

Independent Certification of Lithium-Ion Battery UN Transportation Model Regulation

Model Number	CGA-E/622	
Nominal Voltage	7.2	V
Rated Capacity	5.40	Ah
Watt-hour Rating	39	Wh
Equivalent Lithium Content	3.240	g

Customer Model No.		MBI Model No.
VW-VBD55	CGA-E/622AA	CGA-E/622AA
CGA-D54s	CGA-E/622BA	CGA-E/622BA
CGA-D54	CGA-E/622CB	CGA-E/622CB
CGA-D54D	CGA-E/622DA	CGA-E/622DA

No.	Test Item	Criteria	Result	Remark
T1	Altitude Simulation	No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing.	Passed	
T2	Thermal Test	No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing.	Passed	
T3	Vibration	No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing.	Passed	
T4	Shock	No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing.	Passed	
T5	External Short Circuit	External temperature should not exceed 170 degC. No disassembly, rupture, and fire within six hours of this test.	Passed	
T6	Impact	External temperature should not exceed 170 degC. No disassembly, and fire within six hours of this test.	Passed	Component Cell Test
T7	Overcharge	No disassembly, and fire within seven days of this test.	Passed	
T8	Forced Discharge	No disassembly, and fire within seven days of this test.	-	Cell only

We confirmed the test results based on the UN manual of tests and criteria sub-section 38.3

Panasonic Corporation Energy Company
Lithium-ion Battery Business Unit

Issued on, <u>Nov.26. 2008</u>		
Approved	Checked	Prepared
<i>J. Hama</i>	<i>H. Koyama</i>	<i>Shwata</i>

PRODUCT SAFETY DATA SHEET

Manufacturer

Name of Company : Panasonic Corporation
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Department : Energy Company Lithium-Ion Battery Business Unit, Battery Pack Engineering Group
Representative : **Toshiki Itoi**
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Issued : November 21, 2008

Name of Product Lithium-Ion rechargeable battery (or, Lithium-Ion secondary battery)

(Model name) VW-VBD55 (CGA-E/622A, CGA-E/622AA)
CGA-D54s (CGA-E/622B, CGA-E/622BA)
CGA-D54 (CGA-E/622C, CGA-E/622CB)
CGA-D54D (CGA-E/622D, CGA-E/622DA)

Substance Identification

Substance : Lithium-Ion rechargeable battery
CAS number : Not specified
UN Class : Even classified as lithium batteries, they are exempted from Dangerous Goods.
UN - Recommendations on the Transport of Dangerous Goods Model Regulations.
(ST/SG/AC. 10/1 Rev. 12)

**Lithium-Ion rechargeable cells are not subject to the UN Regulations if they meet the following provisions. (1)(3)

* The equivalent Lithium content calculated by 0.3 times of the rated capacity in Ampere-hour(Ah) is not more than 1.5g.

* Each cell is of the type proved to meet the requirements if each test in the Manual of Tests and Criteria, Part 3, sub-section 38.3.

**Lithium-Ion rechargeable batteries are not subject to the UN Regulations if they meet the following provisions. (1)(3)

* The equivalent Lithium content is not more than 8g.

* Each battery is of the type proved to meet the requirements if each test in the Manual of Tests and Criteria, Part 3, sub-section 38.3.

And they are out of scope for SP A154. (3)

Composition	: Positive electrode; Lithium cobalt oxide	20 - 35wt%
	Negative electrode; Carbon	10 - 20wt%
	Electrolyte; Organic electrolyte mainly composed of alkyl carbonate	10 - 20wt%
	Enclosure; Plastic	

Hazardous and Toxicity Class

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.

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. Take a medical treatment. 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. Take a medical treatment.

Fire Fighting Measures

Extinguishing method	: Since vapor, generated from burning batteries may make eyes, nose and throat irritate, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.
Fire extinguishing agent	: Plenty of water and alcohol-resistant foam are effective.

Measures for electrolyte leakage from the battery

- Take up with absorbent cloth.
- Move the battery away from the fire.

