納入仕様書

Product Specifications

貴社名 :
Customer's name _____

貴社部品名 :
Customer's parts name _____

貴社部品番号 :
Customer's parts number _____

ソニー部品名 :US18650V3
SONY parts name
_____

ソニー部品番号 :F-4992-345-0 (Boat)
SONY parts number F-4992-346-0 (Air)
_____

承　認 Approved by	確　認 Checked by	作 成 Prepared by
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変更履歴
History of revisions

変更年月日 Date		変更事項 Description	承　認 Approved by	作　成 Prepared by
Ver.0.1	2012. 08.01	1st issue (Tentative)		

Contents

Lithium-Ion Battery Specifications

1. General

1.1 Scope

This specification is applied to Lithium-Ion Rechargeable Battery provided by Sony.

1.2 Product Category: Lithium-Ion Rechargeable Battery

1.3 Cell Type US18650V3

1.4 Applicable Safety Standard UL1642: File No.MH12566

2. Cell Rating

Item		Rating	Note
2.1 Nominal Capacity		2250mAh	Typical Capacity of 0.2ItA Discharging with a Cut-off Voltage of 2.5V. Standard Charging. Standard Test Atmosphere.
2.2 Rated Capacity		2150mAh	Standard Capacity of 0.2ItA Discharging with a Cut-off Voltage of 2.5V. Standard Charging. Standard Test Atmosphere.
2.3 Nominal Voltage		3.7V	
2.4 Charge Voltage		4.20 +/- 0.05V	
2.5 Cut Off Voltage		2.5V	
2.6 Maximum Charge Voltage		4.25V	
2.7 Continuous Maximum Charge Current		2.15A	
2.8 Continuous Maximum Discharge Current		10.0A	
2.9 Weight		43.6+/- 1.5g	
2.10 Allowable Environment Temperature	Charge	0 to +45degC	
	Discharge	-20 to +60degC	

※ Cell condition at the shipment About 70% discharged.

* Recommended charge condition.

3. Shape/Dimension and Appearance

3.1 Shape/Dimension (Ref. P10 7. Outline)

	Diameter of crimp	18.2 ＋0.15mm －0.2mm
	Diameter of trunk	18.1 +/- 0.2mm (excluding wrinkle on the tube)
	Total Length	64.90 +/- 0.2mm

3.2 Appearance

There shall be no remarkable scratches, stains, deformation, or leakage that could affect quality or reliability. Any uncertainty arising out of this phrase shall be settled upon consultation between both parties.

4. Performance

4.1 Standard Test Condition

Test condition shall be at 23 +/- 2degC and 65 +/- 20% R.H.

4.2 Testing Instrument or Apparatus

4.2.1 Dimension Measuring Instrument

The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.01mm specified by JIS B 7502(outside micrometer) or JIS B 7503(dial gauge).

4.2.2 Voltmeter and Ammeter

Voltmeters and ammeters shall be equal or more precision instruments specified by JIS C 1102 (Indication Electric Instrument Level 0.5).

4.2.3 Impedance Meter

Impedance shall be measured by a sinusoidal alternating current method (1kHz LCR meter).

4.3 Standard Charge definition

Charging at a constant voltage of 4.2V(±0.05V) and a constant current of 1.075A for 2.5 hours in 23±2℃ atmosphere.

4.4 Standard Discharge definition

Discharging at a constant current of 2.15A down to 2.5V in 23±2℃ atmosphere.

