Global Technology Systems, Inc. is a licensing partner of Honeywell International, Inc.

550 Cochituate Road - Framingham, MA 01701   Tel.: 508 267-2711   Fax: 508 650-1172

Material Safety Data Sheet

1. PRODUCTS AND MANUFACTURER

Item Identification: **HD220R-Li, HDR202-Li**  
Lithium-ion (Li-ion) battery

Hazardous Characteristic Code: C1
National Stock Number: (for Agency use ONLY)
Type Number:
Common Name: Sealed Lithium-ion (Li-ion) battery  
Weight of Item (grams): < 460g ea
Item Dimensions (inches): Width: 3.50 in (89mm), Length: 5.83 in (148.1mm), Height: 0.765 in (19.4mm)
Contract Number:

Battery Pack Manufacturer's Identification:
Battery Pack Manufacturer’s Name  Global Technology Systems, Inc. /Honeywell Batteries
and Address and ZIP code:  550 Cochituate Road, Framingham, MA, 10701
Repairer’s Federal Supply Code (CAGE): 81349
Preparers: Global Technology Systems, Inc.
    550 Cochituate Road
    Framingham, MA, 10701
Emergency & Information telephone numbers: CML: 732-427-3112, DSN: 987-3112
    800-793-4093

2. COMPOSITION OF ITEM:  Panasonic battery company cell

<table>
<thead>
<tr>
<th>Hazardous &amp; Non-hazardous Components</th>
<th>Exposure Limits</th>
<th>Other * Recommended Limits by Item</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Chemical Name, (Symbol), and [CAS#])</td>
<td>OSHA PEL</td>
<td>ACGIH</td>
<td>NIOSH</td>
</tr>
<tr>
<td>Lithium cobaltite (LiCoO₂)[12190-79-3]</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithium hexafluorophosphate (LiPF₆)[21324-40-3]</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon (C)[7782-42-5]</td>
<td></td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Diethyl Carbonate (C₆H₁₀O₂)[105-58-8],</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethylene Carbonate (C₃H₄O₃)[96-49-1], and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propylene Carbonate (C₄H₆O₃)[108-32-7]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum (Al)[7429-90-5]</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper (Cu)[7440-50-8]</td>
<td>0.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polyvinylidene fluoride ((C₂H₂F₆)ₓ)[24937-79-9]</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biphenyl (C₁₂H₁₀)[92-52-4]</td>
<td>0.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Global Technology Systems, Inc. is a licensing partner of Honeywell International, Inc.

550 Cochituate Road - Framingham, MA 01701   Tel.: 508 267-2711   Fax: 508 650-1172
3. PHYSICAL AND CHEMICAL PROPERTIES: N/A for item

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Point</td>
<td></td>
</tr>
<tr>
<td>Melting Point</td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure (mmHg)</td>
<td></td>
</tr>
<tr>
<td>Vapor Density (Air=1)</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate (butyl acetate=1)</td>
<td></td>
</tr>
<tr>
<td>Solubility in Water</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td></td>
</tr>
<tr>
<td>Odor and Appearance</td>
<td></td>
</tr>
</tbody>
</table>

4. STABILITY AND REACTIVITY:

**Chemical Stability:** Stables: X   Unstables: X

Conditions to avoid: **DO NOT:**
- Expose to fire or excessive heat, or overcharge.
- Abuse, mutilate or short circuit the battery.

**Incompatibility:** Store in separate stacks from hazardous materials.

**Hazardous Decomposition Products:** When exposed to extreme heat/fire batteries may rupture leaking corrosive material and/or emit toxic fumes. Burning batteries may emit acrid smoke irritating fumes, and toxic fumes of fluoride.

**Hazardous Polymerization:** May Occur: ____ Will not Occur: X

Conditions to avoid:

5. HEALTH HAZARD IDENTIFICATION

**Emergency Overview** (including Signs and Symptoms, Route(s) of Entry, etc.)
Intact batteries present no specific hazards.

**Acute Health Hazards** (e.g., Inhalation, Eye Contact, Skin Contact, Ingestion, etc.):
- Burning batteries: **AVOID** inhalation of toxic fumes. Burning batteries emit toxic fumes, which are irritating to the lungs.
- Leaking batteries: **AVOID** exposure to leaking electrolyte, it can cause severe irritation and/or damage to the skin, mucous membrane or eyes.

