

FLAMELESS

Fire Limiting & Arresting Materials
Enhancing Lithium Ion Energy Storage
Safety

PROJECT OVERVIEW

- Li-ion batteries have numerous advantages to the military (weight, performance, longevity)
- However, a significant negative attribute is the potential for fire during use and transport, due to high energy content of Li-ion chemistries
- The FLAMELESS program investigates use of materials such as thermal barriers and flame suppressants to limit or arrest fire from lithium-ion battery failures. These materials will convert Type II Li-ion 6Ts (flame on abuse) to Type I Li-ion 6Ts (only smoke on abuse)

BENEFITS

- Reduce or eliminate soldier & vehicle risk from li-ion fires
- Reduces li-ion battery containment requirements during shipment & use
- Allow reduced warehouse footprint for stockpiling & long term storage
- Enable high performance cell chemistries that are not currently deemed safe enough for use by decreasing their hazard response in abuse conditions.

PATH FORWARD

- Fabricate 6T packs with fire suppressant and thermal barrier materials
- Conduct pack level safety testing (Crush, Overcharge) to validate enhanced safety performance
- Conduct delta qualification in accordance with MIL-PRF 32565 and measure HSL level during abuse testing



DoD Executive Agent

Office of the Assistant Secretary of the Army for Installations, Energy, and Environment

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FOR FURTHER INFORMATION

National Defense Center for Energy and Environment
<http://www.denix.osd.mil/ndcee/home>
Ground Vehicle System Center
<https://gvsc.devcom.army.mil/>