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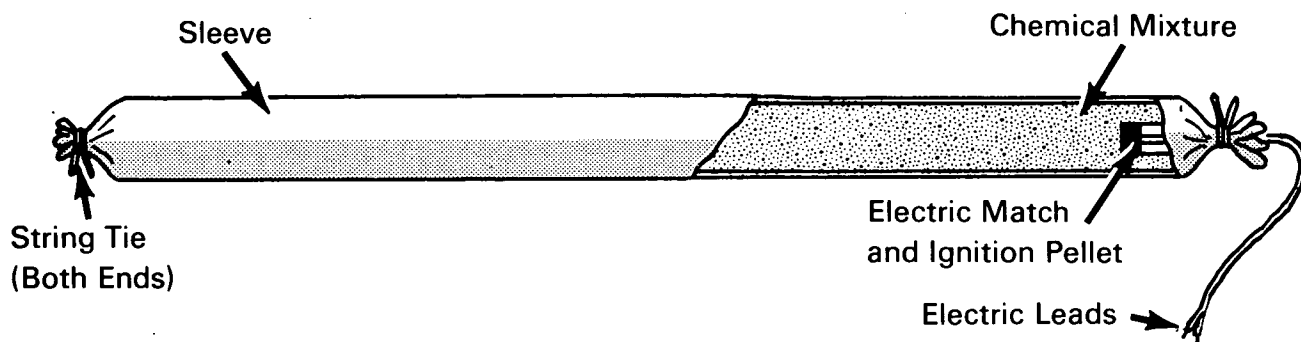
Brief 67-10095

# NASA TECH BRIEF



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## Improved Chlorate Candle Provides Concentrated Oxygen Source



### The problem:

To develop an improved chlorate candle to be used as a solid, portable source of oxygen in emergency situations. The candle must meet more stringent requirements than previously available chlorate candles. These requirements include increased resistance to shock and vibration, lower specific gravity, lower heat of reaction, and a more uniform rate of oxygen evolution.

### The solution:

A candle containing the following components in percent by weight:

Sodium chlorate	86.5
Iron	3.5
Barium peroxide	4.0
Glass	6.0

### How it's done:

The mixed powdered components are cast in a cylindrical mold of the desired dimensions. An ignition pellet and an electric match are inserted in one end of the solidified casting and the assembly is inserted in a commercially available, high temperature (1800° to 2000° F), lightweight sleeve composed of

essentially pure fibrous silica. The ends of the sleeve are tied and the completed candle is inserted in a canister containing an outlet for the oxygen that is evolved (from the decomposition of the sodium chlorate) when the ignition pellet is electrically initiated.

### Notes:

1. Applications of the improved candles are indicated as emergency oxygen supplies for medical purposes and in rescue packs. Analysis has shown that the candles evolve oxygen of 99+% purity.
2. The improved candles were designed for use in a developmental portable life support system for astronauts engaged in orbital extravehicular missions. This system provides suit pressurization, oxygen at a controlled metabolic rate, carbon dioxide removal, and humidity and thermal control.
3. Inquiries concerning the complete system as well as the oxygen-supply candles may be directed to:

Technology Utilization Officer  
Manned Spacecraft Center  
Houston, Texas 77058  
Reference: B67-10095

(continued overleaf)

**Patent status:**

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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