

Causes of explosion(Burning) of Lithium-based batteries

- 1) Overheating during the charging process as a result of short circuits developing inside the battery leads to either the eruption of fires or minor explosions as a result of a fast charge process that generates thermal energy which raises temperature of the battery.
- 2) Manufacturing defects.
- 3) Contamination of Lithium during battery production.
- 4) Leakage into or from the battery as a result improper battery packaging or sealing.



Dealing with the explosion or burning of a Lithium-based battery:

Explosion or burning of a Lithium-based/Li-Ion battery is doubtlessly a leading cause for the eruption and aggravation of fires, which are associated with the production and generation of extreme heat and large amounts of gas and smoke that are both toxic and noxious, because of its component elements. Prevention of such risks requires raising public awareness of how to deal with it and of the type of extinguishers that are most effective in combatting it.


Gases that are emitted as a result of the explosion or burning of a Lithium-based battery include but aren't limited to Fluoride gas, with possible emission and generation of Hydrogen Fluoride(HF) along with Phosphoryl Fluorid(POF3), which is also a highly toxic gas.

Lithium-based/Li-Ion battery fires are classified as flammable metal fires(Class D fires), which can only be combated with special extinguishers specifically designed to combat this type of fire flammable metal fire extinguisher



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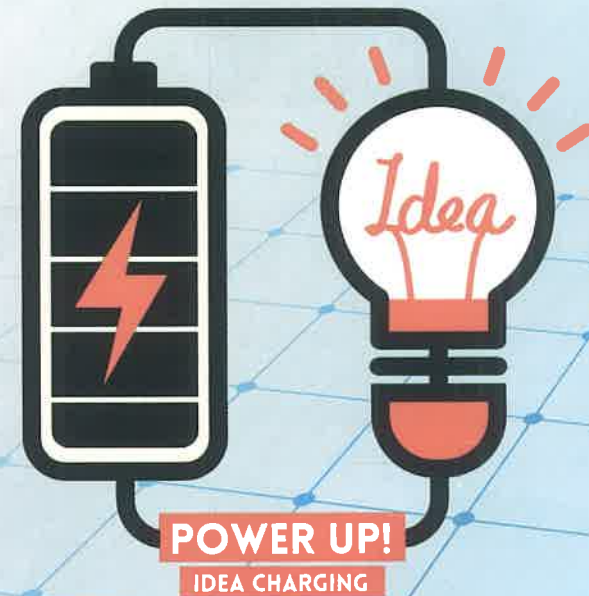
 info@KFPKW.org

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LITHIUM-BASED BATTERY



Prepared by: Eng. YOSEF ALQBAIDAN



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LITHIUM-BASED/LI-ION BATTERIES

This type of battery has multiple uses and is used daily in many electronic devices.

The Lithium metal battery isn't rechargeable, contains metallic Lithium and is characterized by a higher energy density. (Higher electrical capacity) than other un-rechargeable batteries of the same type. This type of battery is used to power portable consumer electronic devices, such as but not limited to calculators, pace makers, wrist watches, electronic car keys...etc.



The Li-Ion battery is a rechargeable battery that doesn't contain metallic Lithium and is characterized by high energy density (high electrical capacity)

The Lithium Polymer Battery is a type of Lithium Ion batteries that is used in consumer products, such as cellular phones, electric vehicles, laptops, electrical appliances and tablet computers.



USES:

Lithium-based batteries are frequently used in portable electronic devices due to its high electrical capacity as previously mentioned i.e. has a high electricity production: weight ratio. It also has the advantage that its power producing capability isn't affected by the number of times it is recharged in addition to its relatively slow (drainage) when not in use.

In addition to its multiple uses in powering small portable devices, such as children's toys, it has wide applications in high-tech weaponry as well as in avionic and space exploration systems due to its high electrical capacity.

Advantages Of Lithium-based Batteries

- 1) Light weight battery compared to rechargeable batteries, such as the car battery
- 2) Lithium is an active element i.e. Energy is stored in bonds between Lithium atoms, making Lithium batteries of higher energy density.
- 3) Lithium batteries keep energy(charge) for a longer period than any other battery
- 4) Lithium batteries can be re-charged at any time unlike other batteries that has to be fully drained before they can be recharged.
- 5) Lithium batteries can be charged and drained hundreds of times before they spoil.

Disadvantages of Lithium-based batteries

- 1) Lithium-based batteries have a maximum life span of 3 years as of the date of manufacturing , whether it is actually used or not.
- 2) Lithium-based batteries are sensitive to high temperatures which dramatically reduce its service life.
- 3) Lithium-based batteries are higher priced compared to other batteries.
- 4) Lithium-based batteries are potentially explosive if misused.

