

Explanatory sheet about safety of product for transportation

(Safety data sheet for transportation)

1. Basic item

Product name	Lithium ion battery (“Lithium ion battery” includes lithium polymer battery in this document)
UN number	3480
Product code	Refer to Table 1.
Product model name	Refer to Table 1.
Manufacturer	Tohoku Murata Manufacturing Co., Ltd.
Address	1-1 Shimosugishita, Takakura, Hiwada-machi, Koriyama-shi, Fukushima, 963-0531 Japan
Phone number	+81-24-958-3811

2. Product information

Basic composition of the product

This product is a battery which consists of such main component as core battery pack assembled with some Lithium ion cells. And it consists of any combination of plastic casing, tube casing, protection circuit boards, safety devices and interface terminals.

3. Safety information

- Sony certifies the battery has passed and satisfied the UN Manual of Tests and Criteria Part III, sub-section 38.3 testing in Sony Shipping.
- Sony manufactured the battery under the quality management program required in UN model regulations 2.9.4(e).

3-1) Component cell

The Watt-hour rating of the component Lithium ion cells is not more than 20Wh.
Refer to Appendix “SDS(QA-TR-81538)”.

3-2) Battery pack

1. The Watt-hour rating of the battery is not more than 100Wh.
2. Package of the battery satisfy the following conditions when Sony ships.
 - (1) The product name “Lithium ion batteries” and how to deal with the damage of the package are written on the label.
 - (2) The package has passed the drop test from the height of 1.2m.
 - (3) The package net weight is not more than 10kg.
3. The battery is not defective for safety reasons, not damaged. It is not collected battery for recycling or disposal.
4. The battery is not subject to the fully regulated requirements for Dangerous Goods in ocean and ground transportation.
5. The battery should be transported by Cargo aircraft as UN3480, class 9 Dangerous Goods, and state of charge not exceeding 30%, attached by required marks and labels, according to Packing Instruction 965 Section IB of the ICAO and IATA regulations.



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Tohoku Murata Manufacturing Co., Ltd.

Table 1

Battery Part Numbers			Battery Information						
Lenovo ASM Lenovo PN Part Number	Lenovo FRU Part Number	Lenovo model name	MSDS Type #	UN DOT 38.3 Test Certificate	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)
42T4878	42T4877		QA-TR-81538	42T4878_UN38.3	3.7	11.1	30	245	2.41
42T4519	42T4518 42T4641		QA-TR-81538	42T4519_UN38.3	3.73	11.2	27.3	220	2.20
42T4521	42T4520 42T4642		QA-TR-81538	42T4521_UN38.3	3.73	11.2	23.7	200	1.91
42T4904	42T4903 42T4967		QA-TR-81538	42T4904_UN38.3	3.7	11.1	65	740	5.22
42T4930	42T4931 42T4979		QA-TR-81538	42T4930_UN38.3	3.7	14.8	49	305	4.02
45N1040	45N1041		QA-TR-81538	45N1040_UN38.3	3.6	10.8	32	245	2.61
45N1074	45N1075		QA-TR-81538	45N1074_UN38.3	3.7	11.1	30	245	2.41
45N1090	45N1091		QA-TR-81538	45N1090_UN38.3	3.7	11.1	47	310	2.84
45N1094	45N1095		QA-TR-81538	45N1094_UN38.3	3.7	14.8	43	277	3.48
45N1110	45N1111		QA-TR-81538	45N1110_UN38.3	3.7	11.1	24	135	1.88
45N1120	45N1121		QA-TR-81538	45N1120_UN38.3	3.7	11.1	48	270	3.83
45N1140	45N1141		QA-TR-81538	45N1140_UN38.3	3.7	14.8	46	280	3.72
45N1164	45N1165		QA-TR-81538	45N1164_UN38.3	3.7	14.8	63	360	5.10
45N1168	45N1169		QA-TR-81538	45N1168_UN38.3	3.7	14.8	47	277	3.82
45N1700	45N1701		QA-TR-81538	45N1700_UN38.3	3.75	15	45	277	3.59
45N1704	45N1705		QA-TR-81538	45N1704_UN38.3	3.7	14.8	47	270	3.82
45N1716	45N1717		QA-TR-81538	45N1716_UN38.3	3.8	3.8	21	120	1.82
45N1742	45N1743		QA-TR-81538	45N1742_UN38.3	3.8	11.4	44	226	3.42
51J0507	51J0508		QA-TR-81538	51J0507_UN38.3	3.6	10.8	32	245	2.61
SB10F46438	00HW000		QA-TR-81538	SB10F46438_UN38.3	3.8	15.2	56	285	1.11
121500228		L13N2P21	QA-TR-81538	121500228_UN38.3	3.75	3.75	25	138	2.00
5B10G62886		L13N2P21	QA-TR-81538	5B10G62886_UN38.3	3.75	3.75	25	138	2.00
121500251		L13N4P01	QA-TR-81538	121500251_UN38.3	3.8	7.6	54	310	4.26
121500003		L10N6P11	QA-TR-81538	121500003_UN38.3	3.7	11.1	54	350	4.38

