GP Batteries

Product Specifications ***Model No.:CR2016***

1. APPLICABILITY

This specification is applicable to GP Manganese Dioxide Lithium Primary Cell CR2016.

2. GENERAL

2.1	Type designation	: CR2016(IEC/JIS)
2.2	Nominal voltage	: 3V
2.3	Typical capacity	: 90mAh (load: 30kΩ, cutoff voltage:2.0V)
2.4	Shape and dimension	: Refer to Drawing 1.
2.5	Typical weight	: 1.7g
2.6	Shelf life	: 5 years at 20±2°C storage

3. APPEARANCE

There shall be no dirt, scratch or deformation detrimental to practical service in appearance.

4. CELL VOLTAGE

4.1 Test method

Method of sampling : MIL-STD-105E level II single sampling normal inspection.
Voltmeter : Digital Voltmeter (DVM) with the precision of 1mV (internal resistance not less than 1 Megohm)
Test temperature : 20±2°C

4.2 Off Load Voltage

At shipping	12 months after manufactured
Above 3V	Above 3V

5 Service Life

	Test Mode	Initial (Nominal)	Initial (Minimum)	12 months storage at 20°C (Nominal)
Service life at 20±2°C	15kΩ24H/D (EPV=2.0V)	3300H	305H	290H

H: hour D: day EPV: end point voltage

Note:

- Initial test: A test commencing within one month after delivery.
- Storage test: A test conducted after 12 months storage under the specified conditions after delivery.

6. ELECTROLYTE LEAKAGE

	Test Items	Test Conditions	Requirements
6.1	Arrival at warehouse	Within two months after shipping	There shall be no leakage observed with naked eye and no bulging or deformation of batteries in excess of dimensions on shown in the Drawing 1
6.2	Long term storage	Within storing for 12 months at 20 ±15°C, 65±20%RH	
6.3	High Temperature	Test specimens shall be kept standing at 45±2°C and below 70% RH or less for 30days	
6.4	Over-discharge	30 kΩ continuously discharge down to 1.8V at 20±2°C, 65±20%RH	

7. QUALITY ASSURANCE

DESCRIPTION	SAMPLING PLAN
Battery dimensions	0.65% (Note 5)
Appearance	1.0% (Note 5)
Off load voltage	0.65% (Note 5)
Service output	Note 1 (Note 5)
Leakage 6.1	0.65% (Note 2 & 5)
6.2	Note 3
6.3	Note 4
6.4	Note 4

Note 1 : Acceptance / rejection in accordance with IEC publication 60086-1 (2011), Sub-clause 5.3.

1) Test nine batteries.
2) Calculate the average without the exclusion of any result.
3) If this average is equal to or greater than the specified figure and no more than one battery has a service output of less than 80% of the specified figure, the batteries are considered to conform for service output.
4) If this average is less than the specified figure and/or more than one battery has a service output of less than 80% of the specified figure, repeat the test on another sample of nine batteries and calculate the average as previously.
5) If the average of this second test is equal to or greater than the specified figure and no more than one battery has a service output of less than 80% of the specified figure, the batteries are considered to conform for service output.
6) If the average of second test is less than the specified figure and/or more than one battery has a service output of less than 8% of the specified figure, the batteries are considered not to conform and no further testing is permitted.

Note 2: Leakage on arrival at warehouse is within two months after shipping.

Note 3: Sample size : n=20
Judgement : Ac=1 Re=2

Note 4: Sample size :n=20
Judgement :Ac=0, Re=1

Note 5: AQL General Inspection level II, single sampling plan.

8. PACKAGING

Packaging shall be a form agreed by both parties.

9. WARRANTY

One (1) year limited warranty against workmanship and material defects.

Precaution & Handling

1) Do not disassemble or short-circuit batteries.
2) Do not recharge batteries.
3) Do not dispose of batteries in fire.
4) Do not allow metal objects to contact the battery terminals.
5) Do not mix with used or other battery type (such as alkaline with carbon zinc).
6) Do not solder the batteries directly. If soldering or welding connection to the battery is required, consult our engineer for proper methods.
7) Do not over-discharge batteries. Force discharging batteries by external power source in a series may cause explosion.
8) To install or remove batteries, follow the equipment manufacturer's instructions.
9) Keep battery away from small children. If swallowed, consult a physician at once.
10) Remove batteries from device when it is not in use.

Storage

1) Store in a cool, dry place before use.
2) Do not keep batteries at temperature of 30°C or above.
3) Do not keep batteries at relative humidity of 75% or above.

Drawing 1