MSDS for Dell Batteries and relationship to Dell Part Numbers

The Attached MSDS, accurately represents the chemical construction, of the Dell Batteries listed below, by Dell Part Number.

Related Part numbers:
1K178, 1K240, C1763, 8H663, 4K001, W0629, 8T063, 7T534, T0804
N0988, X0973, Q256, 1K300, QJ212, T0807, Y0176, 6T216, 9T540, 9T543
Y0175, XD185, YD121, XU882, NR147, X0363, 6P758, 7P867, 0X217, T0787
UO488, D0980, R1457, 4M010, 4P894, D0980, R1457, D0980, R1457, CC154
DC224, FC139, Y9945, JD606, KD491, GD774, JD609, DU154, DU155, JY339
DU156, J825J, M283J, HD941, KD552, GD881, JD735, UD532, XD184, TM777
XU863, GR986, TM980, YW646, JT780, MN127, KK103, MP307, KY268, R437C
W004C, R720C, W267C, 965Y7, 2N135, X0982, Y0418, 6M934, 5M790, 8M815
Y0156, X0317, R5792, R5793, H9567, K9340, 4P259, 1P745, 1X284, W0625
Y0174, W1955, X1710, Y1637, D2340, W1955, Y9947, C9554, CC157, DC227
YG326, WG400, NR222, GR995, FT092, WW131, FU441, KY471, T557C, U008C
U335C, W269C, 9T352, DU093, X0318, T0786, MHRR5, 37H21, NRFFP, 8R5W5
47MMT, YF349
W3Y7C, H415N, G272C, Y022C, WU960, MT276, PW640, KM752, KM970, MT332
KY466, FU439, OCD2N, YXC66, KY266, FU268, XR694, WK380, WK379, RUS83
FW302, PU559, UM230, WR053, XG528, XG496, TM978, NR213, UW280, FP269
NT377, JY336, KP422, NT362, JN149, CR174, TT710, CR171, N338H, M565H H986H, J927H,
FG451, JG181, GG421, NX626, HX348, X0968, 449TX, 78HR1, K962H, TR2F1, FP4VJ, CRKG5,
UY623, F018M, G223N, YK69C, V48RM, 4YRJH, M4RNN, F965N, G558N, X645H, Y569H,
N586M, P185K, RM627, RM628, UD264, PD945, D5505, C5421, F5133, F5134, C5447,
F5126, Y1338, T6840, U5014, 7P806, T0802, 2MRP8, N3N1Y, WRP9M, 09K6P, 2VYF5,
R7X8, 6LYD0, RG049, JNR9M, H3K58, 4TCMG, WG351, D5HR6, HVHC0, 69F7Y, TD432,
W0RH0, 736DJ, VVCM7, YK69C, O6900, 0M540, 0X216, OX237, 0X287, 11VCV, 1DM16,
1G222, 3W2YX, F33MF, DTG0V, JXK73, FKYCH, C42P9, C9891, CC399, DC415, FC362
GC9RQ, X4631, KR174, NU209, 5XR317, 1691P, M5971, N928M, 2M400, 0M340, 9K740
H1388, 5X317, 75UYF, 7P066, 3K585, X1979, Y1909, RW220, WN971, MM158, HR047
YW655, CW666, HX306, RMTVC, 1G765, 1J127, J1989, 1X365, 2H660, 2M400, 2P690
2M400, 2P690, 2P928, J3426, 3TWCP, 4E368, 4E369, 4G344, 4K085, 4M778, 4P254
5G379, 5J005, 5J436, 5P611, 6T087, 6T475, 6T684, 6T751, 6Y912, 7W238, 8C612, 8P140
8T016, 8T273, 8T531, 9T533, 9T969, 9H048, 9H321, 9H848, 9K740, 9T501
CR177, D1437, D225P, D5546, D5550, D5556, DF230, DU128, DU138, DU151
F5122, FF231, FF232, FT078, FW255, G189K, G2103, G3399, G900G, GP973
GW241, H1389, HP277, HW358, HW421, HX345, HX351, J1379, J9324, JD605
JG168, JG917, JN145, JN146, JX76F, JX76F, JY327, K880K, KC866, KD489, KD490
K1216, KP405, KPD66, M539G, M846H, MR317, MT275, MX27W, ND865
NT380, NX618, NX629, NX632, P773K, PR693, PU500, RD300, RK544, RK818
RM803, TO803, T0805, TC020, TD116, TD611, TD612, TK369, TM787, TR321
TR520, TR653, TT712, TT717, TT720, TT721, U0485, U0519, U0520, U0521
U0522, U1700, U4974, U6256, U8735, UD087, UD260, UDS33, UM178
UM181, W0596, W0597, W0628, W1815, W1824, W5P4F, WD414, WR015
WT619, WT873, X0319, X0362, X0981, X6304, X6347, X8483, XD735, XG513
XG527, XG530, XT816, XT827, XX827, XX877, Y0517, Y0518, Y0173, Y0394
Y0417, Y0423, Y1082, Y1087, Y265J, Y267J, Y4460, Y4465, Y4498, Y4501
Y5160, G278C, V79Y0, RMTVY, C429P, FKYCH, 9PCR0, NY38W, R2D9M, NH6K9
F33MF, 3W2YY, Y0WYY, V7M6R, 3NPC0, C1JKH, 911MD, TPMCF, 6FNTV
NGW79, TRM4D, RGR3V, YCFRN, KY1TV, V3JDM, CT4V5, 4WY7C, 163DR
H048N, 8X70T, DG219, H91MK, DG219, OP60Y, 96JC9, D10H3, 6R1V8, 716YD
PPJMY, 4FXY, D10H3, Y1FGD, FJXY, 10NFJ, M7T5F, 1N9CO, PKH18, 6HY59
7VJMH, R0JM6, YD8XC, R9XM9, 4K8YH, KKY1, YDN87, 6POCC, 5K1GW, 0DRRP,
G05H0, 410GJ, YKWXX, 6K8KF, V3716, 29TVH, FJCY5, 8DJT9, F1KTM, 954DF,
79VRK, WWT3M, 2XYN, 5X3XT, VD1WF, 5NJTT, 37CTR, 70K80, T40JJ,
F1KTM, 3SF0D, PGWP3, 78V9D, 21X15, XJW8Y, GM7FD, N4D39, RFX51, 1V6GN, PW640

