive absorbent. Prevent migration into soils sewers and natural waterways.
6.3 Methods and Materials for Containment and Clean-Up Clean any residual electrolyte and liquid using non-combustible, non-reactive absorbent. Ensure that clean-up procedures do not expose spilled material to moisture. Contain and place all leaking batteries in individual containers that are leak-proof, nonconductive, and non-combustible. Ensure sufficient absorbent is used to absorb the full amount of liquid from the battery. Place used spill response materials in leak-proof, non-conductive, non-combustible containers that have absorbent. Avoid the release of collected materials and do not place them near open flame.

7-Handling and Storage

7.1	**Precautions for Safe Handling** ▪ Avoid mechanical damage of Xolta energy systems modules and do not open or disassemble it. ▪ Avoid short circuiting the cell. Remove jewelry items. ▪ Keep away from open flames, hot surfaces, and sources of ignition.
7.2	**Conditions for Safe Storage** ▪ Store in a protected battery warehouse area on pallets or similar devices to enable any leaks to be visibly observed upon inspection and to ensure the items do not encounter water or a salty breeze. ▪ Store away from heat sources. ▪ Keep it in the closed original container. ▪ Store in an upright position and in areas that are not likely to be damaged or disturbed by personnel, equipment, or vehicles. ▪ Do not store unboxed items in areas with a source of spark generation within 30 cm, in direct sunlight, in direct exposure to exhaust gases, such as from automobiles, or in places with continuous or intermittent vibration.

	▪ Store at 15-25C for best results.
7.3	**Storage Conditions and Temperature** ▪ Avoid direct sunlight or storing close to heat sources ▪ Range temperature:15 - 25℃ ▪ If the product has been stored for more than 12 months in its original package, DO NOT ship it before contacting Xolta support team for technical guidelines

8-Exposure controls/personal protective equipment

Item	Description
Ventilation Requirements	Not necessary under normal conditions. Room ventilation may be required in areas where there are open or leaking batteries.
Respiratory protection	Not necessary under normal conditions. Avoid exposure to electrolyte fumes from open or leaking battery. In all fire situations use self-contained breathing apparatus.
Eye Protection	Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.
Hand Protection	Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery.

9-Physical and Chemical Properties

Appearance	Steel case
Odor	Odorless
Specific gravity	1.8-1.9
Flammability	Not applicable unless individual components exposed
Solubility (water)	Insoluble
Conditions	Organic components would burn if module incinerated. Combustion of the module contents could generate Hydrogen Fluoride.

10-Stability and Reactivity

Stability	Product is stable under the conditions described in Section 7.
Conditions to Avoid	Avoid keeping heating over 70℃ at max and -40℃ at min, or incinerate. Do not deform, crush, disassemble, overcharge, short circuit or expose over a long period to humid conditions.
Materials to avoid	Oxidizing agents, alkalis, water
Hazardous Decomposition products	No decomposition if stored and applied as directed.

11-Toxicology Information

- If appropriately handled and if in accordance with the general hygienic rules, no damage to health has become known

- If inappropriately handled, the following health risks may result:

Inhalation:	Lung irritant and Hydrogen fluoride may attack respiratory organs.
Skin contact:	Skin irritant. Smoke generated from a module fire may contain Hydrogen fluoride that may cause severe skin wound.
Eye contact:	Eye irritant and Hydrogen fluoride may cause serious eye damage.
Ingestion:	Significant effects and critical hazards are not known.

11.1-Tolerence Level

Tolerable Level

Component	OSHA PEL		ACGIH TLV	
	TWA	STEL	TWA	STEL
Electrolyte	N/A	N/A	N/A	N/A
Graphite	15mg/m³ (total) 5mg/m³ (resp)	N/A	2mg/m³	N/A
Cobalt compounds	0.1mg/m3	N/A	0.02mg/m3	N/A
Manganese compounds, as Mn	5mg/m3	N/A	0.2mg/m³	N/A
Nickel compounds as Ni	1mg/m3	N/A	0.1mg/m³	N/A
Hydrogen Fluoride	3ppm	N/A	0.5ppm	2ppm

	Toxicity	**Carcinogenicity**			**Teratogen or Mutagen**
		IARC	NTP	ACGIH	
Cobalt compounds	LD50 Oral-rat- 6,171kg/mg(acute) No other data available	Group 2A	No data	A3	No data
Manganese compounds	Oral LD50-rat > 5,000mg/kg ($LiMn_2O_4$) Dermal-LDLO-rabbit- 2,000 mg/kg ($LiMn_2O_4$) No other data available	No data	No data	A4	No data
Nickel compounds	LD~~L~~-Oral-rat>5,000mg/kg No other data available	Group 1	K	A1	No data