4.5 Electrical Performance

<table>
<tr><th>Item</th><th>Condition</th><th>Specification</th></tr>
<tr><td>4.5.1 Open-Circuit Voltage</td><td>Open Circuit Voltage at Outgoing</td><td>From 3.4V
up to 3.8V
Open Circuit Voltage Tolerance
within a Lot 0.10V or less.</td></tr>
<tr><td>4.5.2 AC Impedance</td><td>After standard charge within 3 days.(1kHz)</td><td>25mΩ～35mΩ</td></tr>
<tr><td>4.5.3.1 Capacity</td><td>After standard charging,Discharge at 0.2ltA(430mA) Cur-off Voltage 2.5V</td><td>2150mAh or more</td></tr>
<tr><td>4.5.3.2 Capacity(2)</td><td>After standard charging, Standard discharging</td><td>2043mAh or more</td></tr>
<tr><td>4.5.3.3 Capacity(3)</td><td>After standard charging, Discharge at 6A(6000mA) Cut-off Voltage 2.5V</td><td>1935mAh or more</td></tr>
<tr><td>4.5.4
Charge/Discharge Cycle</td><td>Charge at 4.2V, 2A, Cut off current 100mA cut
←→ Discharge at 6A, 2.5V cut off after 500 cycles</td><td>1355mAh or more</td></tr>
<tr><td>4.5.5 Discharging Temperature Characteristic</td><td>Standard charging, Discharging:6.0A, Cut off Voltage:2.5V
<table><tr><th>Discharge Temperature</th><th>Capacity</th></tr><tr><td>-10degC</td><td>1355mAh or more</td></tr><tr><td>0degC</td><td>1548mAh or more</td></tr><tr><td>23degC</td><td>1935mAh or more</td></tr><tr><td>45degC</td><td>1935mAh or more</td></tr></table></td><td>Refer to the left table.</td></tr>
<tr><td>4.5.6 Charging Temperature Characteristic</td><td>Charging Temperature Characteristics
Charging:4.20V 2.00A,2.5h Standard Discharging
<table><tr><th>Charge Temperature</th><th>Capacity</th></tr><tr><td>0degC</td><td>1737mAh or more</td></tr><tr><td>23degC</td><td>2043mAh or more</td></tr><tr><td>45degC</td><td>2043mAh or more</td></tr></table></td><td>Refer to the left table</td></tr>
<tr><td>4.5.7.1 Storage Characteristic(1)</td><td>After standard charging, stored at 23 degC for 28 days. Remaining capacity measured by Discharge at 6A Cut off Voltage2.5V</td><td>1742mAh or more</td></tr>
<tr><td>4.5.7.2 Storage Characteristic(2)</td><td>After Above measurement, Recovery Capacity Measured by Standard Charging and Discharge at 6A,Cut-off Voltage 2.5V</td><td>1839mAh or more</td></tr>
<tr><td>4.5.7.3 Storage Characteristic(3)</td><td>After standard charging, stored at 45 degC for 28 days. Remaining capacity measured by Discharge at 6A Cut off Voltage2.5V</td><td>1645mAh or more</td></tr>
<tr><td>4.5.7.4 Storage Characteristic(4)</td><td>After Above Measurement, Recovery capacity Measured by Standard Charging and Discharge at 6A,Cut-off Voltage 2.5V</td><td>1742mAh or more</td></tr>
</table>

4.5.8 Long term Storage characteristic	After standard Charging, store at 23 degC, 365days. Recovery capacity Measured by Standard Charging and Discharge at 6A,Cut-off Voltage 2.5V	1742mAh or more

4.6 Mechanical Performance

Item	Condition	Specification
4.6.1 Heat cycle test	1) Standard charge 2) Heat cycle at 75℃6h←30min→-40℃6h for 10 cycles. 3) Storage at 20±5℃ for 24hours	No leakage, No interception
4.6.2 Drop test	After Standard Charging,P-tile from height of 1.2m. Dropped in Each in X,Y and Zfor 3 time,with quide like as tube.Discharge at 6A,Cut-off Voltage 2.5V Capacity of the 2nd time	No leakage 1839mAh or more
4.6.3 Vibration	After Standard Charging,Vibration is to be applied.Discharge at 6A,Cut-off Voltage 2.5V Capacity of the 2nd time. Sinusoidal Oscillation 10～60Hz 20.6m/s2 60～80Hz 13.7m/s2 80～100Hz 6.9m/s2 100～125Hz 3.9m/s2 5min.Sweep Each XYZ for 1h	No leakage. 1839mAh or more

5. Identification and Marking (Lot Number Definition：Manufacturing Date of Cells)
The code is printed on a surface of the can, under the tube, at three lines.

5.1 Manufacturer Name (Trade name)
SE (Trade name of Sony Energy Devices Corp.)
5.2 Trade Mark（Fig.1：USxxxxxx）
US18650V3

Fig.1

5.3 Plant（Fig.1：A for plant code）
K：Sony Energy Devices Corp. Koriyama Plant. T：Sony Energy Devices Corp. Tochigi Plant.
5.4 Specification（Fig.1.：HH for Cell Type）
V3: US18650V3

5.5 Lot Number（Fig.1 : YMDDS for Manufacturing Date of Cells）
Y：Year ’92 as A, Every next year is counted as B, C,… (Using an Alphabet letter)
M：Month January as A, the consecutive month as B, C,… (Using an Alphabet letter)
D：Day 01, 02, ・・・・29,30,31 （Using figures）
S：Electrode History A,B,C,・・ (Using an Alphabet letter)