**Chronic Health Effects** (e.g., Carcinogen, Teratology, Reproduction, Mutagenicity, etc.):
- Cobalt: Suspected human carcinogenic agent.

**Medical Conditions Generally Aggravated by Exposure:** None.

6. FIRST AID MEASURES:

**Inhalation:** If battery is burning, leave the area immediately. If exposed to fumes, seek medical attention promptly.

**Skin Contact:** If battery electrolyte leaks on to the skin flush the affected area for at least 15 minutes with clean water. **DO NOT** attempt to neutralize, Seek medical attention promptly.
7. **FIRE FIGHTING and EXPLOSION HAZARD DATA:**

**Flammable Properties:** N/A

Auto ignition Temperature:

**Flammable Limits:** N/A

Lower flammable limit: Upper flammable limit:

**Hazardous Combustion Products:** Burning batteries may emit acrid smoke irritating fumes, and toxic fumes of fluoride.

**Extinguishing Media:** Carbon dioxide (CO₂) or dry chemical fire extinguisher, 10-B: C.

**Fire Fighting Instructions:**

Personnel: Fight the fire in a defensive mode, while exiting the area. When using a CO₂ fire extinguisher, **DO NOT** re-enter the area until it has been thoroughly ventilated (i.e., purged) of the CO₂ extinguishing agent.

Firefighters: Use a self-contained breathing apparatus (SCBA).

8. **ACCIDENTAL RELEASE MEASURES:**

**Small Spill:** If batteries show signs of leaking, **AVOID** skin or eye contact with the material leaking from the battery. Use chemical resistant rubber gloves and non-flammable absorbent materials for Clean up. Coordinate disposition with the Installation Environmental Office.

9. **HANDLING AND STORAGE:**

**Handling:** Recharge batteries IAW methods specified in applicable technical manuals.

**DO NOT:**
- Overcharge this battery.
- Abuse, mutilate or short circuit the battery.

**Storage:** Gain approval for storage areas from the Installation Fire Department. Store batteries in a cool (i.e., <130°F), dry and well ventilated area.

**DO NOT:**
- Store batteries in direct sunlight or under hot conditions.
- Smoke and keep batteries away from open flame or heat.
- Store batteries in the same stacks with hazardous materials.
- Store batteries in office areas, or other areas where personnel congregate.

**Work/Hygienic Practices:** Thoroughly wash hands after cleaning-up a battery spill (i.e., leaking or venting batteries). **NO** eating, drinking or smoking in battery storage areas.
10. EXPOSURE CONTROL/PERSONAL PROTECTION EQUIPMENT

**Engineering Controls:** NA

**General Exhaust:**

**Local Exhaust:**

**Special:** If the battery is damaged and leaking, protect hands with chemical resistant rubber gloves. If the battery is burning, leave the area immediately.

**Protective Equipment:**

**Respiratory Protection:** During fire fighting firemen should use SCBA.

**Skin Protection:** Use chemical resistant rubber gloves, when cleaning-up leaking batteries.

11. DISPOSAL CONSIDERATIONS/ECOLOGICAL INFORMATION:

**Waste Disposal Method:** DO NOT incinerate

1. Li-ion batteries are non-hazardous solid waste (NHSW) under Resource Conservation and Recovery Act (RCRA) regulations. They are HW in the states of AK, CA, MN, RI and WA, which utilize bioassay to characterize HW in addition to RCRA requirements. All batteries will be managed IAW equipment TM requirements, and disposal will be IAW requirements under the Universal Waste Rule (USEPA), state and local regulations.

2. These batteries should be recycled, if possible. Coordinate battery disposition and disposal with the Installation Environmental Office and the servicing Defense Reutilization and Marketing Office.

12. TRANSPORTATION INFORMATION:

IAW US DOT regulations "Dry batteries" are not subject to transportation requirements when they are offered for transportation in a manner that prevents the dangerous evolution of heat (e.g., effective insulation of exposed terminals to prevent short circuiting of the battery).

**Procedures:** Securely package batteries to withstand conditions normal to shipping. Protect batteries against short-circuiting.

**Special Precautions:** Isolate and remove damaged and/or leaking batteries, if possible. Notify local health, safety and environmental agencies.