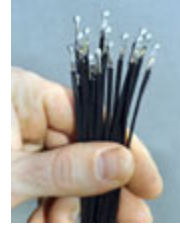




WINNER



2003 R&D 100 Awards Winner **Super-Thermite Electric Matches**

Have you ever attended an elaborate fireworks display choreographed to music and other special effects? To achieve such awe-inspiring shows, experts in pyrotechnics use electric matches, which consist of small ignition elements specifically designed to ignite fireworks remotely and with precise timing. Unfortunately, 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 smoke. The Super-Thermite electric matches produce no toxic lead smoke and are safer to use because they resist friction, impact, heat, and static discharge through the composition, thereby minimizing accidental ignition. They can be designed to create various thermal-initiating outputs—simple sparks, hot slag, droplets, or flames—depending on the needs of different applications.

Applications

The principal application is in the entertainment industry, which uses fireworks displays for a variety of venues, such as sporting events, holiday celebrations, and musical and theatrical gatherings. Secondary applications include

- triggering explosives for the mining, demolition, and defense industries,
- setting off vehicle air bags, and
- igniting rocket motors