5.6 UL Marking
Recognition Mark on the right side of Fig.1

5.7 Korean regulation (Fig.1: Sony BB)
“Sony”: For Korean regulation
“BB”: For the name for Korean regulation “31” : Sony Energy Devices Corp. Tochigi plant

5.8 2D Dimensional Code (Fig.2)
The code is on the surface of the tube

Fig.2

6. Caution
Caution on usage of Lithium-Ion Rechargeable Battery.

6.1 Caution for installing the battery into the pack
*Do not combine the different Lot Number cell (the Last 5 letters and figure) into the pack

6.2 Caution for the battery and the pack

6.2.1 Charge
*It shall be Constant Current-Constant Voltage (CC-CV) charging method.

6.2.2 Discharge
*It shall avoid less than 2.5V by discharging.

6.2.3 Design of battery pack
*It shall be the shape which cannot be connected easily to any charger other than the dedicated charger.
*It shall have the structure which cannot be connected easily for end user to apply for the other purpose.
*It shall have the terminals or function which cannot easily cause external short circuit (such as chain short by necklace).
*It shall not be short easily by effect of vibration or drop due to contact of internal writing materials to battery.

6.2.4 Protection Circuit
*The protection circuit shall be installed in the battery pack, the Host or the charger.
*The battery must possess four types of protective circuits as follows.

6.2.4.1 Over charging protective circuit
The over charging protective circuit shall operate at less than 4.250V/cell.

6.2.4.2 Over discharging protective circuit
The over discharging protective circuit shall operate at 2.0V/cell to 2.5V/cell.

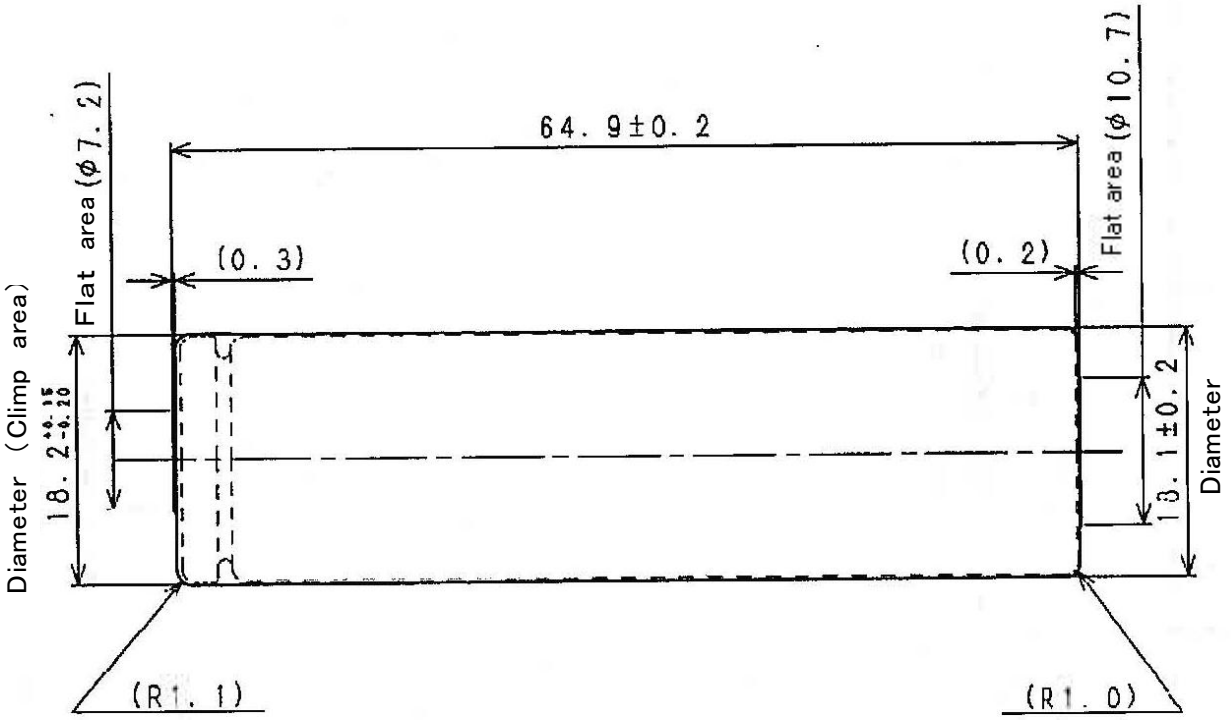
6.2.4.3 Over current protective circuit
The over current protective circuit shall operate charging at over 2.15A.
The over current protective circuit or device shall operate discharging not to result in the risk or fire or explosion for over 10A discharging.

