Revision: 02
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PRODUCT INFORMATION SAFETY DATA SHEET

SECTION 1: Product and Company identification

Product Name	Rechargeable Li-Ion Battery Pack
Part Number /Model	507147 ; 507147-07
Battery Pack Rated Voltage	36 V
Battery Pack Rated Capacity	2500 mAh
Battery Pack Rated Energy	90 Wh

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SECTION 2: Hazards identification

During normal handling and use there is no risk of exposure to materials of concern.

The battery pack contains organic electrolyte which is flammable and may leak from damaged cells. Risk of exposure occurs only if the battery pack is electrically, mechanically or thermally abused.

Vapour from burning batteries may cause respiratory, eye and skin irritation.

Contact with leaking electrolyte may cause irritation and redness of the eyes and skin.

Ingestion of leaking electrolyte may cause irritation of the throat

SECTION 3: Composition/information on ingredients

Rechargeable Li-Ion Battery Pack model 507147 uses 10 Tohuku Murata US18650VTC5D lithium-ion rechargeable cells controlled with a battery management PCB. The cells are connected in a string of 10 cells in series.

Battery Pack Level

Enclosure	**Plastic (Polycarbonate)**
Cell Cage	**Flame Retarded Polycarbonate / Acrylonitrile Butadiene Styrene, Flame Retarded Polypropylene**

Cell Level

Chemical Name	CAS No.	% weight
Lithium Nickel Cobalt Oxides	113066-89-0	37%
Others	-	63%

SECTION 4: First aid measures

In case of inhalation of vapour from a burning battery or contact with or ingestion of leaking electrolyte, actions described below are required.

Inhalation	Move the exposed person to fresh air
Eye contact	Bathe the eye with running water for 15 minutes, if eye irritation persists seem medical attention
Skin contact	Wash off immediately with plenty of soap and water
Ingestion	Wash out mouth with water and drink plenty of water

SECTION 5: Firefighting measures

In case of fire, use CO_2, dry chemical powder extinguishers.
Since irritant and corrosive gas may be produced by battery pack on fire, use self-contained breathing apparatus while extinguishing fire when danger is predicted.
Move batteries to a safer place immediately if a fire breaks out nearby. Use a large amount of water as a supportive measure to cool the exterior of batteries if exposed to fire to prevent rupture.

SECTION 6: Accidental release measures

In the unlikely event that liquid leaks from the battery.

Avoid skin contact.

Use absorbent material (sand, vermiculite, etc.) to absorb any exuded material. Seal leaking battery (unless hot) and contaminated absorbent in a plastic bag and dispose of in accordance with local regulations.

SECTION 7: Handling and storage

HANDLING:
Use only with the appliance for which it has been designed.
Charge only with charging equipment provided with the appliance.
Do not charge at temperatures below 0°C or above 45°C.
Do not short circuit contacts, disassemble, puncture, crush or dispose of in fire.

STORAGE:
Store in a cool, dry place away from sources of ignition and flame.
Do not expose to temperatures below -60 °C or above 100°C.

SECTION 8: Exposure controls/personal protection

During normal handling and use there is no risk of exposure to materials of concern, no personal protective equipment is required.

SECTION 9: Physical and chemical properties

Plastic encased battery pack.

SECTION 10: Stability and reactivity

Not applicable.

SECTION 11: Toxicological information

During normal handling and use there is no risk of exposure to materials of concern.

SECTION 12: Ecological information

During normal handling and use there is no risk of exposure to materials of concern.

SECTION 13: Disposal considerations

Dispose of battery pack in accordance with federal, state and local regulations. Insulate battery pack terminals to prevent accidental short-circuit.

SECTION 14: Transportation information

Rechargeable Lithium-Ion Battery Pack Only

UN Number	: UN3480
UN Proper Shipping Name	: UN3480 – Lithium Ion Batteries (Including Lithium Ion Polymer Batteries)
Class	: 9
Hazard Level	: Class 9, Miscellaneous Dangerous Goods
Packing	: Pass IATA PI965 1.2 m drop test
Packing Label	: 9 and Lithium Battery Mark as per 7.1.C

Land: Battery Pack meets the requirements of

1. European Agreements Concerning the International Carriage of Dangerous Goods by Road (ADR) and Rail (RID). Complies with Special Provisions 188, 230, and 348 and Packing instructions P903. Used batteries will be packaged consistent with P903a and P903b.
2. U.S. Department of Transportation (DOT) 49 CFR 173.185 and 173.185(c) conditions for transportation within the United States.
3. Canadian Transport of Dangerous Goods Regulations (TDGR). Complies with Special Provision 34 exemption. Damaged batteries or batteries transported for disposal will comply with Special Provisions 137 and 138.

