

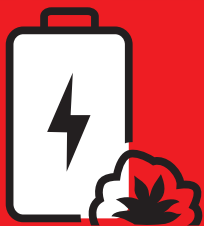
# GLORIA®

Safety First

Fluorine-free  
fine spray mist extinguisher  
with  
excellent spray duration



**Water Fire Extinguisher  
with Cool-Down-Effect  
Suitable for Lithium-Ion Batteries**



## Interesting facts about lithium-ion batteries

### Assessing the potential danger correctly



### Lithium-ion batteries and their underestimated fire potential

Lithium-ion batteries are both a blessing and a curse. High energy density on the smallest storage cell represents a quantum leap and, despite the most modern technology, involves certain risks.

Fires and explosions caused by lithium-ion batteries, which are used operationally in work equipment such as drill screwdrivers, laptops, smartphones or flashlights, are increasing continuously. Larger energy storage devices, such as those installed countless times in large electrical appliances, e-bikes and e-scooters, multiply the fire potential. The higher the energy density, the higher the risk.

Usually qualitative defects, the age of the batteries, accidents, but also carelessness are the mechanical, thermal or electrical causes of fires.

Damages, temperature effects and overcharging can lead to an increase in internal resistance and at the same time, especially with high current flows, cause the temperature to rise significantly. This results in an increase in pressure inside the cell and eventually in a breakdown, possibly with fire and explosion. Thermal runaway is due to the fact that this type of energy storage uses organic solvents in the form of hydrocarbons, which react in an almost flammable manner like petrol.

In the commercial sector burning lithium-ion batteries should be tackled by fire safety assistants if possible, based on the risk assessment and the measures laid down. Fires of several or larger batteries should only be fought by fire brigade personnel!

#### Primary cells just as at risk as batteries

However, it is not only the batteries themselves that are affected by the increasing number of cases, but also the non-rechargeable primary cells. One of the main causes of fire is the massive overheating of one or more cells. It is basically irrelevant whether the battery is a smaller energy storage device with only a few watt-hours of power, as integrated in smartphones, or a large lithium-ion system with several kWh that ensures the operation of an electric car or forklift truck. Even the smallest defective cell is capable of calling a large fire brigade into action.

# Interesting facts about lithium-ion batteries

## Assessing the potential danger correctly

In the process, the overheated cells „infect“ those next to them, comparable to a chain reaction. The thermal runaway of the entire battery system described above can then lead to uncontrollable temperatures as well as dangerous and very toxic gas leaks.

Flammable gases, electrolytes and other cell components

Another cause of fire is the improper, unprotected storage of defective lithium-ion batteries or their storage in so-called „unclear“ condition. Lithium-ion batteries can simply be physically damaged by mechanical impacts during transport and storage or thermal stress in terms of strong sunlight, heat or cold.

Worst case, this can lead to the escape of flammable gases or electrolyte and consequently to ignition. Overheating is usually indicated by white/grey smoke. In such a case, persons in the danger zone should never inhale this smoke, as it contains battery contents and decomposition products that are very unhealthy and corrosive. The mist that is released can subsequently ignite and cause a flash fire, which in turn can decompose other lithium-ion batteries in the immediate vicinity.

In addition to the actual fire, explosion-like processes can occur, as the source of fire can decompose into small, splinter-like individual parts that eruptively burst apart.

