

List of battery sizes

From Wikipedia, the free encyclopedia



4.5-volt, D, C, AA, AAA, AAAA, A23, 9-volt, CR2032 and LR44 batteries

This article lists the sizes, shapes, and general characteristics of some common primary and secondary battery types in household and light industrial use.

Historically the term "battery" referred to a collection of electrochemical cells connected in series,^[1] however in modern times the term has come to refer to any collection of cells (or single cell) packaged in a container with external connections provided to power electrical devices,^[2] leading to the variety of standardized form factors available today.

The long history of disposable dry cells means that many different manufacturer-specific and national standards were used to designate sizes, long before international standards were agreed upon. Technical standards for battery sizes and types are published by standards organizations such as International Electrotechnical Commission (IEC) and American National Standards Institute (ANSI). Many popular sizes are still referred to by old standard or manufacturer designations, and some non-systematic designations have been included in current international standards due to wide use.

The complete nomenclature for the battery will fully specify the size, chemistry, terminal arrangements and special characteristics of a battery. The same physically interchangeable cell size or battery size may have widely different characteristics; physical interchangeability is not the sole factor in substitution of batteries.

Contents

- 1 Standardization
- 2 Non-standard brand-specific names
- 3 Battery chemistry
- 4 Physical interchangeability
- 5 Cylindrical batteries
- 6 Rectangular batteries
- 7 Camera batteries
- 8 Button cells - coin, watch
 - 8.1 Lithium cells
 - 8.2 Silver oxide and alkaline cells
 - 8.3 Zinc air cells (hearing aid)
- 9 Lithium-ion batteries (rechargeable)
 - 9.1 Cylindrical lithium-ion rechargeable battery
 - 9.1.1 List of Li-ion sizes
- 10 Obsolete batteries
 - 10.1 PP series
- 11 See also
- 12 References
- 13 Further reading
- 14 External links

Standardization

Main article: Battery nomenclature

The current IEC standards for portable primary (non-rechargeable) batteries bear the 60086 number. The relevant US standards are the ANSI C18 series, which are developed by a committee of the US National Electrical Manufacturers Association (NEMA).

Both standards have several parts covering general principles, physical specifications and safety. Designations by IEC and ANSI standards do not entirely agree, although harmonization is in progress. Manufacturers further have their own systematic identification of cell types, so cross-reference tables are useful to identify equivalent types from different manufacturers.^[3]

Lead-acid automotive starting, lighting and ignition batteries have been standardized according to IEC standard 60095 and in North America by standards published by BCI.

Non-standard brand-specific names

Manufacturers may assign proprietary names and numbers to their batteries, disregarding common, colloquial, IEC, and ANSI naming conventions (see LR44 battery as an example). Often this is done to steer customers towards a specific brand, and away from competing or generic brands, by obfuscating the common name. For example, if a remote control needs a new battery and the battery compartment has the label, "Replace with CX472 type battery," many customers will buy that specific brand, not realizing that this is simply a brand name for a common type of battery. For example, British standard "U" series batteries were often sold under manufacturer prefixes such as "C", "SP", "HP", etc.; Ever Ready sold "U2" (D) batteries as "SP2" (standard-duty zinc carbon) and "HP2" (heavy duty zinc chloride).

On the other hand, with obscure battery types the designation assigned by a specific brand will sometimes become the most common name for that battery type, as other manufacturers copy or modify the name so that customers recognize it.

Battery chemistry

The terminal voltage of a battery cell depends on the chemicals and materials used in its construction, and not on its physical size. For example, primary (non-rechargeable) alkaline batteries have a nominal voltage of 1.5 volts. Rechargeable NiCd (nickel cadmium) and NiMH (nickel metal hydride) typically output 1.25 volts per cell. Devices intended for use with primary batteries may not operate properly with these cells, given the reduction in voltage.

Dry Leclanche (carbon-zinc), alkaline and lithium batteries are the most common modern types. Mercury batteries had stable cell terminal voltages around 1.35 volts. From the late 1940s until the mid-1990s, mercury batteries were made in many consumer and industrial sizes. They are no longer available since careless disposal can release toxic mercury into the environment. They have been replaced in some applications by zinc-air batteries, which also produce 1.35 volts.

The full battery designation identifies not only the size, shape and terminal layout of the battery but also the chemistry (and therefore the voltage per cell) and the number of cells in the battery. For example, a CR123 battery is always Li-MnO₂ ('lithium') chemistry, in addition to its unique size.

The following tables give the common battery chemistries for the current common sizes of batteries. See Battery Chemistries for a list of other electrochemical systems.

Physical interchangeability

Cylindrical cells typically have a positive terminal nub at one end, and a flat negative terminal at the other. A cell with a nub on the positive terminal is called a **button-top**, and a cell without a positive nub is called a **flat-top**. Two different cells of the same nominal size, e.g. two 18650 cells, may have different diameter buttons if made by different manufacturers, and this can lead to incompatibility with devices. Flat-top cells cannot be used in series without modification or soldering into position, because the flat positive terminal of one cell cannot contact with the next cell's negative terminal. Rarely however, a manufacturer may include tiny bumps on the *negative* terminal, so flat-tops can be used in series.

It is important to check the battery contacts in a device before attempting to install cells, because some will not work with flat-tops or with button-tops whose buttons are the wrong diameter. Some devices have a small bump or spring where the positive terminal of the cell connects, and this allows the use of either button- or flat-top cells. Other devices have a flat area that can only be contacted by a button-top. To prevent damage if a cell is inserted backwards, some devices have a raised plastic ring around the positive contact. This

stops the flat negative end of a cell from connecting accidentally, but also stops the positive end of a flat-top or of a button-top with too large button from connecting.

Cylindrical batteries



This section **needs additional citations for verification**. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed. *(July 2011)* *(Learn how and when to remove this template message)*

These are all round batteries with height greater than their diameter. In zinc-carbon or alkaline types they produce around 1.5V per cell when fresh. Other types produce other voltages per cell (as low as 1.2V for rechargeable nickel-cadmium, up to around 3V for lithium/manganese dioxide). This form has a positive nub terminal at the cap of the cell, and the negative terminal at the bottom of the can; the side of the can is not used as a terminal.