Tohoku Murata Manufacturing Co., Ltd.

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SAFETY DATA SHEET

This Safety Data Sheet is applied to battery pack produced by both Sony and Murata.

Product and Company Identification

Product Information

Product Category : Lithium Ion Polymer Rechargeable Battery Cell

Model Name : None

(All polymer model of lithium cobalt oxide type that capacity of 20Wh or less and Murata manufacture.)

Company Identification

Supplier's Name : Tohoku Murata Manufacturing Co., Ltd.

Supplier's Address : 1-1 Shimosugishita, Takakura, Hiwada-machi, Koriyama-shi, Fukushima,
963-0531 Japan

Information Telephone : +81-24-955-7770

Date Prepared : Feb. 20, 2018

1. Hazard Identification

Class Name : Not applicable for regulated class

Hazard : It may cause heat generation or electrolyte leakage if battery terminals contact with other metals. Electrolyte is flammable. In case of electrolyte leakage, move the battery from fire immediately.

Toxicity : Vapor generated from burning batteries, may make eyes, skin and throat irritate.

2. Composition / Information on Ingredients

IMPORTANT NOTE:

The battery should not be opened or burned since the following ingredients contained within the battery that could be harmful under some circumstance if exposed or misused.

The cell contains neither metallic lithium nor lithium alloy.

UN number : UN3480

Common chemical name / General name	CAS number	Concentration / Concentration range
Lithium Cobalt Oxides (active material)	12190-79-3	30~50%
Polyvinylidene Fluoride (binder)	24937-79-9	0.5~3%
Carbon black (conductive material)	1333-86-4	0.1~1%
Graphite (active material)	7782-42-5	10~30%
Organic Solvent (gel type electrolyte)	N/A	7~17%
Others	N/A	20~50 %

3. First Aid Measures

The product contains organic electrolyte. In case of electrolyte leakage from the battery, actions described below are required.

Eye contact : Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing, and call a doctor. If appropriate procedures are not taken, this may cause an eye irritation.

- Skin contact : Wash the contact areas off immediately with plenty of water and soap.
If appropriate procedures are not taken, this may cause sores on the skin.
- Inhalation : Remove to fresh air immediately, and call a doctor.

4. Fire Fighting Measures

- Use specified extinguishers (gas, foam, powder) and extinguishing system under the Fire Defense Law.
- Since corrosive gas may be produced at the time of fire extinguishing, use an air inhalator when danger is predicted.
- Use a large amount of water as a supportive measure in order to get cooling effect if needed.
(Indoor/outdoor fire hydrant)
- Carry away flammable materials immediately in case of fire.
- Move batteries to a safer place immediately in case of fire.

5. Accidental Release Measures

- Wipe off with dry cloth
- Keep away from fire
- Wear safety goggles, safety gloves as needed

6. Precautions for Safe Handling and Use

- Storage : Store within the recommended limit of -20°C to 45°C (-4°F to 113°F), well-ventilated area.
Do not expose to high temperature (60°C/140°F). Since short circuit can cause burn hazard or gas release, do not store with metal jewelry, metal covered tables, or metal belt.
- Handling : Do not disassemble, remodel, or solder. Do not short + and - terminals with a metal.
Do not open the battery.
- Charging : Charge within the limits of 0°C to 45°C (32°F to 113°F) temperature. Charge with specified charger designed for this battery.
- Discharging : Discharge within the limits of -20°C to 60°C (-4 °F to 140°F) temperature.
- Disposal : Dispose in accordance with applicable federal, state and local regulations.
- Caution : Fire, Explosion, and Severe Burn Hazard. Do not Crush, Disassemble, Heat Above 100°C/212°F, or Incinerate.