Caution and expertise in firefighting

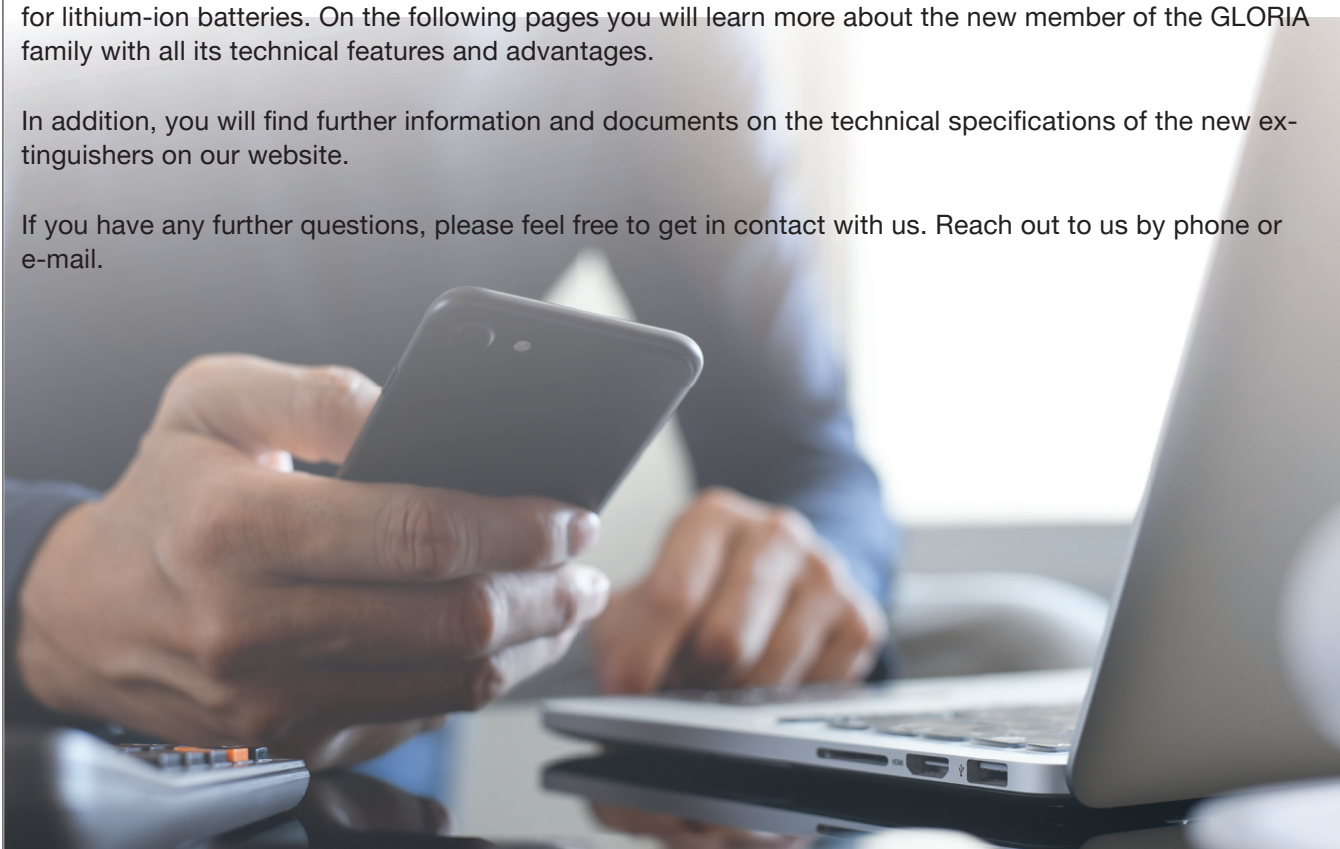
The actual fire-fighting of smaller lithium-ion batteries (up to 642Wh / 1285Wh) by trained personnel requires a fire extinguisher with a particularly high cooling effect, if possible with a pre-mounted extinguishing lance to maintain a safe distance.

Professional associations such as the DGUV and the bvfa recommend water, if necessary with extinguishing agent additives, as the suitable extinguishing agent.

So play it safe and convince yourself of the new GLORIA water fire extinguishers with special suitability for lithium-ion batteries. On the following pages you will learn more about the new member of the GLORIA family with all its technical features and advantages.

In addition, you will find further information and documents on the technical specifications of the new extinguishers on our website.

If you have any further questions, please feel free to get in contact with us. Reach out to us by phone or e-mail.