The underline part numbers was originally assigned to Sanyo and Panasonic have merged and therefore these numbers have been moved into the Sanyo Master MSDS
Safety data sheet for product

1. PRODUCT AND COMPANY IDENTIFICATION
   • Product name: Lithium ion rechargeable battery cell
   • Product code: None
   (All models Sanyo manufactured and whose capacity is less than or equal to 5.4Ah,
   including the cell branded as Panasonic, excluding the cell whose shape is prismatic and
   two or more short / middle / long side excess 12mm/85mm/110mm.)
   • Company name: Sanyo Electric Co., Ltd., Panasonic group
   • Address: 222-1 Kaminozen, Sumoto City, Hyogo, Japan
   • Telephone number: +81-799-24-4111
   • Fax number: +81-799-23-2879
   • Emergency telephone number: [Daytime of business day] +81-799-23-3931
     [Night and holiday] +81-799-24-4131

2. HAZARDS IDENTIFICATION
   For the battery cell, chemical materials are stored in a hermetically sealed metal or metal laminated plastic
   case, designed to withstand temperatures and pressures encountered during normal use. As a result, during
   normal use, there are no physical hazards such as ignition, explosion and chemical hazards due to leakage of
   battery contents.
   However, if exposed to a fire, added mechanical shocks, decomposed, added electric stress by miss-use,
   the gas release vent will be operated. The battery cell case will be breached at the extreme, hazardous
   materials may be released.
   Also, if it is heated strongly by surrounding fires or the like, there is a possibility that irritating or harmful gas
   may be generated.

   • GHS classification: Not available
     (This product is outside the scope of GHS system since it's considered as an "article".)

   • Most important hazard and effects
     Human health effects:
     - Inhalation: The steam of the electrolyte has an anesthesia action and stimulates a respiratory tract.
     - Skin contact: The steam of the electrolyte stimulates a skin. The electrolyte skin contact causes a sore
       and stimulation on the skin.
     - Eye contact: The steam of the electrolyte stimulates eyes. The electrolyte eye contact causes a sore
       and stimulation on the eye. Especially, substance that causes a strong inflammation of the eyes is
       contained.
     - Environmental effects: Since a battery cell remains in the environment, do not throw out it into the
       environment.