Most common	Names		ANSI	Typical capacity (mAh)	Nominal voltage (V)	Size, dia. × h. (mm)	Comments
	Other common	IEC					
4/5AA	FLYCO Ni-Cd, Ni-Mh			600–1500	1.2	14.0 × 40.0	Same diameter as AA battery, used in small electronics, including electric shaver.
½AA	SAFT LS14250 Tadiran TL5101 UL142502P	CR14250 (Li-MnO ₂) ER14250 (Li-SOCl ₂)		850–1200	3 (Li-SOCl ₂) 3.6 (Li-MnO ₂)	14.0 × 25.0 (nom) 14.5 x 25.0 (max)	Same diameter as AA battery, used in small electronics, including pulse oximeters, as well as use in some computer models (such as most pre-Intel Macintosh models and some older IBM PC compatibles) as the



AAAA



MX2500
Mini
UM 6 (JIS) LR8D425
(alkaline)
LR61 25A
(alkaline) 625 (alkaline) 1.5

8.3 ×
42.5 CMOS battery. Also used in
US military MILES gear and
DAGR.
Sometimes used in pen
flashlights, laser pointers,
powered styluses,
calculators, fishing lures, or
electronic glucose meters.

AAA



U16 or HP16 (In LR03 24A 1200 1.5
the UK) (alkaline) (alkaline) (alkaline)
Micro R03 (carbon- 24D (carbon- 540 (carbon-
Microlight zinc) zinc) zinc)
MN2400 FR03 (Li- 24LF (Li- 800-1000
MX2400 FeS₂) FeS₂) (NiMH)
MV2400 HR03 500 (NiZn)
Type 286 (Soviet (NiMH)
Union/Russia) KR03 (NiCd)
UM 4 (JIS)⁽⁴⁾ 単4 ZR03
#7 (China) (NiOOH)
6135-99-117-
3143 (NSN)

10.5 Introduced 1911, but added
× 44.5 to ANSI standard in 1959
(0.41
× 1.75) Used in many household
electronic devices such as
flashlights, Older MP3
players, cheap Cameras,
remote controllers, etc,

AA

U12 or HP7 (In LR6 15A 2700 1.5
the UK) (alkaline) (alkaline) (alkaline)
Pencil-sized R6 (carbon- 15D (carbon- 1100
Penlight zinc) zinc) (carbon-zinc)
Mignon FR6 (Li- 15LF (Li- 3000 (Li-
MN1500 FeS₂) FeS₂) FeS₂)

14.5 Introduced 1907, but added
× 50.5 to ANSI standard sizes in
(0.57 1947.
× 1.99) Note: 14500 Lithium
Batteries are not AA as they



MX1500	HR6 (NiMH)	1.2H2	1700–2700
MV1500	KR6 (NiCd)	(NiMH)	(NiMH)
Type 316 (Soviet Union/Russia)	ZR6 (NiOOH)	1.2K2 (NiCd)	600–1000 (NiCd)
UM 3 (JIS) 単3 #5 (China)			1500 (NiZn)

6135-99-052-0009 (NSN)(carbon-zinc)
6135-99-195-6708 (NSN)(alkaline)

are 3.7 V.

Used in many household electronic devices such as flashlights, toys, cheap Cameras, remote controllers, etc,

A



R23 (carbon-zinc)	1.5
LR23 (alkaline)	

17 × 50 More common as a NiCd or NiMH cell size than a primary size, popular in older laptop batteries and hobby battery packs.

Various fractional sizes are also available; e.g., $\frac{2}{3}$ A and $\frac{4}{5}$ A.

B

U10 (UK)	R12 (carbon-zinc)	8350 (alkaline)	1.5
336 (Russian Federation)	LR12 (alkaline)		

21.5 × 60 Most commonly found within a European 4.5 volt lantern battery. Historically available in UK as a 2 cell battery type *No 8* for bijou size torches.

Not to be confused with the



vacuum tube B battery.

C



U11 or HP11 (In the UK)	LR14 (alkaline)	14A (alkaline)	8000 (alkaline)	1.5	26.2 × 50 (1.03 × 1.97)	Can be replaced with AA cell using plastic "sabot" (size adaptor), with proportional loss of capacity.
MN1400	R14 (carbon-zinc)	14D (carbon-zinc)	3800 (carbon-zinc)			
MX1400	HR14 (NiMH)		4500–6000 (NiMH)			
Baby	KR14 (NiCd)					
Type 343 (Soviet Union/Russia)	ZR14 (NiOOH)					
BA-42 (US Military Spec WWII–1980s) ^[citation needed]						
UM 2 (JIS) 単2 #2 (China)						
6135-99-199-4779 (NSN)(carbon-zinc)						
6135-99-117-3212 (NSN)(alkaline)						
Sub-C	Type 323 (Soviet Union/	KR22C429 (NiCd)	1200–2400 (NiCd)	1.2	22.2 × 42.9	A common size for cordless tool battery packs. This size



Russian Federation) HR22C429 (NiMH) 1800–5000 (NiMH)

is also used in radio-controlled scale vehicle battery packs. $\frac{1}{2}$ -, $\frac{4}{5}$ - and $\frac{3}{4}$ -sub-C sizes (differing in length) are also available.

D



U2 or HP2 (UK) LR20 13A 12000 1.5
Flashlight Battery (alkaline) (alkaline) (alkaline)
MN1300 R20 (carbon-zinc) 13D (carbon-zinc) 8000
MX1300 zinc) zinc) (carbon-zinc)
Mono HR20 2200–11000
Goliath (NiMH) (NiMH)
KR20 (Ni- 2000-5500
Type 373 (Soviet Cd) (NiCd)
Union/Russia) ZR20
BA-30 (US (NiOOH)
Military Spec
WWII–1980s)
UM 1 (JIS) 単1
#1 (China)
6135-99-464-
1938
(NSN)(carbon-zinc)
6135-99-109-
9428
(NSN)(alkaline)

34.2 Introduced 1898 as the first
× 61.5 flashlight battery.
(1.35
× 2.42)

F

R25 60 10500 1.5
(carbon-zinc) (carbon-zinc)
LR25 26000

33 × 91 Four *F* cells are often found
within 6 volt rectangular
lantern batteries.



(alkaline)

(alkaline)

N



Lady
MN9100
UM-5 (JIS)
E90
6135-99-661-
4958 (NSN)

LR1
(alkaline)
R1
(carbon-zinc)
HR1 (NiMH)
KR1 (NiCd)

910A
(alkaline)
910D
(carbon-zinc)
350–500
(NiMH)

800–1000
(alkaline)
400
(carbon-zinc)

1.5

12 ×
30.2

Rechargeable nickel–
cadmium and nickel–metal
hydride are far less common
than other rechargeable
sizes.^[5]

Mercury batteries of the
same dimensions are no
longer manufactured.