7. Exposure Controls/Personal protection (In case electrolyte is leaked from battery)

- Acceptable concentration : Not specified in ACGIH.
- Facilities : Provide appropriate ventilation such as local ventilation system in the storage.
- Protective clothing : Gas mask for organic gases, safety goggle, safety glove.

8. Physical and chemical Properties

- Appearance : Lithium Ion Polymer Rechargeable Cells.

9. Stability and Reactivity

External short-circuit, deformation by crush, high temperature (over 100°C) exposure of a battery cause generation of heat and ignition.

10. Toxicological Information

- Acute toxicity : No information as a battery
- Local effects : No information as a battery

11. Ecological Information

When exhausted battery is buried in the ground, corrosion may be caused on the outer case of battery and electrolyte may be oozed. There is no information on environmental influence.

12. Disposal considerations

When battery is disposed, isolate positive (+) and negative (-) terminals of the battery to avoid those terminals from touching each other. Batteries may be short-circuited when piled up or mixed with the other batteries in disorder. Dispose in accordance with applicable federal, state and local regulations

13. Transport information

- When a number of batteries are transported by ship, vehicle and railroad, avoid high temperature and dew condensation.
- Avoid transportation which may cause damage of package.
- Lithium ion batteries are not subject to dangerous goods regulation for the purpose of transportation by the International Maritime Dangerous Goods regulations(IMDG). For Lithium ion batteries, the Watt-hour rating is no more than 20Wh/cell and 100Wh/battery pack can be treated as “non-dangerous goods” by the United Nations Recommendations on the Transport of Dangerous Goods/Special Provision 188, provided that the products are prevented from being short-circuited with each other and are packaged in an appropriate condition which satisfies Packing Group II performance level.

- IATA (International Air Transport Association): Dangerous Goods Regulation

Packing Instruction 965 (Lithium ion or lithium polymer cells and batteries without electronic equipment)

With effect 1 April 2016: Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity. UN 3480, PI 965, Section IA and IB and II will be restricted to carriage on cargo aircraft. All packages must bear the Cargo Aircraft Only label in addition to the other marks and labels required by the Regulations.

Section II requirements apply to lithium ion cells with a Watt-hour rating not exceeding 20Wh and lithium ion batteries with a Watt-hour rating not exceeding 100Wh packed in quantities that within the allowance permitted in Section II, Table 965-II.

TABLE 965-II

Contents	Lithium ion cells and/or batteries with a Watt-hour rating of 2.7Wh or less	Lithium ion cells with a Watt-hour rating of more than 2.7Wh but not more than 20Wh	Lithium ion batteries with a Watt-hour rating of more than 2.7Wh but not more than 100Wh
Maximum number of cells/batteries per package	No limit	8 cells	2 Batteries
Maximum net quantity per package	2.5 kg	N/A	N/A

Lithium ion cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- each cell and battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3;
- cells and batteries must be manufactured under a quality management program;
- for batteries, The Watt-hour rating must be marked on the outside of the battery case;
- Each package must be capable of withstanding a 1.2m drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
- Each package must be labeled with a lithium battery handling label and the cargo aircraft only Label.
- A shipper is not permitted to offer for transport more than one package prepared according to Section II in any single consignment.

Section IB requirements apply to lithium ion cells with a Watt-hour rating not exceeding 20Wh and lithium ion batteries with a Watt-hour rating not exceeding 100Wh packed in quantities that exceed the allowance permitted in Section II, Table 965-II.

Quantities of lithium ion cells or batteries that exceed the allowance permitted in Section II, Table 965-II must be assigned to Class 9 and are subject to all of the applicable provisions of Regulation.

Even classified as lithium batteries packed with equipment (UN3481), IATA Dangerous Goods Regulations packing instruction 966 is applied.

Even classified as lithium batteries installed in equipment (UN3481), IATA Dangerous Goods Regulations packing instruction 967 is applied.

14. Regulatory information

- IMDG Code: International Maritime Dangerous Goods (IMDG) Code 2016 Edition
- ICAO TI: International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air 2017-2018 Edition
- IATA DGR: International Air Transport Association (IATA) Dangerous Goods Regulations 59th Edition

15. Other Information

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, Tohoku Murata Manufacturing **MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM RELIANCE ON IT.**