   • Specific hazards:
     - If the electrolyte contacts with water, it will generate detrimental hydrogen fluoride.
     Since the leaked electrolyte is inflammable liquid, do not bring close to fire.
3. COMPOSITION / INFORMATION ON INGREDIENTS

- Substance or preparation: Preparation
- Information about the chemical nature of product: *1

<table>
<thead>
<tr>
<th>Portion</th>
<th>Material name</th>
<th>Concentration range (wt %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive electrode</td>
<td>Lithium transition metal oxide (Li[M]<em>{x}[O]</em>{y})</td>
<td>20~60</td>
</tr>
<tr>
<td>Positive electrode’s base</td>
<td>Aluminum</td>
<td>1~10</td>
</tr>
<tr>
<td>Negative electrode</td>
<td>Carbon</td>
<td>10~30</td>
</tr>
<tr>
<td>Negative electrode’s base</td>
<td>Copper</td>
<td>1~15</td>
</tr>
<tr>
<td>Electrolyte</td>
<td>Organic electrolyte principally involves ester carbonate</td>
<td>5~25</td>
</tr>
<tr>
<td>Outer case</td>
<td>Aluminum, iron, aluminum laminated plastic</td>
<td>1~30</td>
</tr>
</tbody>
</table>

*1 Not every product includes all of these materials.

*2 The letter M means transition metal and candidates of M are Co, Mn, Ni and Al. One compound includes one or more of these metals and one product includes one or more of the compounds. The letter m and n means the number of atoms.

4. FIRST-AID MEASURES

Spilled internal cell materials

- Inhalation:
  - Make the victim blow his/her nose, gargle. Seek medical attention if necessary.

- Skin contact:
  - Remove contaminated clothes and shoes immediately. Wash extraneous matter or contact region with soap and plenty of water immediately.

- Eye contact:
  - Do not rub one’s eyes. Immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention immediately.

A battery cell and spilled internal cell materials

- Ingestion:
  - Wash out mouth thoroughly. Do not make the victim vomit, unless instructed by medical personnel. Seek medical attention immediately.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media: Plenty of water, carbon dioxide gas, nitrogen gas, chemical powder fire extinguishing medium and fire foam.

- Specific hazards: Corrosive gas may be emitted during fire.

- Specific methods of fire-fighting: When the battery burns with other combustibles simultaneously, take fire-extinguishing method which correspond to the combustibles. Extinguish a fire from the windward as much as possible.

- Special protective equipment for firefighters: Refer to Section 8-EXPOSURE CONTROLS / PERSONAL PROTECTION (WHEN THE ELECTROLYTE LEAKS)

6. ACCIDENTAL RELEASE MEASURES

Spilled internal cell materials, such as electrolyte leaked from a battery cell, are carefully dealt with according to the followings.

- Precautions for human body:
  - Remove spilled materials with protective equipment (refer to Section 8-EXPOSURE CONTROLS / PERSONAL PROTECTION (WHEN THE ELECTROLYTE LEAKS)). Do not inhale the gas as much as possible. Moreover, avoid touching with as much as possible.

- Environmental precautions: Do not throw out into the environment.

- Method of cleaning up: The spilled solids are put into a container. The leaked place is wiped off with dry cloth.

- Prevention of secondary hazards: Avoid re-scattering. Do not bring the collected materials close to fire.
7. HANDLING AND STORAGE

- Handling suggestions
  - Do not connect the positive terminal to the negative terminal with electrical wire or chain.
  - Avoid polarity reverse connection when installing the battery to an instrument.
  - Do not wet the battery with water, seawater, drink or acid; or expose to strong oxidizer.
  - Do not damage or remove the external tube.
  - Keep the battery away from heat and fire.
  - Do not disassemble or reconstruct the battery; or solder the battery directly.
  - Do not give a mechanical shock or deform.
  - Do not use unauthorized charger or other charging method. Terminate charging when the charging process doesn’t end within specified time.

- Storage
  - Do not store the battery with metalware, water, seawater, strong acid or strong oxidizer.
  - Make the charge amount less than or equal to 50% then store at -20~40 degree C in a dry (humidity: 45~85%) place.
    Since deterioration will be faster in the high temperature range than in the low temperature range, so do not keep it in the high temperature range beyond the period that is specified by the seller or owner.
  - Use insulative and adequately strong packaging material to prevent short circuit between positive and negative terminal when the packaging breaks during normal handling. Do not use conductive or easy to break packaging material.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION (WHEN THE ELECTROLYTE LEAKS)

- Control parameters
  - ACGIH has not been mentioned control parameter of electrolyte.