Sea: Battery Pack meets the requirements of

1. International Maritime Organization (IMO) International Maritime Dangerous Goods Code (IMDG). Complies with Special Provisions 188 and 230 and Packing instructions P903. Meets EmS: F-A, S-I and Stowage category A.

Air: Battery Pack meets the requirements of International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air and the International Air Transport Association (IATA) Dangerous Goods Regulations.

1. The lithium ion cells contained in the Battery Pack are rated at 20 Watt-hours or less. The Battery Pack is rated at less than 100 watt-hours.
2. As outlined in Packing Instructions 965, the state-of-charge (SoC) of the battery pack will not exceed 30% of its rated design capacity.
3. Complies with Packing Instruction 965 Section II (small quantity – <8 cells or <2 batteries per package) or 1B (<10 kg if more than one package included in shipment) and carries the Class 9 and lithium battery mark and the CAO (cargo aircraft only) label.

4. The cells and batteries shall be packed so as to prevent short circuits.
5. Shipment of defective batteries shall be handled in compliance with IATA Special Provision A154.

The Battery Pack and its cells have been tested and comply with the UN Transportation Testing (UN DOT 38.3) specified in the UN Manual of Tests and Criteria, Part III, Subsection 38.3.

Guideline	Test Performed	Pass	Fail
38.3.4.1	Test T.1: Altitude Simulation	X	
38.3.4.2	Test T.2: Thermal Test	X	
38.3.4.3	Test T.3: Vibration	X	
38.3.4.4	Test T.4: Shock	X	
38.3.4.5	Test T.5: External Short Circuit	X	
38.3.4.6	Test T.6: Impact/Crush	N/A	
38.3.4.7	Test T.7: Overcharge	X	
38.3.4.8	Test T.8: Forced Discharge	N/A	

Device Containing Rechargeable Lithium-Ion Battery Pack

UN Number : UN3481
UN Proper Shipping Name : UN3481 – Lithium Ion Batteries Contained in Equipment
UN3481 – Lithium Ion Batteries Packed with Equipment (Including Lithium Ion Polymer Batteries)
Class : 9
Hazard Level : Lithium Battery Mark as per 7.1.C
Packing Label : Lithium battery mark

Land: Product meets the requirements of

1. UN designation 3481 (Lithium ion batteries contained in equipment and packed with equipment) with a spare battery pack included in the package. Complies with UN Model Regulations Special Provisions 188, 230, and 348.
2. European Agreements Concerning the International Carriage of Dangerous Goods by Road (ADR) and Rail (RID). Complies with Special Provisions 188, 230, 348, and 636 (a), and Packing instructions P903.
3. U.S. Department of Transportation (DOT) 49 CFR 173.185 and 173.185(c) conditions for transportation within the United States.
4. Canadian Transport of Dangerous Goods Regulations (TDGR) Special Provision 34 exemption.

Sea: Product meets the requirements of

1. International Maritime Organization (IMO) International Maritime Dangerous Goods Code (IMDG). Complies with Special Provisions 188, 230, and 348, and Packing instructions P903. Meets EmS: F-A, S-I and Stowage category A.
2. UN designation 3481 (Lithium ion batteries contained in equipment and packed with equipment). Complies with UN Model Regulations Special Provisions 188, 230, and 348.

Air: Product meets the requirements of International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air and the International Air Transport Association (IATA) Dangerous Goods Regulations.

1. The Battery Packs and cells included in this product have been tested and comply with the UN Transportation Testing (UN DOT 38.3) specified in the UN Manual of Tests and Criteria, Part III, Subsection 38.3.
2. The lithium ion cells in the Battery Packs contained in the package (1 battery pack contained in the equipment, with a spare included in the package) are rated at 20 Watt-hours or less. Each Battery Pack is rated at less than 100 watt-hours with a net battery weight for the battery packs in the package of less than 5 kg.
3. The product is compliant with the Restriction of Hazardous Substances (RoHS).
4. The shipped product with a spare battery pack included in the package have been completely enclosed within the inner packaging to secure against accidental activation and movement during transport.
5. The shipped package complies with Packing Instructions 967 Section II (Lithium ion batteries contained in equipment, UN3481 P.I. 967-II) and Packing Instructions 966 Section II (Lithium ion batteries packed with equipment, UN3481 P.I. 966-II). The equipment package contains >4 cells or >2 batteries, and will carry the lithium battery mark and UN 3481 designation. The air waybill will include the description of content statement “Lithium ion batteries in compliance with Section II of PI 967 and Section II of PI 966”.

SECTION 15: Regulatory information

Not applicable.

SECTION 16: Other information

Legal Disclaimer
The information contained within is provided for your information only. The information and recommendations set forth herein are made in good faith and are believed to be accurate as of the date of preparation. However, Dyson Technology Ltd makes no warranty, either expressed or implied, with respect to this information and disclaims all liability from reliance on it.