6.2.4.4 Over temperature protective circuit
*The over temperature protective circuit shall operate discharging when cell surface temperature reaches 70degC.
*The over temperature protective circuit shall operate charging at less than 0degC..

6.3 Storage
*It shall be kept in shipping condition (70% discharge) or over than 70% discharge condition to storage for long period.
*It shall be kept in dry condition of low humidity, especially be free from high temperature (45degC or more).
(Recommended Temperature 23degC,Humidity 65±20% or less.)
*Do not storage the battery near heat sources, nor in a place subject to direct sunlight to storage in warehouse.
*It shall be used the battery within 3 months (90 days) after shipping.

6.4 Prohibition Clause
*Do not throw the battery into fire, nor heat the battery.
*Do not disassemble nor modify the battery.
*Do not leave the battery in a place of high temperature (60degC or more).
*Do not use the battery in a place of high temperature (60degC or more).
*To prevent the battery from water or moisture.
*Do not add strong shock, nor drop the battery.
*Do not solder lead directly to the battery body.
*Do not short (+) and (-) terminal of the battery with a kind of metal.
*Do not charge beyond the condition which described on the delivery specification.
*Do not reverse charge the battery.
*Do not use together with the battery of a different kind.
*Do not penetrate the battery with a nail etc., nor make a hole in the battery.
*Do not put the battery into a microwave oven, nor high pressure container.
*Do not connect the battery to wall sockets and cigarette wall sockets in vehicle, etc.