- Personal protective equipment
  - Respiratory protection: Respirator with air cylinder, dust mask
  - Hand protection: Protective gloves
  - Eye protection: Goggles or protective glasses designed to protect against liquid splashes
  - Skin and body protection: Working clothes with long sleeve and long trousers

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance
  - Physical state: Solid
  - Form: Cylindrical or Prismatic or Pouch (laminated)
  - Color: Metallic color or black (without tube if it has tube)
  - Odor: No odor

10. STABILITY AND REACTIVITY

- Stability: Normally stable unless a strong shock is applied or heated strongly
- Possibility of hazardous reactions: Damage to the container may cause leakage of contents. Contents may leak or ignite due to temperature rise.
- Conditions to avoid: Crushing or deformation, use and storage at 80 degree C or higher or at high humidity. Usage at a voltage or current outside the rating and external short circuit.
- Incompatible materials: Conductive material such as water or metal pieces. Oxidizing agent such as bleach.
- Hazardous decomposition products: Acid or harmful gas is emitted during leakage or fire.

11. TOXICOLOGICAL INFORMATION

Organic Electrolyte

- Acute toxicity:
  - LD_{50}, oral - Rat 2,000mg/kg or more
- Irritating nature: Irritative to skin and eye
12. ECOLOGICAL INFORMATION
   "Persistence/degradability:
   Since a battery cell and the internal materials remain in the environment, do not bury or throw out into
   the environment.

13. DISPOSAL CONSIDERATIONS
   Recommended methods for safe and environmentally preferred disposal:
   **Product (waste from residues)**
   Specified collection or disposal of lithium ion battery is required by the law like as "battery control law" in
   several nations. Collection or recycle of the battery is mainly imposed on battery's manufacturer or
   importer in the nations recycle is required.
   **Contaminated packaging**
   Neither a container nor packing is contaminated during normal use. When internal materials leaked from
   a battery cell contaminates, dispose as industrial wastes subject to special control.

14. TRANSPORT INFORMATION
   In the case of transportation, avoid exposure to high temperature and prevent the formation of any
   condensation. Take in a cargo of them without falling, dropping and breakage. Prevent collapse of cargo piles
   and wet by rain. The container must be handled carefully. Do not give shocks that result in a mark of hitting on
   a cell. Please refer to Section 7-HANDLING AND STORAGE also.

   **UN regulation**
   - UN number: 3480 (3481 when the battery is contained in equipment or packed with equipment)
   - Proper shipping name:
     Lithium ion batteries ("lithium ion batteries contained in equipment" or "lithium ion batteries packed with
     equipment")
   - Class: 9 *

   * Although this product meets the criteria of "dangerous goods" and are classified as "lithium ion batteries",
   depending on the battery's total capacity in the packaging, etc., they may not be subject to the fully
   regulated provisions.

   **Regulation depends on region and transportation mode**
   - Worldwide - Air transportation:
     ICAO TI/IATA-DGR [packing instruction 965 section IB or II]
     (When shipping batteries "packed with" or "contained in" equipment, use packing instruction 966 or 967 as
     appropriate.)
   - Worldwide - Ocean transportation:
     IMO-IMDG Code [special provision 188]
   - Europe - Ground transportation:
     ADR [special provision 188]

   * Instructions or provisions in the box brackets are conditions to make the battery cell exempted from full
   regulation.

15. REGULATORY INFORMATION
   Regulations specifically applicable to the product:
   Wastes Disposal and Public Cleaning Law [Japan]
   Law for Promotion of Effective Utilization of resources [Japan]
   US Department of Transportation 49 Code of Federal Regulations [USA]

   * About overlapping regulations, please refer to Section 14-TRANSPORT INFORMATION.
16. OTHER INFORMATION
   · This safety data sheet is offered an agency who handles this product to handle it safely.
   · The agency should utilize this safety data sheet effectively (put it up, educate person in charge) and take proper measures.
   · The information contained in this Safety data sheet is based on the present state of knowledge and current legislation.
   · This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

Reference
   The European Agreement concerning the International Carriage of Dangerous Goods by Road – 2019: The United Nations Economic Commission for Europe (UNECE)

First edition: Apr. 28, 2010
Prepared and approved by: Battery Pack Engineering Department
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                          Panasonic group