

# Industrial-grade batteries and consumer-grade batteries

What are industrial grade batteries?

Industrial grade applications demand more rugged and reliable batteries that can survive long-term deployments in highly-challenging industrial environments, often in places where battery access is difficult or impossible.

What are industrial batteries?

Industrial Batteries Industrial batteries are designed to last much longer and are deployed in extreme environments and remote locations that are difficult to access for battery replacement.

Are industrial grade lithium batteries a good choice?

Industrial grade lithium batteries are designed to endure harsh environments and have a very high energy density for a small form factor, very low annual self-discharge for long operating life, and a more robust seal to prevent leaks and lost energy capacity.

Are industrial batteries good quality?

Since industrial batteries are made to last decades and operate in more extreme environments, quality control is paramount, as battery failure can be totally unacceptable for certain highly remote applications. Rechargeable Li-ion: Rechargeable lithium-ion batteries come in both consumer and industrial grades.

What types of batteries are used in consumer products?

Consumer products such as phones, cameras, computers and watches mainly operate on consumer-grade alkaline, primary lithium, and lithium-ion (Li-ion) rechargeable batteries. While inexpensive and readily available, these batteries are often not well adapted to the fast-growing industrial internet of things (IIoT).

What are industrial grade Li-ion rechargeable batteries?

Industrial grade Li-ion rechargeable cells lend themselves to all sorts of energy harvesting applications that are emerging. Table 1. Comparison of consumer versus industrial Li-ion rechargeable batteries. Source: Tadiran Batteries

Consumer (sometimes referred to as commercial) lithium (Li) batteries offer better performance compared with lower-cost alkaline, nickel-cadmium (NiCd), or nickel metal hydride (NiMH) alternatives, but industrial Li ...

Industrial batteries are designed for heavy-duty applications, offering higher capacities and durability compared to regular batteries, which are typically used in consumer electronics. Understanding these differences is crucial for selecting the right battery for specific needs, whether in industrial settings or everyday use.

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To summarize, consumer batteries value ease, mobility, and predictability. ...

Industrial batteries, particularly industrial lithium batteries, have a higher upfront cost. This is due to their advanced materials, larger capacity, and durability. For example, a 12V industrial lithium battery can cost significantly more than a regular lead-acid battery or consumer-grade lithium-ion battery.

Unlike consumer applications, industrial devices are often used in remote, hard-to-reach locations where the device needs to be self-powered and battery replacement and recharging are difficult or ...

Consumer electronics are typically powered by alkaline batteries, consumer grade primary lithium (non-rechargeable) cells, or consumer grade rechargeable Lithium-ion (Li-ion) batteries. There is also a growing number of industrial applications that require long-life power to operate maintenance-free for decades while delivering two-way wireless communications. These ...

rechargeable battery is the emergence of the Li-ion cell, which is increasingly popular since the battery efficiently uses lithium to provide high power output. Li-ion cells are now available in both consumer and industrial grades. The most popular version of the consumer grade Li-ion battery is the ubiquitous 18650 cell, which

Industrial batteries are typically larger and have higher capacities than regular batteries, allowing them to provide power for heavy-duty machinery and equipment. Regular batteries are smaller and have lower capacities, so they are suitable for powering small electronic devices like remote controls and toys.

**Industrial Batteries:** These batteries are built to last longer due to the demanding environments they operate in. Typically, industrial batteries such as deep-cycle lead-acid or industrial-grade lithium-ion can last between 5 to 20 years, ...

**Industrial and medical Li-ions** Like their primary counterparts, industrial-grade Li rechargeable batteries (Li-ions) address the performance limitations of consumer-grade batteries. Consumer (also known as commercial) Li-ions are limited to 5-year operating lives, 500 to 1,000 recharge cycles, and a high

self-discharge rate of up to 60% per ...

Industrial batteries differ significantly from regular batteries in terms of design, application, and performance characteristics. While regular batteries are typically used for consumer electronics, industrial batteries are engineered for heavy-duty applications, offering greater durability, longer lifespan, and higher capacity.

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Industrial grade Li-ion batteries can operate for up to 20 years and 5,000 full recharge cycles, with a wider temperature range (- 40° to 85°C), able to deliver high pulses.

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