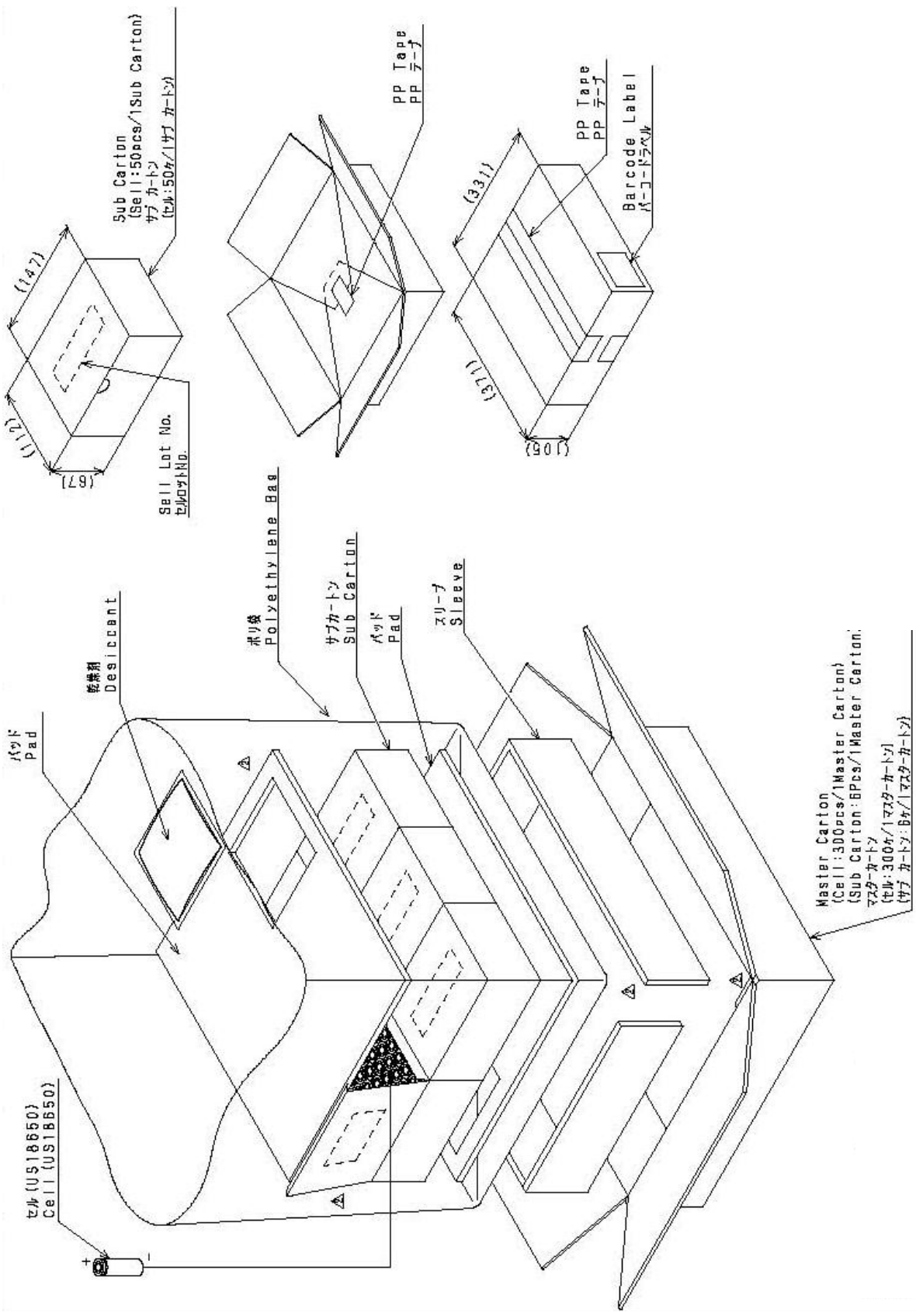
7.Outline



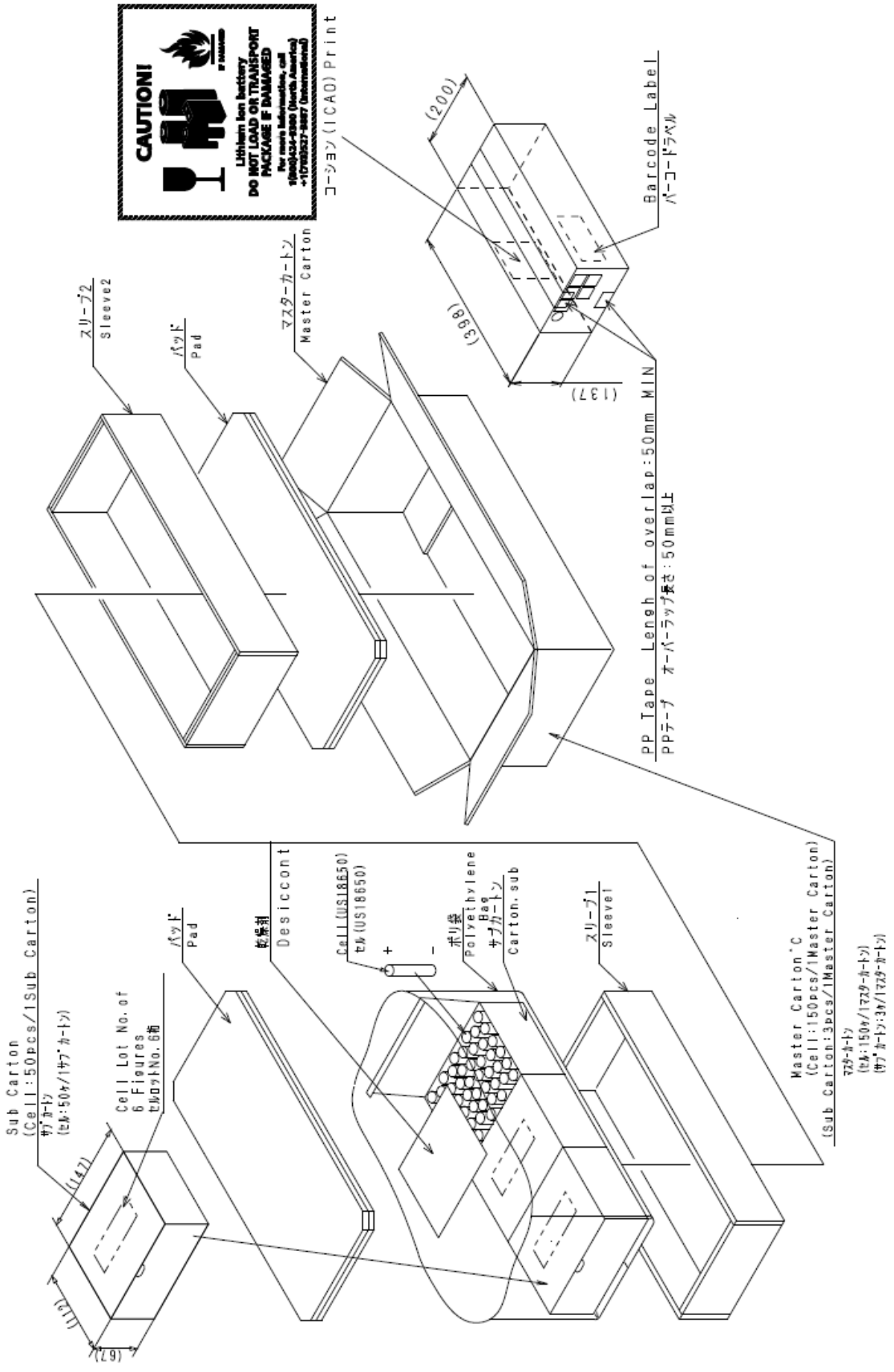
＊:Size excluding wrinkle on the Tube.

