

INCH-POUND

MIL-PRF-32271/2

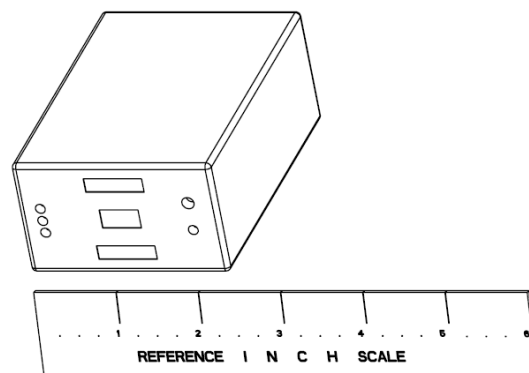
30 October 2008

## PERFORMANCE SPECIFICATION SHEET

## BATTERY, NON-RECHARGEABLE, LITHIUM

This specification is approved for use by all Departments  
and Agencies of the Department of Defense.

The requirements for acquiring the product herein shall consist of this specification and MIL-PRF-32271.



See NOTES for  
nominal  
dimensions; see  
applicable  
drawing for  
dimensional  
requirements.

Figure 1 – General View, M32271/2 Battery Shape

REQUIREMENTS (see 1.2 for Type, Class, and Features descriptions):

Type - I		Type - II <i>Not Applicable</i>	Type - III
Class - 2			Class - 2
Features-C	Features - E		Features - E
PIN: M32271/2-12C	PIN: M32271/2-12E		PIN: M32271/2-32E
Approved Chemistry: Lithium manganese dioxide			Approved Chemistry: Lithium manganese dioxide

Specification requirements: The following requirements of MIL-PRF-32271, identified therein as “when specified”, are applicable as indicated below:

## MIL-PRF-32271/2

Requirement	Specification Reference	Applicability by PIN suffix (M32271/2-)		
		12C	12E	32E
Parallel cell arrangements <sup>1</sup>	3.4	Yes	Yes	Yes
Connectors	3.4.5	Yes	Yes	Yes
Battery charger connection	3.4.5.1	No	No	No
Connection integrity	3.4.5.2	No	No	No
Terminal integrity	3.4.6	Yes	Yes	Yes
Socket strength	3.4.6.1	No	No	No
Terminal strength	3.4.6.2	Yes	Yes	Yes
Complete discharge device	3.4.7	Yes	Yes	Yes
State of charge device	3.4.8	No	Yes	Yes
State of charge data output	3.4.8e	No	Yes	Yes
Cell charging	3.5.3	Yes	Yes	Yes
Nail penetration	3.5.4	Yes	Yes	Yes
Cell series string short circuit	3.5.6	No	No	No
Parallel string charge protection <sup>2</sup>	3.5.6.1	Yes	Yes	Yes
Charge protection	3.5.11	Yes	Yes	Yes
Over-current protection	3.5.13.1	Yes	Yes	Yes
Over-temperature protection	3.5.14	Yes	Yes	Yes
Surface temperature	3.6h	Yes	Yes	Yes
Capacity tests LR and LRT		No	No	No
Immersion	3.7.8	Yes	Yes	Yes
Watertight integrity	3.7.9	No	No	No
DO NOT CHARGE! marking	3.8.1.2b	Yes	Yes	Yes
Complete discharge device	3.8.4	Yes	Yes	Yes
marking/label				
State of charge marking	3.8.5	No	Yes	Yes

Dimensions, marking and configuration, Types I & III

Battery - Drawing A3315879

Battery Connector (3.4.5 & 4.6.1.7) – Drawing A3315879

Mating Connector (3.4.5 & 4.6.1.7) – Drawing A3315879

Battery Charger Connector (3.4.5.1 & 4.6.1.7.1) – Not Applicable

Battery voltages (3.4.4 & 4.6.1.5), Types I & III:

Battery open-circuit voltage (3.4.4.1 & 4.6.1.5.1):

Maximum – 6.6 volts

Minimum – 6.0 volts

Battery closed circuit voltage (3.4.4.2 & 4.6.1.5.2):

For capacity, initial voltage delay, and closed circuit voltage test:

Minimum – 4.0 volts

<sup>1</sup> Parallel cell arrangements are permitted but are not required.