Handling and Storage

- When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals. Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together. (1)(2)
- Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation. (1)(2)(3)

- Do not let water penetrate into packaging boxes during their storage and transportation.
- The batteries will be stored at room temperature, charged to about 30 - 50% of capacity.
- Do not store the battery in places of the high temperature exceeding 35 deg. C or under direct sunlight or in front of a stove. Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, water drop or not to store it under frozen condition.
- Batteries are sure to be packed in such a way as to prevent short circuits under conditions normally encountered in transport. (1)(2)(3)
- Please avoid storing the battery in the places where it is exposed to the static electricity so that no damage will not be caused to the protection circuit of the battery pack.

Exposure Control (in case of electrolyte leakage from the battery)

- Acceptable concentration : Not specified in ACGIH. (4)
- Facilities : Provide appropriate ventilation system such as local ventilator in the storage place.
- Protective clothing : Gas mask for organic gases, safety goggle, safety glove.

Physical and Chemical Properties of Single cell

- Appearance : Single cell: Cylindrical or Prismatic cell
- Nominal voltage : Single cell: 3.6 volts

Stability and Reactivity

Since batteries utilize a chemical reaction they are actually considered a chemical product. As such, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage.

Toxicological Information (in case of electrolyte leakage from the battery)

- Acute toxicity : Oral (rat) LD50 >2g/kg (estimated)
- Irritation : Irritating to eyes and skin.
- Mutagenicity : Not specified.
- Chronic toxicity : Not specified.

Ecological Information

- In case of the worn-out battery was disposed in land, the battery case may be corroded, and leak electrolyte. But, we have no ecological information.

Heavy metal in battery : Mercury(Hg) and Cadmium(Cd) are neither contained nor used in battery.

Disposal Considerations (Precautions for recycling)

- When the battery is worn out, dispose of it under the ordinance of each local government or the law issued by the relevant government.
- Disposal of the worn-out battery may be subjected to Collection and Recycling Regulation.

Transport Information

- During the transportation of a large amount of batteries by ship, trailer or railway, do not leave them in the places of high temperatures and do not allow them to be exposed to condensation.
- During the transportation do not allow packages to be fallen down or damaged.
- For air shipment that contain more than 24 new Lithium-Ion rechargeable cells, or more than 12 new Lithium-Ion rechargeable batteries, they are necessary to meet the following items. (1)(3)
 1. Each packages shall be marked indicating that it contains lithium batteries and special procedures shall be followed in the event that the package is damaged.
 2. Each shipment shall be accompanied with a document indicating that packages contain Lithium batteries and that special procedures shall be followed in the event that the package is damaged.
 3. Be capable of withstanding a 1.2 meter drop test in any orientation.
 4. Packages shall not exceed 30kg.
- Transport Regulations Title 49 CFR 173.185, IATA Special Provision A45 and IMDG Special Provision 188.

Regulatory Information

- IATA Dangerous Goods Regulations 49th Edition Effective 1 January 2008.
- ICAO Technical Instructions for the safe transport of dangerous goods by air.

Others

References

- (1) UN Recommendations on the Transportation of Dangerous Goods Model Regulations.
(ST/SG/AC.10/1/Rev.12)
- (2) Federal Register/ Vol. 65, No. 174/Thursday, September 7, 2000/Notices.
- (3) IATA Dangerous Goods Regulations 49th Edition Effective 1 January 2008.
- (4) TLV s and BEI s 1999 ACGIH

Panasonic

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November 21, 2008

No. PRNM08-305

To whom it may concern

Certification of the Non Mercury Contain of Battery

1. Manufacturer

Company name : Panasonic Corporation

2. Product

Brand name: Panasonic
Type: Lithium-Ion Battery
Model No.: VW-VBD55 (CGA-E/622A, CGA-E/622AA)
CGA-D54s (CGA-E/622B, CGA-E/622BA)
CGA-D54 (CGA-E/622C, CGA-E/622CB)
CGA-D54D (CGA-E/622D, CGA-E/622DA)
Country of Origin: Japan
HS code: 8507.8020 / Lithium ion

3. Material Data

We, Panasonic Corporation Energy Company, hereby certify that above battery complies with our specification and also neither contained nor used Mercury.
Accordingly, the product complies with the Chinese regulation.

