

# Pleomax LR20 Product Specification

**Edition: 2016-11**

## 1.0. SCOPE

Scope : This specification defines the technical requirements for alkaline cell, Zn/MnO<sub>2</sub>, LR20 Size.

## 2.0. Reference standards

IEC60086-1 : 2011 《Primary batteries-part 1:General》

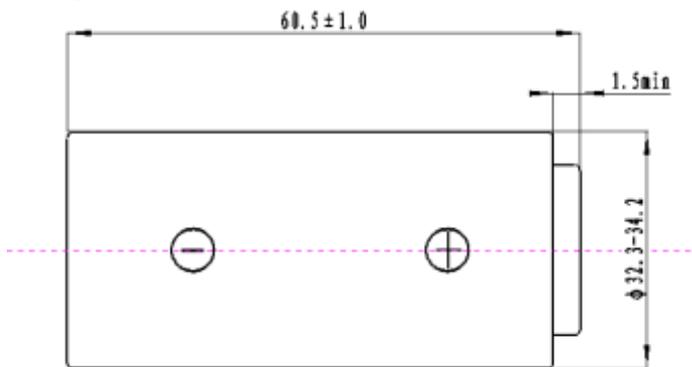
IEC60086-2 : 2011 《Primary batteries-part 2 : Physical and technologic specifications》

IEC60086-5 : 2011 《Primary batteries-part 5 : Safety of batteries with aqueous electrolyte》

## 3.0. Mechanical requirements

### 3.1. Physical :

Figure 1



### 3.2. Weight

Weight range per cell :  $135 \pm 4$  g.

## 4.0. Electrical requirements

### 4.1. Nominal voltage: 1.5 V

### 4.2. Open-circuit voltage

	OCV
Min. :	1.50V
Max. :	1.68V

### 4.3. Cell service life

Unless otherwise stated, all measurements are to be performed at a Standard Environment of  $20 \pm 2^\circ\text{C}$   $55 \pm 20\% \text{R.H.}$

**Table 1 cell service life**

	Application	Power Load	Cycle Time	Cutoff Voltage	Minimum Average Duration				unit
					Initial	After 12 months storage	After 36 months storage	After 60 months storage	
D	Radio	10Ω	4h/d	0.9	114	104.9	96.9	85.5	h
	Portable stereo	600mA	2h/d	0.9	14	12.9	11.9	10.5	h
	Toy	2.2Ω	1h/d	0.8	22	20.2	18.7	16.5	h
	Portable lighting	1.5Ω	4m/15m, 8h/d	0.9	650	598	552	487	min
	※	2.2Ω	24h/d	0.9	18	16.6	15.3	13.5	h
Note	※ The item is established by Factory								

### 5.0. Safety of batteries

**Table 2 Test and requirements**

Test	Misuse simulation	requirements
Electrical	D Incorrect installation	No fire(NF) No explosion (NE)
	E External short circuit	No fire(NF) No explosion (NE)
	F overdischarge	No leakage and distortion
Temperature	G High temperature store	No leakage

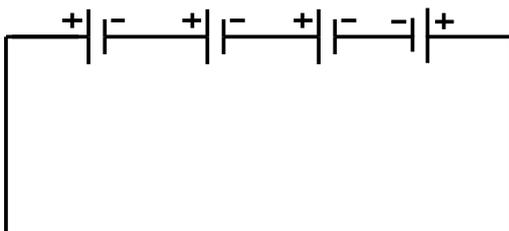
#### 5.1. TEST D - incorrect installation (four batteries in series)

##### 5.1.1. Test procedure (5 groups)

Four undischarged batteries of the same brand, type and origin shall be connected in series with one reversed (B1) as shown in figure2. The circuit shall be connected for 24 h or until the battery case temperature has returned to ambient temperature.

The resistance of the inter-connecting circuitry shall not exceed 0.1Ω.

Figure 2



##### 5.1.2. requirements

See table 2.

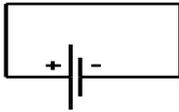
**5.2 TEST E – External short circuit**

**5.2.1 Test procedure (5 groups)**

An undischarged battery shall be connected as shown in figure 3. The circuit shall be connected for 24 h or until the battery case temperature has returned to ambient temperature.

The resistance of the inter-connecting circuitry shall not exceed 0.1Ω.

Figure 3



**5.2.2. requirements**

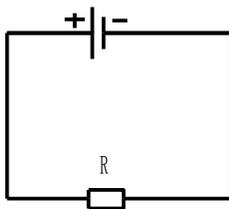
See table 2.

**5.3. Test F- Overdischarge**

**5.3.1. Test procedure (5 groups)**

After have finished discharging under the stated condition, continue discharge, until the on-load voltage falls to 40% of the nominal voltage.

Figure 4



**5.3.2. requirements**

See table 2.

**5.4. Test G – High temperature**

**5.4.1. Test procedure**

Batteries stored in the condition of 60°C, 90%±5% R.H. for 20 days.

**5.4.2. requirements**

See table 2.

**6.0. Heave metal contents**

Mercury limit (per battery weight)	1ppm
Cadmium limit (per battery weight)	2ppm
Lead limit (per battery weight)	15ppm

**7.0. Shelf life : 60 months.**