## Interesting facts about lithium-ion batteries

Assessing the potential danger correctly and prevent

### The 10 most common causes of fire in a lithium-ion battery:

**1. Increased operating and storage temperatures**  
(over 70°C)

**2. Direct impact of heat**  
(e.g. by sunlight)

**3. Incorrect handling**  
(overcharging, incorrect charger, deep discharge)

**4. Manufacturing defect**  
(faulty assembly)

**5. Overpressure inside the cell**  
(expansion of the electrolyte liquid)

**6. Mechanical impact from outside**  
(pressure, shocks, crushing)

**7. Internal short circuit due to production defect**

**8. External short circuit**

**9. Defect in the cooling circuit**  
(especially with large batteries/vehicle batteries)

**10. Counterfeit lithium-ion batteries and chargers**

#### Which precautions can I take?

- ✓ Do not short-circuit the battery or mechanically damage it
- ✓ Do not heat or burn
- ✓ Keep battery cells away from small children
- ✓ Always store battery cells in a dry and cool store
- ✓ In case of contact with conspicuous battery cells (leakage of content, deformations, discolourations, dents or similar) adequate body and respiratory protection is required

# Water fire extinguisher with Cool-Down-Effect

PRO-Line with strike-knob, extinguishing pistol and lance

WKL 6/9 PRO

## The ace even for sensitive applications

Portable cartridge operated water fire extinguisher with very good ecological and maintenance-friendly characteristics, approved according to DIN EN 3 for fire class A. Due to the proven special suitability for burning lithium-ion batteries, the extinguisher can be used on batteries up to 642Wh\* (WKL 6 PRO) respectively 1285Wh\* (WKL 9 PRO) or with pouches up to 700Wh (WKL 9 PRO).

### Product features

- Laser-welded cylinder with durable inner coating
- Black anodised metal locking collar
- Perfect handling due to rotatable and extra-long LABS-free quality hose assembly with fabric insert made of synthetic rubber material.
- Rotatable and suppressible extinguishing pistol with pre-mounted extinguishing lance with 5-hole spray nozzle
- Extinguishing agent concentrate fluorine-free, without environmentally harmful PFOS or PFOA
- Conscious renunciation of substances in the water
- Blue colour code indicates extinguishing agent water
- Special suitability for lithium-ion batteries up to 642Wh\* (WKL6PRO) or 1285Wh\* (WKL 9 PRO), at pouches up to 700Wh (WKL 9 PRO)

### Application

- Users of products with lithium-ion batteries up to 642Wh\* or 1285Wh\* or of pouches up to 700 Wh (laptops, e-bikes, e-scooter, cordless, screwdrivers, etc.)
- Hotels, especially bicycle hotels
- Computer/electronic stores (including storage areas)
- Tool departments in retail companies
- File storages/archives/paper and packaging stores
- Offices
- Wood processing
- Textiles
- Municipal facilities
- Administrative and manufacturing areas
- Private households



\* Tests were conducted on cell type 18650

### Note

The suitability test on lithium-ion batteries was conducted by the Dutch institute KIWA!

Type	Part No.	Extinguishing Agent / Qty.	Type	Propellant	Performance LE*	Discharge time / Discharge range	Temperature range	Use on lithium-ion (in Wh) Type 18650	H/W/D in bracket ø – cylinder Weight (kg)
WKL 6 PRO	803841.0000	5,88 l Water + 0,12 l Imprex C	Strike knob and pre-mounted lance	60 g CO2	21A	65 sec. / 4m	+5 °C to +60 °C	642Wh	640/400/165 10,8 kg
WKL 9 PRO	803851.0000	8,82 l Water + 0,18 l Imprex C	Strike knob and pre-mounted lance	120 g CO2	27A	80 sec. / 4m	+5 °C to +60 °C	1285Wh Pouches: 700Wh	640/430/205 15,6 kg