8.1 Packing Instruction

8.1.1 Boat transport specifications

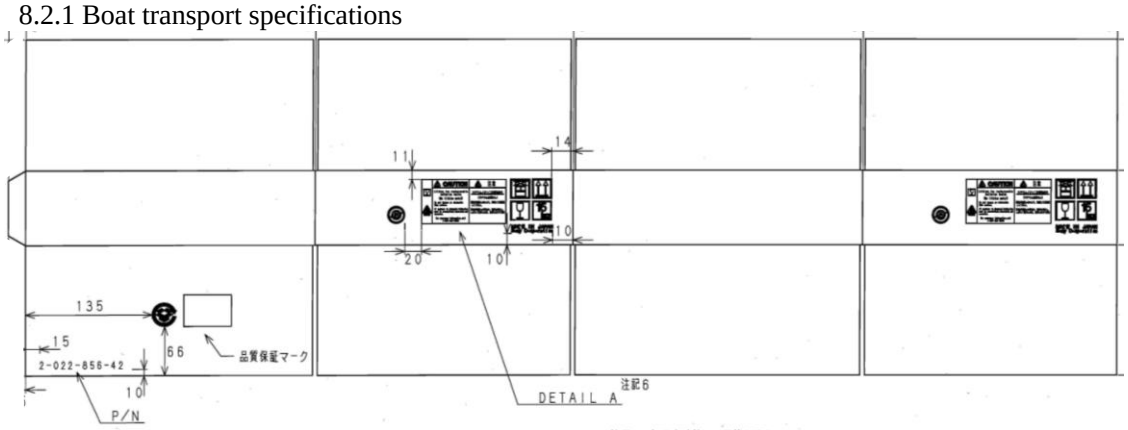


8.1.2 Air transport specifications



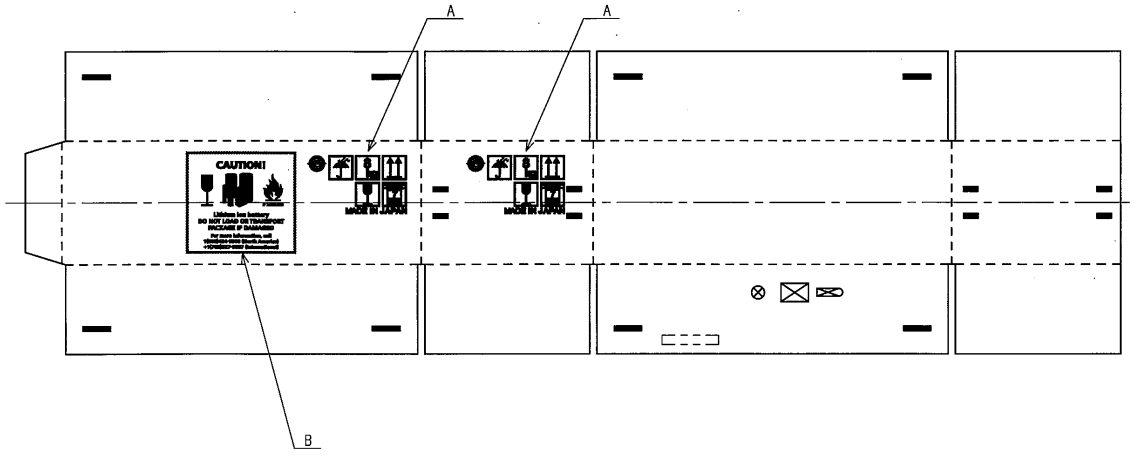
8.2 Printing Instruction for Master Carton

8.2.1 Boat transport specifications



[DETAIL A]

8.2.2 Air transport specifications



Detail A

Detail B

8.3 Parts name marking

A part name is marked on the bar code label of master carton. This bar code label is stuck to one places of master carton.

Boat transport specifications (to be continued)

Air transport specifications (to be continued)

8.4 Packing Instruction for Pallet (to be continued)