A23



V23GA
23A
23AE
MN21
L1028
8LR23
LRV08
LR23A

8LR932
(alkaline)

1811A
(alkaline)

55 (alkaline)

10.3 ×
28.5

Used in small RF devices
such as key fob-style garage
door openers, wireless
doorbells, and keyless entry
systems where only
infrequent pulse current is
used.

Usually contains a stack of
eight LR932 button cells
shrink wrapped together.

A27

GP27A
MN27

8LR732
(alkaline)

22 (alkaline)

8.0 ×
28.2

Used in small RF devices
such as car alarm remote



L828
27A
V27A
A27BP
G27A

controls. Can also be found in some cigarette lighters. May be made of eight LR632 cells.

BA5800

BA5800/U
(Li-SOCl₂)
BA5800A/U
(Li-SO₂)

7500
(Li-SO₂)

Li-SO₂:
5.3

35.5 ×
128.5

Has both terminals at the same end and is roughly the size of two stacked D cells. Used in military hand-held devices such as the PLGR.

Duplex



Ever Ready No. 8 2R10

21.8 ×
74.6

Internally contains two 1.5 V cells hence the nickname 'Duplex'.

In Switzerland as of 2008, 2R10 batteries accounted for 0.003% of primary battery sales.^[6]

4SR44



PX28A
A544
K28A
V34PX

4LR44
(alkaline)

110–150
(alkaline)
170–200
(silver-oxide)

Alkaline:
6.2
Silver-oxide:
6.5

13 ×
25.2

Used in film cameras, blood glucose meters, medical instruments, dog training devices. Often simply a stack of four SR44 (LR44) button cells shrink wrapped together.

Rectangular batteries

Most Common	Names		IEC	ANSI	Typical capacity (mAh)	Nominal voltage (V)	Terminal layout	Dimensions (mm)	Comments
	Other Common								
4.5-volt 	Pocketable battery		3LR12 (alkaline)	3LR12 (alkaline)	6100 (alkaline)	<i>Alkaline carbon-zinc</i>	Two 6–7 mm wide metal strips	H: 67 L: 62 W: 22	This battery, introduced in 1901, was very common in continental Europe until the 1970s. <i>In Switzerland as of 2008, 4.5-volt batteries account for only 1% of primary battery sales.</i> ^[7]
	4.5 V	MN1203 (Soviet Union/Russia)	3R12 (carbon-zinc)	3R12 (carbon-zinc)	1200 (carbon-zinc)	(3 cells): 4.5	+		
9-volt or E^[8] 	PP3 Radio battery		6LR61 (alkaline)	1604A (alkaline)	565 (alkaline)	<i>Alkaline carbon-zinc</i>	Both on same end	H: 48.5 L: 26.5 W: 17.5	Added to ANSI standard in 1959.
	Smoke alarm battery		6F22 (carbon-zinc)	1604D (carbon-zinc)	400 (carbon-zinc)	(6 cells): 9	+		
	Square battery		6KR61 (NiCd)	1604LC (lithium)	1,200 (lithium)	(3 cells): 9	–: female clasp		Often contains six LR61 cells, which are similar to and often interchangeable
	Transistor battery		6HR61 (NiMH)	7.2H5 (NiMH)	175–300 (NiMH)	<i>Lithium NiMH / NiCd</i>			
	006P			11604	120 (NiCd)	(6, 7 or 8 cells):			
	MN1604			(NiCd)	500 (lithium)	7.2, 8.4 or			

	Type Krona (Soviet Union/Russia)		1604M (mercury, obsolete) ^[9]	polymer rechargeable 580 (mercury, obsolete)	9.6 ^[10]			with AAAA cells.
6-volt Lantern (Spring)	Lantern 6 V Spring top MN908 996 or PJ996 Energizer 529	4LR25Y (alkaline) 4R25 (carbon-zinc)	908A (alkaline) 908D (carbon-zinc)	26,000 (alkaline) 10,500 (carbon-zinc)	<i>Alkaline</i> <i>carbon-zinc</i> (4 cells): 6	Springs, top +: corner spring -: center spring	H: 115 L: 68.2 W: 68.2	Spring terminals. Usually contains four F cells.
Lantern (Screw)	Lantern 6 V Screw Top 6135-99-645- 6443 (NSN)	4R25X (carbon-zinc) 4LR25X (alkaline)	915 (carbon-zinc) 915A (alkaline)	10,500 (carbon-zinc) 26,000 (alkaline)	6	Screw posts on top of battery. +: corner, -: center. Maximum diameter of the posts is 3.5 mm.	H: 109.5 L: 66.7 W: 66.7	Used in locations susceptible to high vibration/shock where connectors may be knocked off the terminals.
Lantern (Big)	918 R25-2 Big Lantern	4R25-2 (carbon-zinc) 4LR25-2	918A	22,000 (carbon-zinc) 52,000	6	Screw posts on top of	H: 125.4 L: 132.5 W: 73	Used in locations susceptible to





Double
Lantern
MN918
Energizer 521

(alkaline)

(alkaline)

battery.
Labelled
only, no
physical
keying for
polarity.

high
vibration/shock
where
connectors may
be knocked off
the terminals.

Maximum
diameter
of the
posts is
4.2 mm
spaced
75 mm
apart.

J



7K67

4LR61
(alkaline)

1412A
(alkaline)

625
(alkaline)

6

6.5 mm² flat contacts,
+:
chamfered corner,
-: top side

H: 48.5
L: 35.6
W: 9.18

Typically used
in applications
where the
device in
question must
be flat, or
where one
should not be
able to insert
the battery in
reverse
polarity, such
as a blood
glucose meter
or blood

pressure cuff.
Also good for elderly persons, due to its large size.

Often contains four LR61 cells, which are similar to and often interchangeable with AAAA cells.

Camera batteries

Digital and film cameras often use specialized primary batteries to produce a compact product. Flashlights and portable electronic devices may also use these types.

Image (AA size for scale)	Most Common	Names		IEC	ANSI	Typical Capacity (mAh)	Nomina l Voltage (V)	Shape	Termina l Layout	Dimension s	Comments
		Other Common									



CR123A Camera
battery
 $\frac{2}{3}$ A
123
CR123
17345
16340
CR-123A
6135-99-
851-1379
(NSN)

CR17345
(lithium)

5018LC
(lithium)

1500
(lithium)
700 (Li-ion)
rechargeable 3.6 (Li-
) ion)

Cylinder
+: Nub
cylinder
end
-: Flat
opposite
end

H:
34.5 mm
Ø:
17 mm^[11]

A lithium
primary
battery, not
interchangeabl
e with zinc
types. A
rechargeable
lithium-
polymer
version is
available in
the same size
and is
interchangeabl
e in some
uses.
According to
consumer
packaging,
replaces
(BR) $\frac{2}{3}$ A.

