



CIS Li-Ion Battery – Altair 5 Product Family

CONTENT INFORMATION SHEET

1. Chemical Product and Company Identification

LABEL IDENTIFIER: BATTERY ASSEMBLY: Altair® 5, Altair® 5X, Altair® 5-IR, Altair® 5X-IR, Altair® 5X-PID

COMPANY IDENTIFICATION: MSA Safety Incorporated
1000 Cranberry Woods Drive
Cranberry Township, PA 16066
CUSTOMER SERVICE: 1-800-MSA-2222 (8:30 a.m. – 5:00 p.m., USA local time)

2. Content Information

CONTENT: UN 38.3 Test Summary Report in accordance with Sub-section 38.3 of the UN Manual of Tests and Criteria, Part III, Sub-section 38.3.5.

Product Information Sheet furnished by Panasonic for Lithium Ion Batteries used in the Altair®5 family of products.

Panasonic Batteries, Revision: – January 1, 2018

3. Disclaimer

This document is not a Safety Data Sheet as defined by 29 CFR 1910.1200. This product has been determined to be an "article" according to the OSHA Hazard Communication Standard and is thereby excluded from any requirements of the standard.

The information provided herein is considered proprietary in nature and is provided only as information that may be necessary for material handling. It may not be used or disclosed in any other manner. Use of the product may have impacted its contents; and it is the user's responsibility to dispose of the product in accordance with local, state and federal laws and regulations.

The information provided herein has been compiled from sources believed to be reliable. However, MSA Safety Incorporated makes no warranty as to the accuracy, completeness or sufficiency of the information and in no event will MSA Safety Incorporated be responsible for loss or damage of any nature whatsoever resulting from use of this information.



The Safety Company

UN 38.3 TEST SUMMARY REPORT

Lithium Cell or Battery Test Summary in Accordance with Section 2.9.4 UN Model Regulations and Sub-section 38.3 of the UN Manual of Tests and Criteria, Part III, Sub-section 38.3.5.

[a] Manufacturer

MSA Safety Incorporated

[b] Manufacturer Contact Information

1000 Cranberry Woods Drive
Cranberry Twp., PA 16066 USA
T: 1-800-MSA-2222
www.MSAnet.com

[c] Test Laboratory

Motorola Product Testing Services
1700 Belle Meade Court
Lawrenceville, GA 30043
No longer in operation.

Contact MSA for information regarding the full test report.

[d] Test Report ID# | MPTS#1580

[e] Test Report Date | March 7, 2008

[f] Description: Small secondary battery pack, 3.6V, 2450 mAh utilized in the following MSA products: Altair® 5, Altair® 5-IR, Altair® 5X, Altair® 5X-IR, Altair® 5X-PID

Lithium Ion Lithium Metal

Mass (g)	44.0 g	Watt-hour Rating	8.82	Lithium Content	N/A
Model Number(s)	10083508 – MSA Altair® 5 Rechargeable Battery Pack				

[g] List of Test Conducted **Result (Pass / Fail / N/A)**

38.3.4.1 T.1: Altitude simulation	Pass
38.3.4.2 T.2: Thermal test	Pass
38.3.4.3 T.3: Vibration	Pass
38.3.4.4 T.4: Shock	Pass
38.3.4.5 T.5: External short circuit	Pass
38.3.4.6 T.6: Impact/Crush (cell only)	N/A
38.3.4.7 T.7: Overcharge (packs only)	Pass
38.3.4.8 T.8: Forced discharge (cell only)	N/A

[h] Battery Assembly: Not Applicable UN38.3.3 (f) UN38.3.3 (g)

[i] Test Reference: Manual of Tests and Criteria Amendments, Third Edition, Section 38.3

[j] Signatory – Global Environmental Health and Safety

Date: March 14, 2019

Name: David Vogt

Title: Global Environmental Program Manager

Signature:

Notice – The above signatories affirm that this UN 38.3 Test Summary Report is an accurate and correct summary of the original tests. The original test data is confidential information available to competent Authorities with valid identification and only upon the review by MSA of a written formal request. Disclosure of original test data may be subject to the execution of a nondisclosure agreement.

Product Information Sheet

Panasonic Batteries

Panasonic Industrial Devices Sales Company of America
 A Division Panasonic Corporation of North America
 1701 Golf Road Suite 3-1100
 Rolling Meadows, IL 60008
 Toll Free: 877-726-2228
 Fax: 847-468-5750
 Internet: na.industrial.panasonic.com/products/batteries
 e-mail: oebatteries@us.panasonic.com

Product: Lithium-ion Batteries
(Li-ion)
Applicable models/sizes: All Cylindrical
 and Prismatic Lithium-ion batteries

Revision: – January 1, 2018

The batteries referenced herein are exempt articles and are not subject to the OSHA Hazard Communication Standard requirement. This sheet is provided as a service to our customers.

