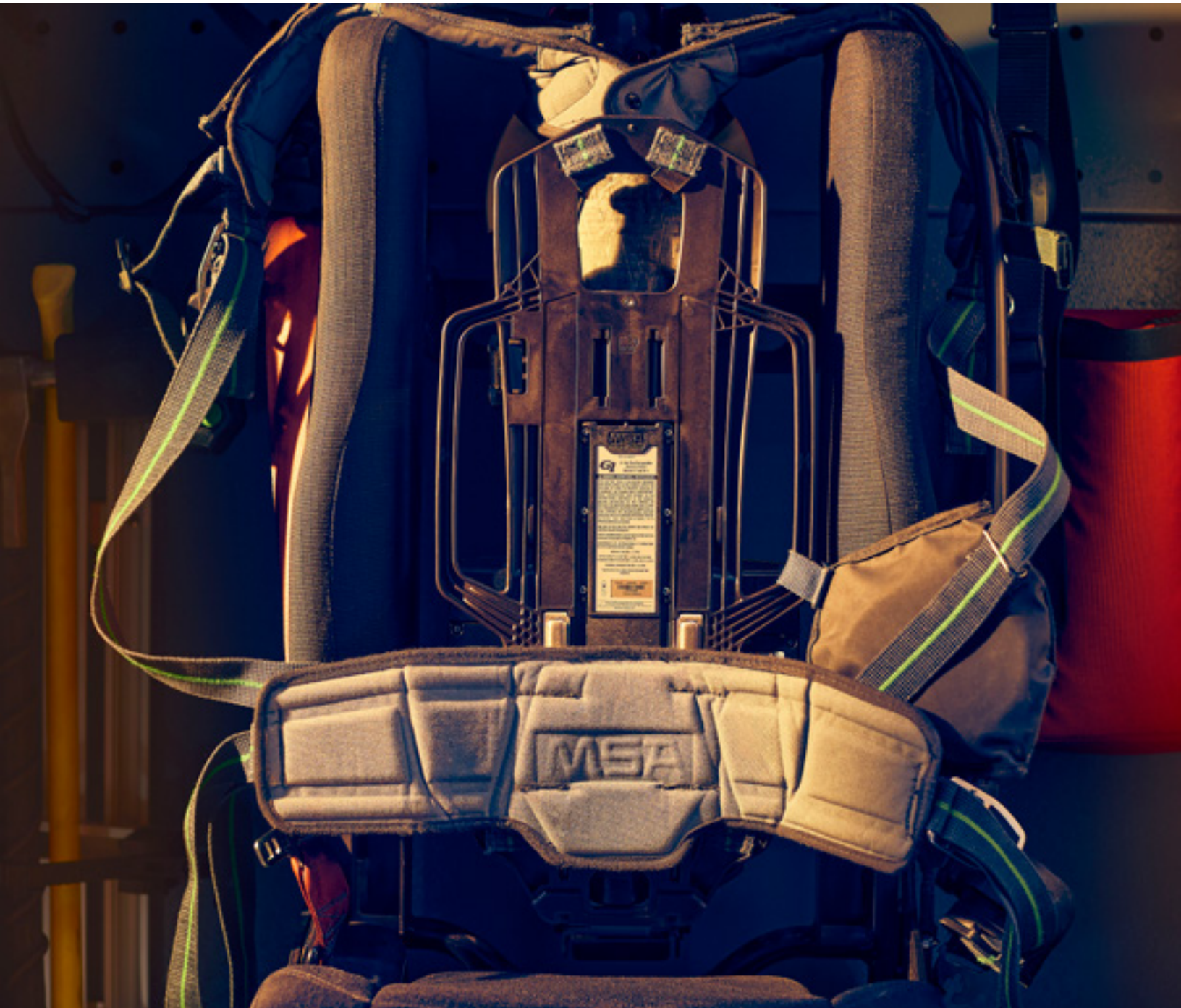




Lithium-Ion Batteries and the MSA G1™ SCBA

Whitepaper



WHEN YOU GO IN, WE GO IN WITH YOU.



Lithium-ion batteries are an important part of modern life. They are used in a range of applications and devices, from cellphones and e-bikes to AEDs and portable radios for firefighters.

MSA uses a lithium-ion battery pack as central power for all the electronics and communications of the G1 SCBA. Lithium-ion batteries are popular because of their low weight, high energy density, and quick recharge time.

While there are some hazards associated with lithium-ion batteries experiencing a short-circuit and overheating, MSA has sought to reduce those risks by sourcing only high-quality, UL-certified lithium-ion batteries from manufacturers known for product consistency and reliability.

Why does MSA use a lithium-ion battery pack?

Compared to the alkaline battery pack, the lithium-ion battery pack provides weight reduction (1/2 pound lighter) and delivers more power for longer periods. Because they are rechargeable, lithium-ion battery packs may also provide the customer cost savings, as they do not need to be replaced as often as alkaline batteries.

Are all lithium-ion cells manufactured to the same quality?

No. Lithium-ion batteries can have widely varying quality and performance. Few lithium cell manufacturers meet MSA's standards for safety, performance, reliability, and production. For the G1 SCBA, MSA uses only manufacturers researched and verified for product consistency and reliability and whose cells are UL recognized.

Do MSA lithium-ion batteries follow UL standards?

Yes. MSA only uses UL-recognized battery cells when making the G1 SCBA battery pack. The G1 SCBA lithium-ion battery pack is certified to UL 913 (Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations) and UL 1642 (Lithium Battery Cells).

How is the MSA G1 SCBA battery pack manufactured/constructed?

Inside the case are two 18650 lithium-ion cells. These cells are protected by a battery management protection chip, which is designed to break the circuit if overcharging or over-discharging is detected. The lithium-ion cells are housed within a rugged, durable case that helps protect from impact and environmental damage. The MSA G1 SCBA battery case is vented to reduce heat and pressure build-up during charging or discharging.

What about the charging station? How does it prevent overcharging?

The G1 multi-bay charger helps provide an additional layer of safety. The charger has an integrated battery management circuit that can provide high-accuracy voltage and current regulation. The charger incorporates cell protective temperature monitoring, which is designed to terminate charging when thermal abnormalities of the cell are detected. The G1 lithium-ion battery charger charges the cells at a relatively low current, which can help to prevent overcharging and thermal stressing of the cells and may extend cell life. In most cases, a battery pack can be fully charged in as little as six hours; the charging station is designed to terminate charging once a battery is fully charged.

Have there been any documented fires caused by the lithium-ion battery pack provided with the MSA G1 SCBA?

No. There are no known incidents or reports of any fires caused by the G1 SCBA lithium-ion battery pack.

Note: This Bulletin contains only a general description of the products shown. While product uses and performance capabilities are generally described, the products shall not, under any circumstances, be used by untrained or unqualified individuals. The products shall not be used until the product instructions/user manual, which contains detailed information concerning the proper use and care of the products, including any warnings or cautions, have been thoroughly read and understood. Specifications are subject to change without prior notice. MSA is a registered trademark of MSA Technology, LLC in the US, Europe, and other Countries. For all other trademarks visit <https://us.msasafety.com/Trademarks>.

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