# Water fire extinguisher with Cool-Down-Effect

The ace for sensitive applications

## A compact summary of our top 10 product highlights

### 1 ✓ Special suitability for lithium-ion batteries

Extinguishing agent Imprex C with proven special suitability for burning lithium-ion batteries up to 642 Wh\* (Typ WKL 6 PRO) or 1285 Wh\* / pouches bis up to 700 Wh (Typ WKL 9 PRO)



### 2 ✓ Confirmed sustainability

100% fluorine-free, without environmentally harmful PFOS or PFOA, long extinguishing agent shelf-life



### 3 ✓ Creditable towards basic equipment according to ASR A 2.2

Water extinguisher WKL 6 PRO with 6 LE and WKL 9 PRO with 9 LE is part of the basic equipment in fire class A for workplaces.

### 4 ✓ Cartridge technology

Water additive in separate cartouche  
High ease of maintenance

### 5 ✓ Top product for home

Suitable for the most common fires at home (fire class A)

### 6 ✓ Increased safety

Extinguishing lance for additional distance to source of danger at 4m spraying distance

### 7 ✓ Use on electrical equipment

... up to 1000V, minimum distance 1m (at higher voltage follow DIN VDE 0132)

### 8 ✓ Special nozzle

Very long discharge time, up to 40% longer than conventional units (e.g. WKL6PRO = 65 sec.)  
Your fine spray mist extinguisher with excellent spraying duration.

### 9 ✓ Standardised spare parts

### 10 ✓ Special hose assembly

Rotatable hose assembly with rotatable and suppressible extinguishing pistol

\* Tests were conducted on cell type 18650

# Interesting facts about fighting burning Li-On batteries

## Minimize risks

# WORK SAFETY



SAFETY FIRST



PROTECTION



REGULATIONS



HAZARDS



HEALTH



INSURANCE

## Safety instructions for fighting burning lithium-ion batteries



### Staying in the hazardous area

In the event of fire, first and foremost, unprotected persons who are not required for emergency response should be prohibited from entering or remaining in the hazardous area. Persons wearing protective equipment should always ensure to keep a minimum distance. In the event of a clear development of smoke or release of gas, the hazardous area must be left immediately and sufficient ventilation must be provided.



### Fire fighting

Only suitable fire extinguishers containing extinguishing agents with a high cooling effect may be used for fire fighting. Professional associations such as the DGUV and the bvfa recommend water as extinguishing agent, if necessary with additives. Other extinguishing agents, such as ABC or BC powder, metal fire powder or carbon dioxide (CO<sub>2</sub>) must not be used! The warning and safety instructions on the corresponding extinguishing equipment must also be observed.

Since batteries can re-ignite even after a longer period of time, they must be stored safely in water basins or other suitable containers after extinguishing. This container must be stored outside the building and away from other fire loads until it can be disposed of properly.



### Personal protective equipment

Authorised persons should only act with suitable, sufficient, adapted protective equipment in the form of protective gloves, protective clothing, face and respiratory protection.

As a general rule, no action should be taken that involves a personal risk of danger to oneself or that has not been adequately practised.

# GLORIA®

## Safety First

For more than seven decades, we have been the right contact for questions about preventive fire protection products. During this time, we have been able to gain a lot of experience, optimise our products and adapt them to current requirements.

Our focus are fire extinguishers, of which we offer a wide range of portable and mobile models.

Another main focus is on our smoke and CO detectors from our own production. These are highly reliable and come with manufacturer's warranties of up to 10 years. With our sophisticated range of accessories and spare parts, we create the safety you need.

The portfolio is rounded off by both internal and external training courses and seminars. Especially with our VR Fire Trainer, we are breaking new ground and setting the course for a new type of fire extinguishing training in the virtual world.



Portable Fire Extinguishers



Mobile Extinguishers



Smoke detectors



CO detectors



Training, Seminars,  
Information



Accessories, Spare Parts,  
Extinguishing water systems „dry“



VR Fire Trainer

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