



Hydrogel

the new standard for extinguishing lithium-ion battery fires

Hydrogel is the next-generation fire-extinguishing agent designed to address one of the fastest-growing and most dangerous fire risks of our time: lithium-ion battery fires. Unlike conventional extinguishing agents, Hydrogel is specifically developed to effectively control and suppress thermal runaway in lithium-ion batteries - making it the only truly effective solution for these highly complex fires.

As the use of electric vehicles, energy storage systems, e-bikes, tools, and portable electronics continues to grow, lithium-ion battery fires are becoming an increasing threat in homes, industries, warehouses, and public spaces. These fires are extremely difficult to extinguish due to their intense heat, rapid thermal propagation, and high risk of re-ignition. Traditional extinguishing agents such as water, foam, or powder are often unable to stop the chain reaction inside the battery cells.

Hydrogel changes this completely

Its revolutionary technology rapidly penetrates and cools battery cells at the source of the thermal runaway, while simultaneously creating a protective cooling layer that prevents heat transfer and re-ignition. This unique combination of deep cooling, fire suppression, and thermal isolation makes Hydrogel uniquely capable of controlling lithium-ion battery fires where other agents fail.

At the same time, Hydrogel delivers these unmatched performances without the use of fluorinated chemicals, making it environmentally responsible and safe for human use. Hydrogel is fully certified according to KIWA NTA 8133, confirming its proven effectiveness and reliability in combating lithium-ion battery fires.



Hydrogel Extinguishing Mechanisms

Hydrogel uses multiple advanced extinguishing mechanisms that work together to effectively control and terminate lithium-ion battery fires.

1 Rapid cooling and flame extinguishment

Hydrogel contains a high water content that instantly absorbs heat, eliminates flames and rapidly lowers battery temperatures. The gel adheres to hot surfaces, providing continuous cooling and preventing thermal runaway escalation.

2 Thermal Isolation

The hydrogel forms a protective barrier around the battery cells, limiting heat transfer and preventing thermal propagation to adjacent cells. This helps contain the fire and reduces the risk of re-ignition.

3 Gas Suppression & Neutralization

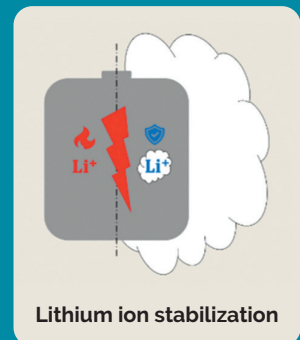
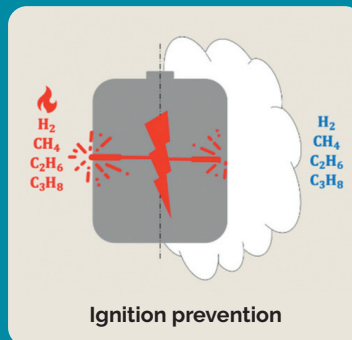
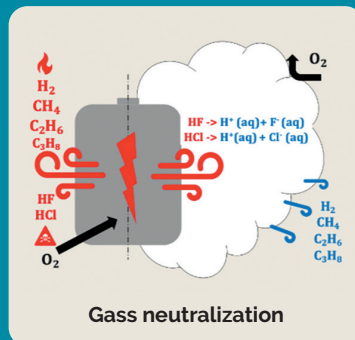
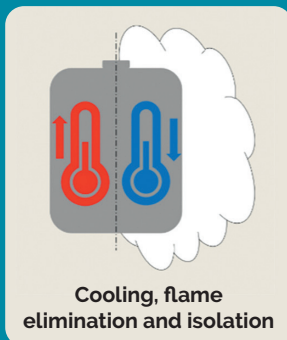
During lithium-ion battery fires, dangerous gases such as hydrogen (H_2), methane (CH_4), and hydrogen fluoride (HF) are released. Hydrogel helps reduce flammable gas concentrations, neutralizes toxic compounds, and suppresses combustion by limiting oxygen availability.

4 Lithium Ion Stabilization

Special clay particles within the hydrogel penetrate the battery structure and capture reactive lithium ions (Li). This reduces chemical reactivity inside the battery and contributes to complete fire termination and long-term stabilization.

5 Re-Ignition prevention

Through sustained cooling, battery insulation and ignition blocking, Hydrogel prevents the battery from reigniting - one of the biggest challenges in lithium-ion battery fire suppression. Together, these mechanisms make Hydrogel a unique and highly effective solution for lithium-ion battery fire safety.



Practical use and Application

- Premix formulation (ready to use): Hydrogel is supplied as a fully premixed extinguishing agent, requiring no dilution or on-site preparation.
- Hydrogel can be used in all water-based fire suppression systems
- Temperature requirement: It can only be applied at ambient temperatures above 0°C.
- Hydrogel is mild corrosive
- Hydrogel is non-toxic for the environment and contains ZERO PFAS

Production & Supply

Hydrogel is produced in The Netherlands under strict quality-control standards

Hydrogel is supplied in

- 1000-liter IBCs
- 300-liter IBCs
- 25-liter jerrycans