

# Lead-Free Super-Thermite Electric Matches

## Applications:

- Fireworks
- Theatrical Pyrogenics
- Gun Primers
- Microthrusters

## Secondary Applications

- Setting off airbags
- Igniting rocket motors
- Triggering explosives

## Benefits:

- Zero toxic lead smoke
- Safer to use—resists friction, impact, static, and heat.
- Thermal output can be customized
- Very hot reactions
- Ease of manufacturing
- Design versatility
- Low current requirements for ignition
- Low cost

## Contact:

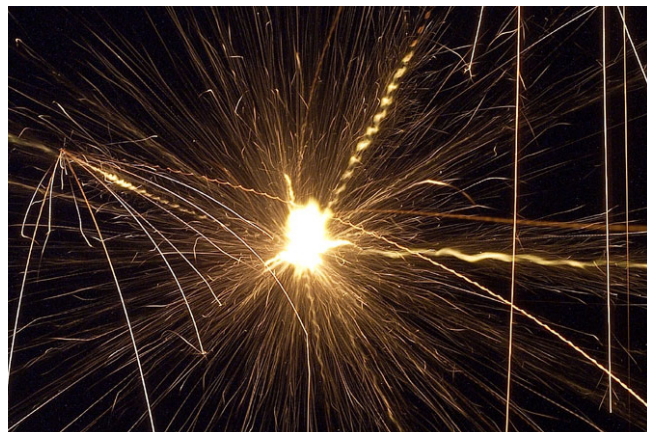
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## Summary:

Conventional electric matches use lead-containing compounds that are extremely sensitive to impact, friction, static, and heat stimuli, thereby making them dangerous to handle. In addition, these compounds produce toxic lead smoke. The industry demands simple, relatively inexpensive initiators that use economical and easy-to-use firing sets as energy sources to achieve precisely timed firework displays. Current electric match technologies can be improved significantly to decrease the inherent risk in using pyrotechnics while exceeding industry expectations.



Electric matches developed by Los Alamos National Laboratory (LANL) are designed to meet and exceed such expectations. The nanoscale thermites described in this invention, when used as an alternative for electric match compositions, increase performance using comparatively low ignition currents in a more environmentally respectful way. These compositions are safer to use because they resist friction, impact, heat, and static discharge. LANL electric match capabilities also allow technicians to create various thermal-initiating outputs—simple sparks, hot slag, droplets, or flames—depending on the needs of different applications.

LANL Super-Thermite technology offers many improvements to existing pyrotechnologies and can be applied to a multitude of related products—anywhere there is a need for sophisticated and accurate ignition control with lower risk of misfire at lower cost.

## Development Stage:

Working prototype available for demonstration purposes.

## Patent Status:

Patent pending Non-Provisional

## Licensing Status:

LANL is seeking partners to help commercialize this product which is available for exclusive or non-exclusive licensing.