SDS

Safety Data Sheets (SDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid or particle; (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

Because all of our batteries are defined as "articles", they are exempt from the requirements of the Hazard Communication Standard, hence a SDS is not required.

The following components are found in a Panasonic Lithium Ion battery:

Nickel Manganese Cobalt Type

Component	Material	Formula / CAS
Positive Electrode	Lithium Nickel Manganese Cobalt Oxide	LiMnCoO ₂ 346417-97-8
Negative Electrode	Graphite	C 7440-44-0
Electrolyte	Ethylene Carbonate – Solvent	C ₃ H ₄ O ₃ 96-49-1
	Diethyl Carbonate – Solvent	C ₂ H ₁₀ O ₃ 105-58-8
	Lithium Hexafluorophosphate – Salt	LiPF ₆ 21324-40-3

Cobalt Type

Component	Material	Formula / CAS
Positive Electrode	Lithium Cobalt Oxide	LiCoO ₂ 12190-79-3
Negative Electrode	Graphite	C 7440-44-0
Electrolyte	Ethylene Carbonate – Solvent	C ₃ H ₄ O ₃ 96-49-1
	Diethyl Carbonate – Solvent	C ₂ H ₁₀ O ₃ 105-58-8
	Lithium Hexafluorophosphate – Salt	LiPF ₆ 21324-40-3

Nickel Cobalt Aluminum Type

Component	Material	Formula / CAS
Positive Electrode	Lithium Cobalt Nickel Aluminum Oxide	LiCoNiAlO ₂ 193214-24-3
Negative Electrode	Graphite	C 7440-44-0
Electrolyte	Ethylene Carbonate – Solvent	C ₃ H ₄ O ₃ 96-49-1
	Diethyl Carbonate – Solvent	C ₂ H ₁₀ O ₃ 105-58-8
	Lithium Hexafluorophosphate – Salt	LiPF ₆ 21324-40-3

Notice: The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Panasonic Industrial Company makes no warranty expressed or implied.



DISPOSAL

All Panasonic Lithium ion batteries are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. These batteries, however, do contain recyclable materials. Panasonic is a Licensee of the Call2Recycle Battery Recycling Program. If you build our cells into a battery pack, please call 1-800-8-BATTERY or go to the Call2Recycle website at www.call2recycle.org for additional information on how your branded product can also participate in the program.

TRANSPORTATION

All Panasonic lithium ion batteries are not subject to the other requirements of the US Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185.

Effective January 1, 2018 all Panasonic lithium ion batteries can be shipped by air in accordance with International Civil Aviation Organization (ICAO) 2017-2018 edition, Section II or Section 1B or International Air Transport Association (IATA), 59th edition, Section II or 1B, Packing Instructions (PI) 965 (Batteries), PI 966 (Batteries, packed with equipment) and PI 967 (Batteries, contained in equipment) as appropriate.

All Panasonic lithium ion batteries are regulated by the International Maritime Organization (IMO), 2016 edition, 38th amendment, under Special Provisions 188 and 230.

All Panasonic lithium ion cells are tested and comply with the UN Model Regulations, Manual of Test and Criteria, Part III, subsection 38.3.

If you build any of our lithium ion cells into a battery pack, you must also assure that they are tested in accordance with the UN Model Regulations, Manual of Test and Criteria, Part III, subsection 38.3, 6th revised edition.

If you plan on transporting any untested prototype battery packs contact your Panasonic Sales Representative for regulatory information. Check with your air carrier before shipping. Many air carriers have additional requirements.

FIRST AID

If you get electrolyte in your eyes, flush with water for 15 minutes without rubbing and immediately contact a physician. If you get electrolyte on your skin wash the area immediately with soap and water. If irritation continues, contact a physician. If the battery is ingested, call the National Capital Poison Center (NCPC) at 202-625-3333 (Collect) or your local poison center immediately.

GENERAL RECOMMENDATIONS

CAUTION: Risk of fire, explosion and burns. Do not short-circuit, crush, incinerate or disassemble battery.