12-Environmental information

Environmental injuries are not known or expected under normal use, so this information is of relevance if the battery is broken, and the ingredients are released into the environment.
- The electrolyte solution reacts with water and organic substances, causing damage to flora and fauna. The electrolyte may also contain soluble components which can be toxic to aquatic environments. Do not flush into surface water or a sanitary sewer system.
- In case spent batteries are subject to regulation of the Battery Directive, this is adopted into national legislation for both composition and end-of-life management of batteries.

13-Disposal

Item	Consideration
Advice on disposal	For recycling consult local battery recyclers and always use proper PPE.
Contaminated packaging	Disposal in accordance with local regulations and always use proper PPE.

14-Transport Information

Item	Description
Proper Shipping Name	Lithium-ion batteries
Hazard Class: 9	Miscellaneous Dangerous Goods
Identification Number	UN3480
Pictogram	
Packing Group	II (per GHS Regulations); No packing groups specified under US DOT regulations. When transported must be done strapped in a pallet wood, secure and not touch each other's.
Packing Instructions	965-IA (IATA Dangerous Goods Regulations 58th Edition)
Environmental Hazard	Follow all applicable local, requirements when identifying additional environmental hazards.
Label for transportation	Lithium battery label Class 9 hazard label

15-Information on regulation

Location	Regulation
European Union	Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I: Not listed. Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex II: Not listed. Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I as amended: Not listed. Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals: Not listed. *Other EU Regulations* Directive 96/82/EC (Seveso II) on the control of major accident hazards involving dangerous substances: Not listed. Directive 94/33/EC on the protection of young people at work: Not listed. This Safety Data Sheet complies with the requirements of Regulation (EC) No. 1907/2006 and amended on 28 May 2015 by (EU) 2015/830. Regulation (EC) No. 1272/2008 These products are not classified as hazardous.
Additional regulatory information not provided elsewhere	58th Edition of the IATA Dangerous Goods Regulations (DGR).

16-Other information

This file is only effective to the batteries (GEN4) provided by commissioner (NISSAN MOTOR CO., LTD), which is manufactured by Applicant. The commissioner provides the composition information of batteries and promises its integrity and accuracy.
Users should read this file carefully and use the batteries in the correct method. Guangdong Inspection and Quarantine.

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Exact composition information is immediately available on a confidential basis to medical professionals treating exposures to module components or combustion byproducts. The information given above is provided in good faith based on existing knowledge and does not constitute an assurance of safety under all conditions. It is the user's responsibility to observe all laws and regulations applicable for storage, use, maintenance, or disposal of the product. If there are any queries, the supplier should be consulted. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Only in case of Fires:
HYDROFLUORIC ACID EXPOSURE DURING FIRE FIGHTING
This information is given for the use of professional fire fighters responding to a warehouse fire where fire from other materials may incinerate cells. This section is provided solely in case of exposure, during firefighting, to the combustion byproducts. Hydrofluoric acid is not present in the product. Contact with module causes none of the following symptoms under normal conditions. Hydrofluoric acid occurs as a by-product of combustion.

Hydrofluoric acid is extremely corrosive. Contact with hydrogen fluoride fumes is to be avoided. The permissible exposure limit is 3 ppm. In case of contact with hydrogen fluoride fumes, immediately leave the area and seek first aid and emergency medical attention. Symptoms may have delayed onset.

Fluoride ions penetrate skin readily causing destruction of deep tissue layers and even bone. Fluoride interferes with nerve impulse conduction causing severe pain or absence of sensations.

Immediately flush eyes or skin with water for at least 20 minutes to neutralize the acidity and remove some fluoride. Remove and destroy all contaminated clothing and permeable personal possessions.

Before re-use, impermeable possessions should be soaked in benzalkonium chloride after water washing. Following flushing of the affected areas, an iced aqueous solution of benzalkonium chloride or 2.5% calcium gluconate gel should be applied to react with the fluoride ion. Compresses and wraps may be used for areas where immersion is not practical.

Medicated dressing should be changed every 2 minutes. Exposure to hydrofluoric acid fumes sufficient to cause pain requires immediate hospitalization for monitoring for pulmonary edema.