*In Switzerland
as of 2008,
these batteries
accounted for
16% of lithium
camera
battery sales.^[6]
Used in
flashlights.*



CR2 15270 (Li-ion rechargeable, 800 mA) 15266 (Li-ion, 600 mA) 6135-99-606-3982 (NSN)

CR15H270¹⁾ 5046LC 750 (lithium) 600/800 (Li-ion types) 3 (lithium) 3.6 (Li-ion) Cylinder

+: Nub cylinder end
-: Flat opposite end

H: 27 mm
Ø: 15.6 mm

Standard discharge current: 10 mA

A common battery type in cameras and photographic equipment.

In Switzerland as of 2008, these batteries accounted for 6% of lithium camera battery sales.^[6]



2CR5 EL2CR5 DL245 RL2CR5 6135-99-577-2940 (NSN)

2CR5 5032LC^[13] 1500 6 Double cylinder. Keyed.

Both on one end. Terminal center spacing 16 mm.

H: 45 mm
L: 34 mm
W: 17 mm

Commonly used in film and digital cameras. Shaped so that it can be inserted into a battery compartment only one way.

In Switzerland

as of 2008, these batteries accounted for 1% of lithium camera battery sales.^[6]



CR-P2

BR-P2
223A
CR17-33
5024LC

CR-P2

5024LC^[14] 1500

6

Double cylinder. Keyed.

Both on one end. Terminal diameter: 8.7 mm Terminal center spacing: 16.8 mm. H: 36 mm L: 35 mm W: 19.5 mm

Shaped so that it can be inserted into a battery compartment only one way.

Typical mass: 37 g.

They contain two 3 V batteries exchangeable with CR123 batteries.



CR-V3

CRV3
RCR-V3
(Li-ion)

5047LC 3000
5047LF (lithium)
(primary)^[1] 1300 (Li-ion)

3

(lithium) 3.6 (Li-ion)

Double flat pack. Keyed.

Both on one end. H: 52.20 mm L: 28.05 mm W: 14.15 mm

The same size as two R6 (AA) cells side by side. A rechargeable type is also made in this size.

CP1	DLCP1 DL-CP1C	CP3553 ^[16]	2300 ^[17]	3	Prismatic .	Both on one end.	H: 57 mm L: 35 mm W: 7 mm	<p>May be used in some devices not explicitly designed for CR-V3, especially digital cameras.</p> <p>Shaped so that it can be inserted into a battery compartment only one way. No longer made by Duracell, nor listed in its official website, but still stocked as of 28 February 2017 by some re-sellers. Typical mass: 1.1 oz (31 g).^[17] Disposable</p>
-----	------------------	------------------------	----------------------	---	----------------	---------------------	---------------------------------	---

equivalent of
the Nikon EN-
EL5 Li-ion
rechargeable
camera
battery.^[16]

Button cells - coin, watch

See also: Button cell

Lithium cells



Coin cells of various diameters and thicknesses.

Coin-shaped cells are thin compared to their diameter. Polarity is usually stamped on the metal casing.

The IEC prefix "CR" denotes lithium manganese dioxide chemistry. Since Li-MnO₂ cells produce 3 volts there are no widely available alternative chemistries for a lithium coin battery. The "BR" prefix indicates a round lithium/carbon monofluoride cell. See lithium battery for discussion of the different performance characteristics. One Li-MnO₂ cell can replace two alkaline or silver-oxide cells.

IEC designation numbers indicate the physical dimensions of the cylindrical cell. Cells less than one centimeter in height are assigned four-digit numbers, where the first two digits are the diameter in millimeters, while the last two digits are the height in tenths of millimeters. Taller cells are assigned five-digit numbers, where the first two digits are the diameter in millimeters, followed by the last three digits indicating the height in tenths of millimeters.

All these lithium cells are rated nominally 3 volts (on-load), with open circuit voltage about 3.6 volts. Manufacturers may have their own part numbers for IEC standard size cells. The capacity listed is for a constant resistance discharge down to 2.0 volts per cell.^[18]

Names		Typical Capacity (mAh)	Standard Discharge Current (mA)	Dimensions d × h (mm)	Comments
IEC	ANSI				
CR927		30		9.5 × 2.7	Used extensively in blinkies. Also used in some LEGO toys.
CR1025	5033LC	30	0.1	10 × 2.5	
CR1130		70		11.5 × 3.0	A rare battery, sometimes used in car security (car alarm/keyfob batteries), organizer (backup battery for PDA such as Psion etc.), glucometer equipment, and some pedometers. Also known as DL1130, BR1130, KL1130, L1130, ECR1130, KCR1130, E-CR1130, KECR1130 ^{[19][20]}
CR1216	5034LC	25	0.1	12.5 × 1.6	Used in some lighted watches and some LED decorator lights (electronic tea candles).
CR1220	5012LC	35–40	0.1 (CR) 0.03 (BR)	12.5 × 2.0	Used in keychain LED flashlights.
CR1225	5020LC	50	0.2	12.5 × 2.5	Maximum discharge current: 1 mA. Maximum pulse discharge current: 5

CR1616	50–55	0.1	16 × 1.6	mA. Used in automobile key remotes and in Game Boy cartridges (for powering the RAM for saved games).
CR1620	5009LC 75–78	0.1	16 × 2.0	Used in automobile key remotes and early digital watches.
CR1632	140 (CR) 120 (BR)	0.1 (CR) 0.03 (BR)	16 × 3.2	Used in automobile key remotes; e.g., Toyota Prius 2012.
CR2012	55	0.1	20 × 1.2	
CR2016	5000LC 90	0.1 (CR) 0.03 (BR)	20 × 1.6	Frequently used in digital watches. Often used in pairs instead of CR2032 for devices that require more than 3V, like blue/white LED flashlights.
CR2020	115–125		20 × 2	
CR2025	5003LC 160–165	0.2	20 × 2.5	Frequently used in digital watches and automobile remotes.
CR2032	5004LC 225 (CR) 190 (BR)	0.2 (CR) 0.03 (BR)	20 × 3.2	Maximum discharge current: 3 mA. Maximum pulse discharge current: 15 mA.
				This is also the most common lithium cell. Commonly used on computer motherboards as nonvolatile BIOS memory and real-time clock (RTC) backup batteries. Weighs around 2.9 g. ^[21]
CR2040	280		20 × 4.0	Used in Skytronic PRO Audible Altimeter but also flow meters and organizers (as a memory backup battery). Has become obsolete and hard to find. Other names are BR2040, DL2040, ECR2040, E-CR2040, KCR2040, KECR2040, KL2040, L2040, L24.
CR2320	110–175 <small>[22][23][24]</small>		23 × 2	
CR2325	165–210		23 × 2.5	The most common battery size in Soviet/Russian electronic watches, calculators and remote controls. ^[citation needed]
CR2330	265 (CR) 255 (BR)	0.2 (CR) 0.03 (BR)	23 × 3.0	
BR2335 ^[25]	165 (BR)		23 × 3.5	