<sup>2</sup> Only required if parallel cell arrangements are used

## MIL-PRF-32271/2

Cell closed circuit voltage test (3.4.4.3 & 4.6.1.3): Minimum - 2.0 volts per cell

Maximum weight (3.1 & 4.6.1.6): Type I - 0.86 lbs. (390 g); Type III – 0.90 lbs (408 g)

Capacity test requirements (3.6 & 4.6.4), Type I:

Test	Initial voltage delay		Minimum Capacity	Cut-off Volts	
	Time (MAX)	to Volts			
I	1 second	4.0	4.8 hours		4.0
L	1 second	4.0	4.0 hours		4.0
H	1 second	4.0	4.0 hours		4.0
Storage Period					
			<u>1-Week</u>	<u>4-Week</u>	
IT	1 second	4.0	4.4 hours	4.3 hours	4.0
LT	1 second	4.0	3.7 hours	3.6 hours	4.0
HT	1 second	4.0	3.7 hours	3.6 hours	4.0

Capacity test requirements (3.6 & 4.6.4), Type III:

Test	Initial voltage delay		Minimum Capacity	Cut-off Volts	
	Time (MAX)	to Volts			
I	1 second	4.0	5.2 hours		4.0
L	1 second	4.0	4.0 hours		4.0
H	1 second	4.0	4.5 hours		4.0
Storage Period					
			<u>1-Week</u>	<u>4-Week</u>	
IT	1 second	4.0	4.8 hours	4.7 hours	4.0
LT	1 second	4.0	3.7 hours	3.6 hours	4.0
HT	1 second	4.0	4.1 hours	4.0 hours	4.0

Abuse test pulse discharge capacity requirement (3.5.12 & 4.6.2.12i): Type I – 9.4 ampere-hours; Type III – 10.8 ampere-hours.

#### METHODS OF EXAMINATION AND TEST:

Verification requirements. The following verification requirements of MIL-PRF-32271, identified therein by the phrase “when specified,” are applicable to each battery type as indicated below:

## MIL-PRF-32271/2

Test Requirement	Specification Reference	Applicability by PIN suffix (M32271/2-)		
		12C	12E	32E
Parallel discharges	Tables III, IV, IX & XI	No	No	No
Connector	4.6.1.7	Yes	Yes	Yes
Battery charger connection test	4.6.1.7.1	No	No	No
Static connection integrity	4.6.1.7.2	No	No	No
Dynamic connection integrity	4.6.1.7.3	No	No	No
Terminal integrity	4.6.1.8	Yes	Yes	Yes
Socket strength	4.6.1.8.1	No	No	No
Terminal strength	4.6.1.8.2	Yes	Yes	Yes
Complete discharge device	4.6.1.9	Yes	Yes	Yes
State of charge device	4.6.1.10	No	Yes	Yes
Cell charging	4.6.2.3	Yes	Yes	Yes
Nail penetration	4.6.2.4	Yes	Yes	Yes
Cell series string short	4.6.2.6	No	No	No
Parallel cell charge protection <sup>3</sup>	4.6.2.6.1	Yes	Yes	Yes
Charge protection test	4.6.2.11	Yes	Yes	Yes
Battery over-current protection	4.6.2.13	Yes	Yes	Yes
Battery over-temperature protection	4.6.2.14	Yes	Yes	Yes
Surface temperature	4.6.4.1	Yes	Yes	Yes
Capacity test LR	4.6.4.1.5	No	No	No
Capacity test LRT	4.6.4.1.9	No	No	No
Immersion	4.6.5.8	Yes	Yes	Yes
Watertight integrity	4.6.5.9	No	No	No

Cell closed-circuit voltage test: When cells are tested as specified in 4.6.1.3, load each cell to be used in a single series cell string design with 2 amperes constant current, 1 ohm constant resistance, or 4 watts constant power. In the event that parallel cell arrangements are used, use a load that produces a current equivalent to 2 amperes divided by the number of parallel cell strings to be used, as a minimum.

Battery closed-circuit voltage test: When tested as specified in 4.6.1.5.2, load each battery with 2 ohms constant resistance, 2 amperes constant current, or 8 watts constant power.

Abuse test, pre-discharge: When tested as specified in 4.6.2.12a, discharge Type I batteries with a load of 7 watts for 2.1 hours; discharge Type III batteries with a load of 7 watts for 2.4 hours.

Abuse test, pulse discharge: When tested as specified in 4.6.2.12i, discharge with a load of 3.0 amperes for 1 minute followed by 2.1 amperes for 4 minutes, cycled continuously to 4.0 volts.

Battery over-current protection: When tested as specified in 4.6.2.13, load batteries with either 4 amperes or 20 watts.

Immersion: When tested as specified in 4.6.5.8, a load of 5.0 watts shall be applied during the storage and immersion time periods specified.