FIRE SAFETY

In case of fire, you can use dry chemical, alcohol resistant foam or carbon dioxide fire extinguishers. Cooling the exterior of the batteries will help prevent rupturing. Fire fighters should use self-contained breathing apparatus. Detailed information on fighting a lithium ion battery fire can be found in Guide 147 (Lithium Ion Batteries) of the US DOT Emergency Response Guide.

Panasonic
ideas for life

Lithium Ion UR18650A

Features & Benefits

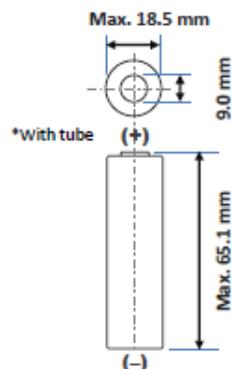
- General purpose model
- Superior cost performance
- Ideal for notebook PCs, backup applications, handheld devices, etc.

Specifications

Rated capacity ⁽¹⁾	Min. 2100mAh
Capacity ⁽²⁾	Min. 2150mAh Typ. 2250mAh
Nominal voltage	3.6V
Charging	CC-CV, Std. 1510mA, 4.20V, 3.0 hrs
Weight (max.)	44.0 g
Temperature	Charge: 0 to +45°C Discharge: -20 to +60°C Storage: -20 to +50°C
Energy density ⁽³⁾	Volumetric: 453 Wh/l Gravimetric: 176 Wh/kg

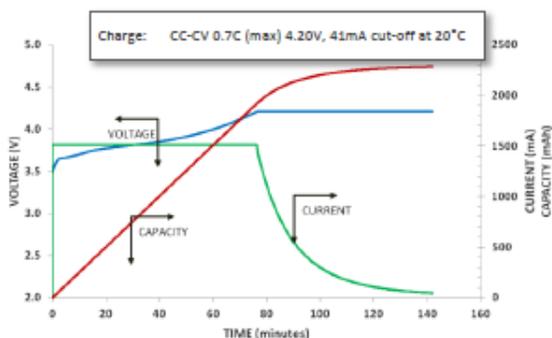
⁽¹⁾ At 20° C ⁽²⁾ At 25° C ⁽³⁾ Energy density based on bare cell dimensions

Dimensions

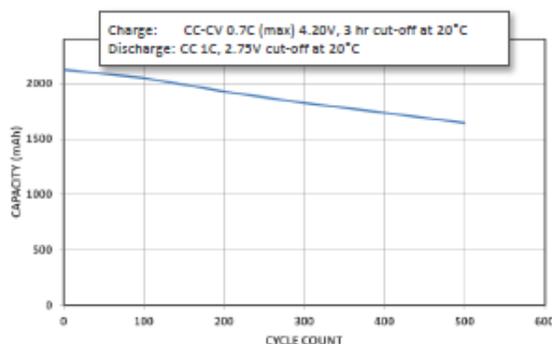


For Reference Only

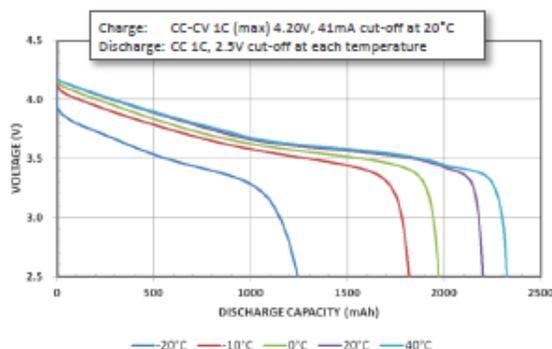
Charge Characteristics



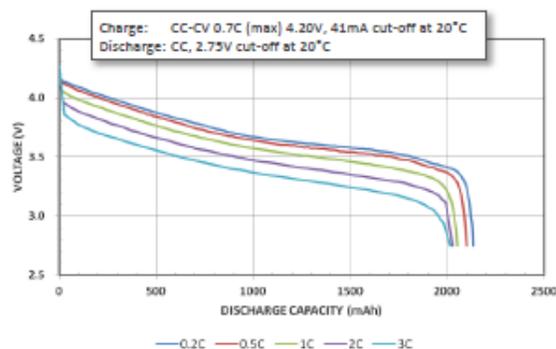
Cycle Life Characteristics



Discharge Characteristics (by temperature)



Discharge Characteristics (by rate of discharge)



The data in this document is for descriptive purposes only and is not intended to make or imply any guarantee or warranty.

For more information on how Panasonic can assist you with your battery power solution needs, visit us at www.panasonic.com/industrial/batteries-oem or e-mail secsales@us.panasonic.com.