CR2354	560	0.2	23 × 5.4	
CR2412	100	0.2	24.5 × 1.2	
CR2430	5011LC 270–290		24.5 × 3.0	
CR2450	5029LC 610–620		24.5 × 5.0	Portable devices requiring high current (3.0 mA) and long shelf life (up to 10 years)
CR2477	1000	0.2	24.5 × 7.7	Has the highest capacity of lithium button cell batteries. ^[citation needed]
CR3032	500–560 (CR) 500 (BR)	0.1–0.2 (CR) 0.03 (BR)	30.0 × 3.2	Continuous discharge current taken from Panasonic Catalog. ^[21]
CR11108	160		11.6 × 10.8	Also called CR1/3N because it is $\frac{1}{3}$ rd the height of an alkaline N cell, and a stack of three of them will form a battery with the same dimensions as an N cell, but with 9V terminal voltage. Such 9V batteries in a single package do exist but are rare and only usually found in specialist applications; they can be referred to as 3CR1/3N. However 2CR1/3N, a 6V battery consisting internally of a stack of two CR1/3N and standardized by ANSI as 1406LC and by IEC as 2CR13252 (although some datasheets state it as 2CR11108 instead), is sold by Duracell (PX28L ^[26]), Energizer (L544, now obsolete ^[27]), and others.

A CR1/3N was also used by photographers instead of two LR44 batteries, in cameras such as the Nikon EM or FE2.^[citation needed]

Silver oxide and alkaline cells

Round button cells have heights less than their diameter. The metal can is the positive terminal, and the cap is the negative terminal.

Button cells are commonly used in electric watches, clocks, and timers. IEC batteries that meet the international IEC 60086-3 standard for watch batteries^{[28][clarification needed]} carry a "W" suffix. Other uses include calculators, laser pointers, toys, LED "blinkies", and novelties.

IEC designation numbers indicate the physical dimensions of the cylindrical cell. Cells less than one centimeter in height are assigned 4-digit numbers, where the first 2 digits are the diameter in millimeters, while the last 2 digits are the height in tenths of millimeters. Taller cells are assigned 5-digit numbers, where the first 2 digits are the diameter in millimeters, followed by the last 3 digits indicating the height in tenths of millimeters.



Assorted sizes of button and coin cells, including alkaline and silver oxide chemistries. Four rectangular 9V batteries are also shown, for size comparison. Enlarge to see the button and coin cell size code markings.

In the IEC designations, cell types with an "SR" prefix use silver oxide chemistry and provide 1.55 volts, while the "LR" prefix batteries use alkaline chemistry and provide 1.5 volts. Common alternative manufacturer's prefixes for these two types are "SG" for silver oxide and "AG" for alkaline. Since there are no "common" names beyond the AG designation, many vendors use these four designations interchangeably for the same physical sized cell.

The functional differences are that silver oxide batteries typically have 50% greater capacity than alkaline chemistry, relatively slowly declining voltage during discharge compared to alkaline types of the same size, and superior leakage resistance. The ultimate energy capacity of a silver battery may be as much as twice that of an alkaline. Also, a silver cell with a flat discharge characteristic is

preferable for devices that need a steady voltage, such as photographic light meters, and devices that will not operate below a certain voltage; for example, some digital calipers, which do not work below 1.38V.

Alkaline batteries are usually cheaper than silver oxide equivalents. Inexpensive devices are sometimes supplied fitted with alkaline batteries, although they would benefit from the use of silver oxide batteries. Exhausted silver oxide cells are often recycled to recover their precious metal content, whereas depleted alkaline cells are discarded with household trash or recycled, depending on the local practices.

Mercury batteries were formerly commonly made in button sizes for watches, but due to careless disposal and the resulting mercury pollution hazard, they are no longer available. This is also a concern for users of vintage camera equipment, which typically used a mercury button battery in the exposure meter for its very steady voltage characteristic. Substitute non-mercury batteries have been produced to replace certain discontinued mercury batteries, typically by incorporating a miniature voltage regulator to simulate the flat voltage discharge characteristics of the original batteries.

In the following table, sizes are shown for the silver-oxide IEC number; types and capacity are identified as "(L)" for alkaline, "(M)" for mercury (no longer manufactured), and "(S)" for silver-oxide. In some cases, sizes that originally were considered distinct are now interchangeable. For example, the 189/389 cell is 3.1 mm high and was designated 1131, while the 190/390 size is 3.0 mm high and was designated 1130, but these sizes are now considered equivalent.

Most Common	Names		IEC	ANSI	Typical Capacity (mAh)	Dimensions dia × h (mm)	Comments (L) = alkaline (S) = silver-oxide
	Other Common						
SR41	AG3/SG3/G3-A		LR736 (L)	1135SO	25–32 (L)	7.9 × 3.6	
	LR41		SR736 (S)	(S)	38–45 (S)		
	192/384/392			1134SO			
	6135-99-949-0402 (NSN)(S)			(S)			
SR42	QR41					11.6 × 3.6	
	242 ^[29] 344/350 ^[30]		SR1136 (KOH electrolyte,	1139SO	63 (387S) 100		

Most Common	Names		IEC	ANSI	Typical Capacity (mAh)	Dimensions dia × h (mm)	Comments (L) = alkaline (S) = silver-oxide
	Other Common						
		387S ^[31]	344/350) SR1136S (NaOH electrolyte, 387S)		(344/350)		
SR43	AG12/SG12 LR43 L1142 186/301/386 6135-99-547-0573 (NSN)(S)		LR1142 (L) SR1142 (S)	1133SO (S) 1132SO (S)	80 (L) 120–125 (S)	11.6 × 4.2	
SR44	AG13/SG13 LR44 /LR154 6135-99-792-8475 (NSN)(alkaline) 6135-99-651-3240 (NSN)(S) A76/S76/EPX76 157/303/357 1128MP, 208-904, A-76, A613, AG14, AG-14, CA18, CA19, CR44, D76A, G13A, G13-A, GDA76, GP76A, GPA7, GPA75, GPA76, GPS76A, KA, KA76, AG76, L1154, L1154C, L1154F, L1154G, L1154H, LR44G, LR44GD, LR44H,		LR1154 (L) SR1154 (S)	1166A (L) 1107SO (S) 1131SOP (S)	110–150 (L) 170–200 (S)	11.6 × 5.4	Typical internal resistance: 8 ohms

