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Gwinnett County Department of Fire and Emergency Services

## Office of the Fire Marshal Community Risk Reduction Services

Deputy Chief Ed Knopick, Fire Marshal



# Open Flame Devices and Candles

## Information Bulletin # 08-001

Open flame devices, which by definition include candles, are flame producing devices, i.e., candles, torches, butane burners, or any other such device. Historically, open flame devices have presented a significant fire risk to occupants and buildings. Trends in retail sales indicate over 700% increase in the last ten years. These devices are being found in other “non-traditional” occupancy settings such as Business (offices) and other non-Residential occupancies with increasing frequency. Holistic health practitioners are growing in popularity, using open flame devices to affect mood or in aromatherapy. Growing interest in stress management has introduced aromatherapy strategies, where candles are used, into the workplace. Open flame devices possess inherent hazards that cannot be altered or removed. Life safety and fire protection strategies include prohibiting the risk when it is unacceptable or practicing fire safe behaviors when exposed to the risk.

### Risk Data

#### Fire Experience *(NFPA data for 2005)*

- 23,600 residential structure fires;
- 165 fire deaths;
- 1,525 fire injuries;
- \$539 million in direct property damage.

On average, a candle related fire is reported every 34 minutes.

#### Causal Factors *(USFA data for 2006)*

Causes and circumstances contributing to ignition of combustibles from open flame devices and candles are largely attributed to error and negligence.

- Too close to combustibles – 55%
- Left unattended or abandoned – 34%

A National Fire Protection Association (NFPA) study, Home Candle Fires, (September, 2007) affirmed USFA results and further identified that in 98% of cases, candles were used for the purposes of decoration, pleasure or mood.

### Codes and Standards

International Fire Code, (2006), International Code Council, Chapter 3, General Precautions Against Fire, Section 309, Open Flames

NFPA 101 Life Safety Code, (2000), National Fire Protection Association, Chapters 12 and 13, (New & Existing) Assembly Occupancy, Operating Features

### General Precautions

Generally, in all occupancy types, except One- and Two-Family dwelling units, open flame devices, including candles, is prohibited where highly flammable, combustible or explosive material is used or stored (IFC §308.2).

Specific open flame activities are permitted in Assembly occupancies, e.g., dining activities, theatrical performances, and religious ceremonies.

Specific provisions apply to:

- Open-flame cooking devices
- Open-flame decorative devices

### Aisle and Exits

Candles are prohibited in areas where occupants stand, or in an aisle or exit.



### Location near Combustibles

CPSC identified, in a 2001 study, the most common cause of candle fires was due to the candle falling over or being knocked over by wind, doors, children or pets.

- 1 foot, minimum, in all directions, from ignitable materials
- 3 foot, minimum, from window treatments, wall hangings, and other similar situations where wind, drafts, and movement can place the ignitable material within the 1 foot clearance zone.

### Decorative Devices

Open-flame decorative devices are required to comply with the following specifications:

- No flammable liquids or LP-gas
- Sealed fuel storage
- Self-extinguishing and leak resistant
- Tip-over resistant up to a 45° angle
- Enclosed flame
- Non-combustible and securely fastened chimney/shade

### U.S. Consumer Product Safety Commission

Voluntary standards have been developed through the efforts of the North American State Fire Marshals Association (NASFM), National Candle Association, and the American Standard & Testing of Materials (ASTM) to address the fire related hazards associated with candles, including labeling.



### Candle Safety Rules

A study conducted by the U.S. Consumer Product Safety Commission indicated that 85% of candle fires could be avoided if three basic safety rules are followed:

1. NEVER leave a burning candle unattended.
2. NEVER burn a candle on or near anything that might catch fire.
3. ALWAYS keep candles out of the reach of children and pets.

Additionally, the National Candle Association offers other guidance for burning candles safely:

#### Candle Safety Rules

- *Trim candlewicks to 1/4 inch each time before burning.*
- *Always use a candleholder specifically designed for candle use.*
- *Be sure the candleholder is placed on a stable, heat-resistant surface.*
- *Keep the wax pool free of wick trimmings, matches and debris at all times.*
- *Always read and follow the manufacturer's use and safety instructions carefully.*
- *Keep burning candles away from drafts, vents, ceiling fans and air currents.*
- *Always burn candles in a well-ventilated room.*
- *Extinguish the flame when 2 inches or 1/2 inch in a container of wax remains.*
- *Never touch or move a burning candle or when the wax is liquid.*
- *Place candles at least 3 inches apart.*
- *Use a candle snuffer to extinguish flame, never water.*
- *Ensure wick ember is completely extinguished before leaving room or unattended.*
- *Extinguish the candle if it smokes, flickers repeatedly, or the flame becomes too high.*

National Candle Association  
www.candles.org