<sup>3</sup> This test only required if parallel cell arrangements are used

## MIL-PRF-32271/2

Capacity tests (4.6.4):

Test	Discharge Rate	Duty Cycle
	<u>2 min. Then</u>	
I	9.0W 6.5W	Continuous discharge to cut-off volts, followed by 2.0 amperes To zero volts, then 2.0 amperes forced discharge for 5 minutes.
L	8.0W 5.0W	Continuous discharge to cut-off voltage
H	12.0W 9.0W	Continuous discharge to cut-off voltage
IT	9.0W 6.5W	Continuous discharge to cut-off voltage
LT	8.0W 5.0W	Continuous discharge to cut-off voltage
HT	12.0W 9.0W	Continuous discharge to cut-off voltage

Discharge Cycle: For each test, the first discharge rate shall be applied for 2 minutes; the load shall then switch to the second discharge rate, which shall be applied to cut-off voltage.

## NOTES:

(This section contains information of a general nature which may be helpful, but is not mandatory)

Intended use: This battery is intended for use in thermal weapons sights. It is also used to power a radio test set. It can be used in several models of obsolete mine detection sets.

<sup>4</sup>Nominal ratings: The following are the nominal ratings for the battery described by this specification sheet. They are provided for information purposes.

<b>Battery PIN:</b>	<b>M32271/2-12E</b>	<b>M32271/2-32E</b>
<i>Overall Dimensions:</i>	3.75 in H x 2.55 in W x 1.5 in D	
<i>MAX Weight:</i>	0.86 lb (390 g)	0.90 lbs (408 g)
<i>Voltage Range:</i>	4.0-6.6 Volts	
<i>Nominal Capacity (Ampere-hours):</i>	10 Amp-hours	11.6 Amp-hours
<i>Nominal Energy (Watt-hours):</i>	42 Watt-hours	48 Watt-hours
<i>MAX Rated Power Output:</i>	15 Watts	
<i>MAX Continuous Load Rating:</i>	2.0 Amps	
<i>MAX Pulse Rating:</i>	3.0 Amps	
<i>Instantaneous Trip Rating:</i>	4.0 Amps	
<i>Operating Temperature Range:</i>	-20 to 130°F (-29 to 55°C)	-4 to 130°F (-20 to 55°C)
<i>Storage Temperature Range:</i>	-40 to 160°F (-40 to 71°C)	
<i>MAX Abusive Temperature (non-operating):</i>	195°F (91°C)	172°F (78°C)

Other data:

<sup>4</sup> Capacity and energy delivered by a battery are significantly affected by usage conditions, such as temperature and loads applied. If you have any questions about use of this battery in a particular device or circumstance, please visit the following web site (contact info is posted): <http://www.cerdec.army.mil/c2d/armypower>.

## MIL-PRF-32271/2

**Military Type Designations.** The military type designations that relate to the PINs covered by this specification sheet are as follows: The BA-5347()/U designation has been used for the Type I PIN; and the BA-7847()/U designation was used once for prototypes of the Type III PIN. Please note that the Type II BA-5847/U designation has been replaced by the BA-5347()/U.

Both battery types covered by this specification sheet are subject to the transportation requirements of 49 CFR 173.185. They have solid cathodes and more than 2.0 grams of lithium content. See applicable Material Safety Data Sheet (MSDS) for the maximum lithium weight per cell and battery. It should be noted that all non-rechargeable lithium batteries are restricted from shipment as cargo aboard passenger aircraft within, entering, or leaving the US.

Both battery types covered by this specification sheet include a complete discharge device in order to render the battery non-reactive after use. If the battery is damaged, or if the device does not operate as indicated by an amber or yellow light, the battery is considered reactive waste. Both battery types may be recycled after use. Universal waste rules, where applicable, apply only when recycling is the chosen disposal method.

The US Army CECOM Life Cycle Management Command (LCMC) publishes guidelines for the design of battery compartments for devices using the Type I battery covered by this specification sheet: Technical Bulletin CECOM-TB-7. Please contact the CECOM LCMC Directorate for Safety at [monm-amselsfsec@conus.army.mil](mailto:monm-amselsfsec@conus.army.mil) for further information.

Navy safety tests of NAVSEA S9310-AQ-SAF-010 are required for this battery during first article testing. The test data provided from the testing will be used to evaluate applications for specific using devices and Navy platforms. Devices using a battery described by this specification sheet will require US Navy Safety Approval prior to use by Department of Navy users unless such approval has already been granted. Please consult with NAVSEA Instruction 9310.1 for further information.

**Custodians:**

Army – CR  
Navy – NW  
Air Force – 99  
DLA – GS

**Preparing activity:**

Army – CR  
(Project Number 6135-2006-005)

**Review activities:**

Navy – SH, AS, MC  
Air Force – 71

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil> or <http://assist.daps.dla.mil/quicksearch/>.