Most Common	Names		IEC	ANSI	Typical Capacity (mAh)	Dimensions dia × h (mm)	Comments (L) = alkaline (S) = silver-oxide
		Other Common					
		MS76H, PX76A, PX675A, RPX675, RW82, SB-F9, V13G, 357A					
SR45		AG9/SG9 LR45 194/394 6135-99-782-4675 (NSN)(S)	LR936 (L) SR936 (S)		48 (L) 55–70 (S)	9.5 × 3.6	
SR48		AG5/SG5 LR48 L750 193/309/393	LR754 (L) SR754 (S)	1136SO (S) 1137SO (S)	52 (L) 70 (S)	7.9 × 5.4	
LR52		A640PX, E640, EN640A, EPX640A, MR52, PX640, PX640A ^[32]	LR52 (L) MR52 (M)	1126A (L) ^[33]	335 (L) ^[33]	15.8 × 11.1 ^[33]	1.5V (L), 1.35V (M) No longer made by Duracell or Energizer, but still stocked by some re-sellers as of 26 February 2017 ^[32]
SR54		AG10/SG10/G10-A LR54 189/387/389/390 LR1130/SR1130 6135-99-796-0471 (NSN)(S)	LR1131 (L) SR1131 (S)	1138SO (S)	44–68 (L) 80–86 (S)	11.6 × 3.1	
SR55		AG8/SG8 LR55 191/381/391 LR1120/SR1120	LR1121 (L) SR1121 (S)	1160SO (S)	40–42 (L) 55–67 (S)	11.6 × 2.1	

Most Common	Names		IEC	ANSI	Typical Capacity (mAh)	Dimensions dia × h (mm)	Comments (L) = alkaline (S) = silver-oxide
		Other Common					
		365, 366, S16, 608	SR1116SW	1177SO <small>[34]</small>	28-40 ^{[35][36]}	11.6 × 1.65	1.55V
SR56			SR1126			11.6 × 2.6	Listed in IEC 60086-2:2001, but apparently no longer manufactured by any major company.
SR57		AG7/SG7 LR57 195 395(low-drain)/399(high-drain) ^[37] LR927/SR927 SR927W/SR927SW/GR927 6135-99-796-0471 (NSN)(S)	LR926 (L) SR926 (S)	1165SO (S)	46 (L) 55-67 (S)	9.5 × 2.6	
SR58		AG11/SG11 LR58 162/361/362	LR721 (L) SR721 (S)	1158SO (S)	18-25 (L) 33-36 (S)	7.9 × 2.1	
SR59		AG2/SG2 LR59 196/396/397	LR726 (L) SR726 (S)	1163SO (S)	26 (L) 30 (S)	7.9 × 2.6	
SR60		AG1/SG1 LR60 164/364	LR621 (L) SR621 (S)	1175SO (S)	13 (L) 20 (S)	6.8 × 2.1	
SR62		SR516SW 317	LR516 (L) SR516 (S)		11 (S)	5.8 × 1.6	
SR63		AG0/SG0 LR63	LR521 (L) SR521 (S)		10 (L) 18 (S)	5.8 × 2.1	

Most Common	Names		IEC	ANSI	Typical Capacity (mAh)	Dimensions dia × h (mm)	Comments (L) = alkaline (S) = silver-oxide
	Other Common						
		379					
SR64	LR64		LR527 (L)		12 (L)	5.8 × 2.7	
	319		SR527 (S)		20 (S)		
SR65	SR616SW		LR65			6.8 × 1.65	
	321		Varta V321				
SR66	AG4/SG4		LR626 (L)	1176SO	12–18 (L)	6.8 × 2.6	Commonly used in many wrist watches.
	LR66		SR626 (S)	(S)	26 (S)		
	177/376/377 SR626SW						
SR67	315		SR716 (S)		21 (S)	7.9 × 1.65	
SR68	SR916SW		LR916 (L)		26 (S)	9.5 × 1.6	
	373		SR916 (S)				
SR69	AG6/SG6		LR921 (L)		30 (L)	9.5 × 2.1	
	LR69		SR921 (S)		55 (S)		
	171/370/371 LR920/SR920						
SR416	SR416SW		LR416 (L)		8 (S)	4.8 × 1.6	
	337		SR416 (S)				
SR712	SR712SW		SR712 (S)		9 (S)	7.9 × 1.3	
SR731	SR731SW		LR731 (L)		36 (S)	7.9 × 3.1	
	24		SR731 (S)				
	329						
LR932			LR932 (L)		40 (L)	9.3 × 3.2	Rarely used independently. 8 of these in series are used to form an A23 battery.

Zinc air cells (hearing aid)



Zinc-air hearing aid batteries

Miniature zinc-air batteries are button cells that use oxygen in air as a reactant and have very high capacity for their size. Each cell needs around 1 cc of air per minute at a 10 mA discharge rate. These cells are commonly used in hearing aids. A sealing tab keeps air out of the cell in storage; a few weeks after breaking the seal the electrolyte will dry out and the battery becomes unusable, regardless of use. Nominal voltage on discharge is 1.2 V.

	Names		Typical Dimensions		Capacity (mAh)	dia. × h. (mm)	Comments
	Most common	Other common	IEC	ANSI			
5		Red tab, AC5, ZA5	PR63	7012ZD	33	5.8 × 2.5	Marked as "discontinued" in Energizer data sheet. ^[38]
10		Yellow tab, AC10/230, ^[39] DA10, DA230, ZA10 ^{[40][41]}	PR70	7005ZD	91	5.8 × 3.6	
13		Orange tab, ZA13	PR48	7000ZD	280	7.9 × 5.4	
312		Brown tab 6135-99-752-3528 (NSN) ZA312	PR41	7002ZD	160	7.9 × 3.6	

630	DA630 ^[39]	7007Z	1,000	15.6 × 6.2	No longer listed by Duracell
675	 Blue tab, ZA675	PR44 7003ZD	600	11.6 × 5.4	
AC41E		PR43 7001Z	390	11.6 × 4.2	Discontinued

Lithium-ion batteries (rechargeable)



An 18650 size lithium ion battery, with an alkaline AA for scale

Cylindrical lithium-ion rechargeable battery

Lithium-ion rechargeable batteries are generally not interchangeable with primary types using different chemistry, although certain sizes of lithium primary cells do have lithium-ion rechargeable equivalents. Most rechargeable cylindrical cells use a chemistry with a nominal voltage around 3.7 volts, but LiFePO₄ cells produce only 3.2 volts.