Signature : Toshiki Itoi

Toshiki Itoi / Group Manager
Battery Pack Engineering Group
Lithium-Ion Battery Business Unit

Additional Document for Section II of PI965 to PI970 and Section IB of PI965 and PI968

Air Waybill number Master : _____ House: _____
 (for consolidation only)

WARNING: LITHIUM BATTERIES THAT HAVE BEEN RECALLED BY THE MANUFACTURER FOR SAFETY REASONS **MUST NOT** BE SHIPPED BY AIR.

This package contains lithium cells or batteries in the following configuration (check applicable):

Lithium Ion - Maximum of <ul style="list-style-type: none"> • 20 Watt-hours per cell; and • 100 Watt-hours per battery 	Lithium Metal – Maximum of <ul style="list-style-type: none"> • 1 gram of lithium metal per cell; and • 2 grams of lithium per battery
<input type="checkbox"/> Cells or batteries only (ICAO/IATA Packing Instruction 965, Section II) – Cells or batteries in a package, without electronic equipment Package Limit: ≤2.7Wh = 2.5kg; <u>or</u> >2.7Wh but ≤ 20Wh = 8 cells; <u>or</u> >2.7Wh but ≤ 100Wh = 2 batteries	<input type="checkbox"/> Cells or batteries only (ICAO/IATA Packing Instruction 968, Section II) – Cells or batteries in a package, without electronic equipment Package Limit: ≤0.3g = 2.5kg; <u>or</u> >0.3g but ≤ 1g = 8 cells; <u>or</u> >0.3g but ≤ 2g = 2 batteries
<input type="checkbox"/> Cells or batteries only (ICAO/IATA Packing Instruction 965, Section IB) – Cells or batteries in a package, without electronic equipment UN3480, _____ package(s) x _____ kg G each	<input type="checkbox"/> Cells or batteries only (ICAO/IATA Packing Instruction 968, Section IB) – Cells or batteries in a package, without electronic equipment UN3090, _____ package(s) x _____ kg G each
<input type="checkbox"/> Packed with equipment (ICAO/IATA Packing Instruction 966, Section II) – Cells or batteries packed in a package with equipment	<input type="checkbox"/> Packed with equipment (ICAO/IATA Packing Instruction 969, Section II) – Cells or batteries packed in a package with equipment
<input type="checkbox"/> Contained in equipment (ICAO/IATA Packing Instruction 967, Section II) – Cells or batteries contained in equipment	<input type="checkbox"/> Contained in equipment (ICAO/IATA Packing Instruction 970, Section II) – Cells or batteries contained in equipment

- This package must be handled with care. A flammability hazard exists if the package is damaged.
- If this package is damaged in transportation, it must not be loaded until the condition of the contents can be verified. The batteries contained in this package must be inspected for damage and may only be repacked if they are intact and protected against short circuits.
- For more information about the batteries contained in this package, call the following telephone number:

List telephone number here, including area code and any applicable country code

For Section IB use only

Name/Address of shipper	Name/Address of consignee
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NOTE: Regarding Section IB of PI965 and PI968, the same name and address of shipper and consignee as above shall be marked on the packages.

When overpack(s) are used, overpack information required in DGR 8.1.6.9.2 Step 7 must be indicated below.

Example ① 10 (packages) x 10kgG. Overpack used _____

 Example ② 10 x 5kgG (UN3480) and 10 x 2kgG (UN3090), overpack used x 3, #126,
 #127, #128, total quantity per overpack UN3480=50kgG UN3090=20kgG

Name/Title of Signatory: _____ Date: _____
 Signature: _____

SAMPLE

CAUTION!



IF DAMAGED

Lithium metal and ion batteries
**DO NOT LOAD OR TRANSPORT
PACKAGE IF DAMAGED**

For more information, call
Name: ()
Phone Number: ()

121mm

114mm