

INCH-POUND

MIL-PRF-32271/9

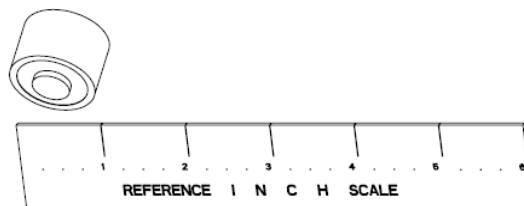
30 October 2008

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, M32271/9 Battery Shape

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

Type – I

Class – 1

Features – A

PIN – M32271/9-11A

Approved chemistry: Lithium manganese dioxide (Li/MnO₂)

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

<u>Requirement</u>	<u>Specification Reference</u>	<u>Applicability</u>
Parallel cell arrangements	3.4	No
Connectors	3.4.5	No
Battery charger connection	3.4.5.1	No
Connection integrity	3.4.5.2	No
Terminal integrity	3.4.6	Yes
Socket strength	3.4.6.1	No
Terminal strength	3.4.6.2	Yes
Complete discharge device	3.4.7	No
State of charge device	3.4.8	No
State of charge data output	3.4.8e	No
Cell charging	3.5.3	No

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Requirement	Specification Reference	Applicability
Nail penetration	3.5.4	No
Cell series string short circuit	3.5.6	No
Parallel string charge protection	3.5.6.1	No
Charge protection	3.5.11	No
Over-current protection	3.5.13.1	No
Over-temperature protection	3.5.14	No
Surface temperature	3.6h	No
Capacity tests LR and LRT		No
Immersion	3.7.8	Yes
Watertight integrity	3.7.9	No
DO NOT CHARGE! marking	3.8.1.2b	No
Complete discharge device marking/label	3.8.4	No
State of charge marking	3.8.5	No

Dimensions, marking and configuration

Battery - Drawing A3315886
 Battery Connector – Not Applicable
 Mating Connector – Not Applicable
 Battery Charger Connector – Not Applicable

Battery voltages (3.4.4 & 4.6.1.5):

Battery open-circuit voltage (3.4.4.1 & 4.6.1.5.1):

Maximum – 3.3 volts

Minimum – 3.0 volts

Battery closed circuit voltage (3.4.4.2 & 4.6.1.5.2):

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

Minimum – 2.0 volts

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): 1.1 ounces (31.2 g)

Capacity test requirements (3.6 & 4.6.4):

Test	Initial voltage delay		Minimum Capacity	Cut-off Volts	
	Time (MAX)	to Volts			
I	1 second	2.0	20.0 hours		2.0
L	1 second	2.0	11.0 hours		2.0
H	1 second	2.0	18.4 hours		2.0
			Storage Period		
			<u>1-Week</u>	<u>4-Week</u>	
IT	1 second	2.0	18.6 hours	18.0 hours	2.0
LT	1 second	2.0	10.2 hours	9.9 hours	2.0
HT	1 second	2.0	17.1 hours	16.6 hours	2.0

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Abuse test pulse discharge minimum capacity requirement (3.5.12 & 4.6.2.12i): 0.93 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 as indicated below:

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

Cell closed-circuit voltage test: When cells are tested as specified in 4.6.1.3, load each cell with 100 milli-amperes constant current, 20 ohms resistance, or 200 milli-watts constant power.

Battery closed-circuit voltage test: When tested as specified in 4.6.1.5.2, load each battery with 100 milli-amperes constant current, 20 ohms resistance, or 200 milli-watts constant power.

Abuse test, pre-discharge: When tested as specified in 4.6.2.12a, discharge with a load of 50 milli-amperes for 10 hours.

Abuse test, pulse discharge: When tested as specified in 4.6.2.12i, discharge with a load of 55 milli-amperes for 1 minute followed by 40 milli-amperes for 4 minutes, cycled continuously to 2.0 volts.

Immersion: When tested as specified in 4.6.5.8, apply a load of 10 milli-amperes during the storage and immersion time periods specified.

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Capacity tests (4.6.4):

Test	Discharge Rate	Duty Cycle
I	50 milli-amperes	Continuous discharge to zero volts, followed by 50 milli-amperes forced discharge for 5 minutes
L	50 milli-amperes	Continuous discharge to cut-off voltage
H	50 milli-amperes	Continuous discharge to cut-off voltage
IT	50 milli-amperes	Continuous discharge to cut-off voltage
LT	50 milli-amperes	Continuous discharge to cut-off voltage
HT	50 milli-amperes	Continuous discharge 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 night vision goggles. It is also used as either a memory hold or back-up power battery for several types of devices. It is used either singly or with 2 to 4 batteries in series. Some applications use this battery to power electric motors.

¹Nominal ratings: The following are the nominal ratings for the battery described by this specification sheet. They are provided for information purposes.

Battery PIN:	M32271/9-11A (Li/MnO₂)
<i>Overall Dimensions:</i>	0.749 in L x 1.0 in DIA
<i>MAX Weight:</i>	1.1 ounces (31.2 grams)
<i>Voltage Range:</i>	2.0-3.3
<i>Nominal Capacity: (in ampere-hours)</i>	1 Amp-hr
<i>Nominal Energy: (in watt-hours)</i>	2 Watt-hrs
<i>MAX rated power output:</i>	125 milli-watts
<i>MAX continuous load rating:</i>	50 milli-amperes
<i>MAX pulse load rating:</i>	55 milli-amperes
<i>Instantaneous trip rating:</i>	Not applicable
<i>Operating temperature range:</i>	-20 to 130°F (-29 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)

Other data:

Military Type Designations. The military type designation that relates to the PIN covered by this specification sheet is as follows: The BA-5367()/U designation has been used for the

¹ 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>.

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Type I PIN. It should be noted that the Type II BA-5567()/U has been replaced by the BA-5367()/U.

This battery was exempt from the transportation requirements of 49 CFR 173.185 until January 2008; now it is subject to the test requirements therein beginning in October 2009. Class 9 shipping labels typically won't be needed; consult with 49 CFR 173.185 for package quantity/size limitations. It is a single-cell battery that has a solid cathode and contains less than 1.0 grams of lithium per cell/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.

This battery does not have a complete discharge device. It is considered Non-Hazardous Solid Waste per the Resource Conservation and Recovery Act (RCRA). However, it is considered Hazardous Waste in states using Bioassay rules. Check with your local disposal office for rules that apply.

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 this battery may 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 6135-2006-012)

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/>.