Lithium-ion cells are made in various sizes, often assembled into packs for portable equipment.^[42] Many types are also available with an internal protection circuit to prevent over-discharge and short-circuit damage. This can increase their physical length; for example, an 18650 is around 65 mm (2.6 in) long, but may be around 68 mm (2.7 in) long with an internal protection circuit. Safe and economic recharging requires use of chargers specified for these cells. Popular applications include laptop battery packs, electronic cigarettes, flashlights, electric vehicles, and cordless power tools.

Commonly-used designation numbers indicate the physical dimensions of the cylindrical cell, in a way similar to the system used for lithium button primary cells. The larger rechargeable cells are typically assigned five-digit numbers, where the first two digits are the (approximate) diameter in millimeters, followed by the last three digits indicating the (approximate) height in tenths of millimeters.

List of Li-ion sizes

Most common	Names		Typical capacity (mAh)	Dimensions, max., dia. × l. (mm)	Comments
		Other common			
10180	Lithium ion	$\frac{1}{3}$ AAA	90	10 × 18	Sometimes called $\frac{1}{3}$ AAA. Used in tiny flashlights.
10280	Lithium ion	$\frac{2}{3}$ AAA	200	10 × 28	Used in small flashlights.
10440	Lithium ion	AAA	340	10 × 44	Same size as AAA cell.
14250	Lithium ion	$\frac{1}{2}$ AA	300	14 × 25	Same size as $\frac{1}{2}$ AA cell. Used in the flashlight Lummi RAW
14430			400	14 × 43	Used in solar garden lights, used in rechargeable shavers (e.g., some Philips/Norelco).
14500 ^[43]	Lithium-ion	AA	700–800 ^[44]	14 × 53	Same size as AA cell or longer if a protection circuit is

14650		940-1600	14 × 65	included. Used in many LED flashlights. Some contain protection cells
15270		450-600	15 × 27	Approximately $\frac{5}{4}$ the length of a AA cell.
16340		500-1000	16 × 34	Substitute for CR2 primary lithium.
16650		1600-2700	16 × 65	Alternate substitute for CR123A primary lithium. ^[45] Unprotected. (16 × 36, some protected versions ^[46]).
RCR123A	17340, R123, RCR123, $\frac{2}{3}$ A, Tenenergy 30200 ^[47]	750	17 × 34.5	Made by Sanyo and a few Others, narrower version of 18650 cells.
17500 ^[48]	A	1100	17.3 × 50	Protected version, same size as, and substitute for, CR123 primary lithium for cameras and flashlights. Size $\frac{2}{3}$ A.
17670 ^[49]		1250	17 × 67	The same size as an A cell, and 1.5 times the length of a CR123A.
18350		700-1200	18 × 35 (nominal)	Twice the length of a standard CR123A.
18490		800-1300	18 × 49	^[45]
18500 ^[50]		1400	18.3 × 49.8	About the same length as an A cell, but larger diameter.
18650 ^[51]	168A	1500-3600	18.6 × 65.2	This cell type is used in many laptop computer batteries, Tesla Roadster, Tesla Model S, Tesla Model X, electronic cigarettes, ^[52] and LED flashlights. ^[45]
19670	Protected 18650 ^[53]	2200-3600	19 × 67	Correct designation of protected 18650 . ^[45]
21700	20650, 21-70, 2170	4200-4800	21 × 70	Announced by Samsung ^[54] and LG Chem in 2015 for electric bikes. ^[55] As of January 5, 2017 currently being produced at Tesla Gigafactory 1 for Tesla Model 3. ^[56]
25500 ^[57]		2500-5000	24.3 × 49.2	About the same diameter as a C.
26650 ^[58]		3300-5200 ^[59]	26.5 × 65.4	Popular size as ^[60] ANR26650 LiFePO 4 cell from A123 Systems for radio control hobby use.

32600 ^[61]	3000–6000	32 × 61.9	About the same diameter as a D cell but longer.
32650	5000–6000	32 × 67.7	Popular in larger LED flashlights.
75400	80–150	7.5 × 40	Used in some cheap E cigarettes.

Obsolete batteries

These types are no longer manufactured or only used in legacy applications.

Further information on obsolete batteries may be found on the web sites of the Classic Radio Shop in the UK and the Radiomuseum in Switzerland.

Most common	Names		ANSI	Typical capacity (mAh)	Nominal voltage (V)	Terminal layout	Dimensions (mm)	Comments
	Other common	IEC						
523 	PX21	3LR50	1306A	580 (alkaline)	4.5		D: 17.1 H: 49.9	Used in cameras and Apple Macintosh computers (such as the 128K through 512K and similar).
531 	PX19	3LR50	1307AP	580 (alkaline)	4.5		D: 17.1 H: 58.3	A 523 with snap connectors attached to either end. Used in some older cameras, notably the Polaroid Automatic Land Camera packfilm models.

No. 6



Ignition R40
Cell,
6135-99-
114-3446
(NSN)
FLAG (in
UK)

905 35000–40000 1.5 V
(carbon-zinc)

D: 67
H: 172

Typical modern uses include school science experiments, and starting glow plug model engines. Still commonly used in the UK for remote level crossing telephone handsets, where solar cells and rechargeable batteries have not been specified or retrofitted. Formerly used for primary cell powered alarms (those without mains power) and associated bell ringing, servant or nurse call systems, ignition systems, telephones,^[3] and (in pairs) in WWII US Navy battle lanterns.

Modern cells are more likely to be Alkaline type made from 'D' cells.

Terminals are screw posts with a maximum diameter of 4.2 mm.

+: centre; -: edge.

A Battery

Eveready
742

1.5 V

Metal tabs H: 101.6
L: 63.5

Used to provide power to the filament of a vacuum



B Battery

Eveready
762-S



W: 63.5 tube.

45 V

Threaded posts

H: 146
L: 104.8
W: 63.5

Used to supply plate voltage in vintage vacuum tube equipment. Origin of the term *B+* for plate voltage power supplies.

Multiple B batteries may be connected in series to provide voltages as high as 300 V DC.

Some versions have several taps at 22.5 volt intervals.

GB Battery

C Battery
Eveready
761



1.5 to 9 V

Threaded posts or banana sockets

H: 76.2
L: 101.6
W: 31.75

Originally used in vintage vacuum tube equipment for grid bias.

Still popular for school science class use as a variable voltage supply as the current version has several taps at 1.5 volt intervals.

15-volt

Eveready 10F15 (Zn/MnO₂) 220 65
 504
 Mallory
 M154
 NEDA
 220
 Rayovac
 220

15 V Flat round H: 34.9
 (10 cells) (one each L: 15.1
 end) W: 15.9

Used in older instruments^[62]
 and old battery–capacitor
 flashes.

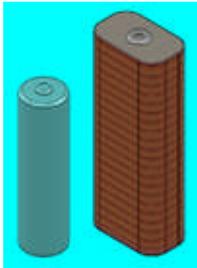
Only used in legacy
 applications, but as of 2016,
 still being manufactured.

22.5-volt

Eveready 15F20 (Zn/MnO₂) 215 140
 412

22.5 V Flat round H: 50
 (15 cells) (one each L: 25
 end) W: 15

Used in older instruments.^[63]
 the Regency TR-1 (first
 transistor radio) and old
 battery–capacitor flashes.

30-volt

Eveready 20F20 (Zn/MnO₂) 210 140
 413

30 V Flat round H: 64
 (20 cells) (one each L: 25
 end) W: 15

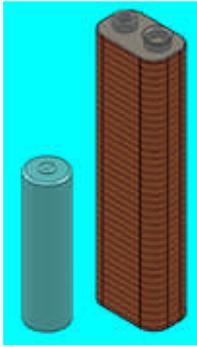
Used in older instruments.^[64]

45-volt

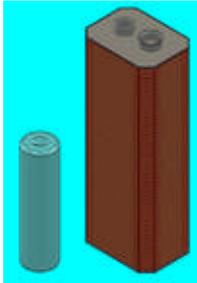
Eveready 30F20 (Zn/MnO₂) 213 140
 415

45 V Both on H: 91
 (30 cells) same end L: 26
 W: 15

Used in older instruments.^[65]



67.5-volt Eveready
416



217 140

67.5 V Both on
(45 cells) same end H: 88
L: 33
W: 25

Used in older instruments.^[66]

PP series



The PP battery range.

The PP (*Power Pack*) series was manufactured by Ever Ready in the UK (Eveready in the US). The series comprised multi-cell carbon-zinc batteries used for portable electronic devices. Most sizes are uncommon today, however the PP3 size (and to a lesser extent PP8 and PP9, which are used in electric fencing and marine applications respectively) is readily available. ^{[67][68]} The PP4 was cylindrical; all the other types were rectangular. Most had snap terminals as seen on the common PP3 type.

Image	Names PP Other common	Typical capacity (mAh)	Nominal voltage (V)	Dimensions (mm)	Comments
	PP1		6	H: 55.6 L: 65.5 W: 55.6	This battery had 2 snap connectors spaced 35.0 mm apart (1 3/8").
	PP3	<i>See 9-volt, above</i>			
	PP4 226 NEDA 1600 IEC 6F24		9	H: 50.0 Diameter: 25.5	
	PP6 246 NEDA 1602 6135-99- 628-2361 (NSN) IEC 6F50-2	850	9	H: 70.0 L: 36.0 W: 34.5	Center distance between terminals is max. 12.95 mm with both offset 7 mm nominal from the wider battery edge. Mass is 120 g.
	PP7 266 NEDA 1605 6135-99- 914-1778 (NSN) IEC 6F90	2500	9	H: 63 L: 46 W: 46	Center distance between terminals is max. 19.2 mm. Mass is 200 g.



PP8 SG8
"Fencer"

6

H: 200.8
L: 65.1
W: 51.6

This battery typically had 2 snap connectors, however 4 connector versions are available.

They were spaced 35.0 mm apart (1 3/8").

This type of battery is sometimes used in electric fencing applications.



PP9 276 5000
NEDA 1603
6135-99-
945-6814
(NSN)

9

H: 81.0
L: 66.0
W: 52.0

This battery has 2 snap connectors spaced 35.0 mm apart (1 3/8").

IEC 6F100



PP10

9

H: 226.0
L: 66.0
W: 66.0

This battery had 2 pin connectors.

They were a single $\varnothing 3.2$ mm negative pin and a single $\varnothing 4.0$ mm positive pin spaced 13.0 mm apart.



PP11

4.5 + 4.5

H: 91.3
L: 65.1
W: 52.4

This battery contained two independent 4.5V batteries, and had a 4 pin connector. 9 V with a center tap was available by wiring in series.

There were two $\varnothing 3.2$ mm negative pins spaced 9.5 mm apart and two $\varnothing 4.0$ mm positive pins spaced 14.3 mm

apart.

Negative and positive pins were spaced 18.1 mm apart.

It was used in some early transistor radio amplifiers with a Class B output stage, allowing the loud speaker to be connected between the amplifier output and the battery center tap.

- Battery holder
- Battery recycling
- Battery (vacuum tube)
- Button cell
- Comparison of battery types
- List of battery types
- Nine-volt battery
- *Search for the Super Battery* (2017 PBS film)

Further reading

- IEC 60086-1: Primary batteries - Part 1: General
- IEC 60086-2: Primary batteries - Part 2: Physical and electrical specifications
- IEC 60086-3: Primary batteries - Part 3: Watch batteries
- IEC 60086-4: Primary batteries - Part 4: Safety of lithium batteries
- ANSI C18.1, Part 1 Portable Primary Cells and Batteries With Aqueous Electrolyte - General and Specifications
- ANSI C18.1, Part 2 Portable Primary Cells and Batteries With Aqueous Electrolyte Safety Standard
- ANSI C18.2, Part 1 Portable Rechargeable Cells and Batteries - General and Specifications
- ANSI C18.2, Part 2 Portable Rechargeable Cells and Batteries Safety Standard
- ANSI C18.3, Part 1 Portable lithium Primary Cells and Batteries - General and Specifications
- ANSI C18.3, Part 2 Portable lithium Primary Cells and Batteries Safety Standard

- MOD Defence Standard 61-017 The Selection and Introduction of Batteries and Fuel Cells for Service Use^[clarification needed]
- MOD Defence Standard 61-021 Generic Specification for Batteries

"