

Temporary Use of Tents and Membrane Structures

Background

Occupancies may occasionally have the need to temporarily erect tents or membrane structures in order to provide additional use space. This information sheet is a summary of the most common provisions from the Minnesota State Fire Code (MSFC) applicable to these types of structures and their uses when erected for 180 days or less within a 12-month period. A complete list of requirements can be found in MSFC, Chapter 31.

Before erecting a temporary tent or membrane structure, contact the local fire code official to determine whether a permit and/or approval is required within the jurisdiction. Tents or membrane structures erected for more than 180 days within a 12-month period must conform to the requirements of the Minnesota Building Code.

This document addresses the following:

- Fabric flammability.
- Reducing potential ignition sources.
- Location and placement.
- Egress.
- Operational features.

Definitions: Tents and membrane structures

Tents are constructed of fabric or similar pliable materials. They are typically supported by poles, ropes, light-weight frame or similar arrangements. Some tents only have a roof covering (like a canopy) while others have a roof covering and sidewalls.

Membrane structures are typically air-inflated or air-supported. Membrane structures may also use cables or light-weight framing to keep the fabric supported. Golf and tennis domes are examples of an air-supported, membrane structure. A “bouncy-house” for children is an example of an air-inflated membrane structure.

Fire retardant requirements

MSFC Section 3104 requires that tents and membrane structures are flame resistant, meeting the flame propagation performance of Test Method 2 of NFPA 701. “Flame resistant” does not mean that the material will not burn. Flame resistant materials are somewhat difficult to ignite with a relatively small open flame (like a match or small burner). Materials can be inherently flame resistant or treated with flame retardant products, coatings or chemicals. Flame resistant materials are not intended to protect against ignition from large open-flame devices (like a furnace or open-flame heater). Proof of flame resistance must be demonstrated with an approved label affixed to the structure or by a certificate issued from an approved testing laboratory.



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Reducing ignition sources

The MSFC is attempting to eliminate ignition sources inside these structures. For ignition sources outside, the MSFC is trying to separate them by distance to minimize the risk. Here are some common ignition sources and how the MSFC addresses them:

- Smoking is not allowed and NO SMOKING signs are required (MSFC 3107.3).
- Open flame candles are not allowed inside tents; battery-powered candles are allowed (MSFC 3107.4).
- Open flame cooking is not allowed (MSFC 3107.4). Operations involving the warming of food but not using open flame, that do not pose an ignition risk, need to be reviewed by the fire code official (MSFC 3107.12.4).
- Outdoor cooking that produces sparks or grease must be at least 20 feet away (MSFC 3107.12.6).
- Electric generators and similar combustion power sources need to be at least 20 feet from the tent or membrane structure (MSFC 3107.16).

Heating of tents and membrane structures

Recognizing that tent and membrane structure use in Minnesota requires some form of heating during the cold-climate months, here are some restrictions:

- Portable outdoor gas-fired appliances are prohibited (MSFC 603.4.2.1.1). See photo at the right for an example.
- Open-flame devices and similar arrangements are not allowed inside of or within 20 feet of tents and membrane structures when they are open to the public (MSFC 3107.4).
- Heating equipment needs to be at least 10 feet from exits or combustible materials, even when not open to the public (MSFC 3107.12.3).



Preferred heating methods

The following heating methods are allowed for both tents and membrane structures.

- Indirect heat: A heater located outside and a safe distance from the tent where warm air is blown into the tent.
- Electric heat: Must be listed by a nationally recognized testing laboratory.
- If open-flame heaters are being used, they should be:
 - 20 feet from the tent, if open to the public (MSFC 3107.4).
 - 10 feet from exits from the tent (MSFC 3107.12.3).
- If propane (LP) gas is the fuel source for the heaters, the following separation distances are required.
 - Containers of 500 gallons or less: 10 feet from the tent.
 - Containers of more than 500 gallons: 25 feet from the tent.



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Tent and membrane structure location and placement

Tents and membrane structures need to be located and placed so that:

- They are at least 30 feet from combustible vegetation or waste (MSFC 3107.18 and 3107.19).
- They do not block fire lanes or emergency vehicle access to the site (MSFC 3103.8).
- Tents over 15,000 square feet are at least 20 feet from lot lines, buildings, other tents and vehicles. This distance includes supporting ropes, poles and guy wires (MSFC 3103.8.2).
- Tents and membrane structures cannot block egress doors from adjacent buildings (MSFC 3105.8 and 3106.3.2).
- Flammable and combustible liquid storage and tanks are at least 50 feet away (MSFC 3107.14.2).
- Refueling using flammable or combustible liquids are at least 20 feet away (MSFC 3107.14.3).
- They are adequately anchored and provide structural stability to withstand the elements of weather without collapse. This includes rain, snow and wind loads anticipated under expected weather conditions (MSFC 3103.9).

Means of egress

Each tent or membrane structure should have the following minimum number and width of egress:

Occupant Load	Minimum Number of Means of Egress	Minimum Width of Each – Tents	Minimum Width of Each – Membrane Structures
10-199	2	72 inches	36 inches
200-499	3	72 inches	72 inches
500-999	4	96 inches	72 inches

- Each door or exit must have lighted EXIT signs when there are 50 or more occupants (MSFC 3103.12.6).
- Exit openings:
 - Can be doors that swing outward (direction of exit travel).
 - Are to remain open (if they are an opening in the tent).
 - Openings can be covered with a flame-resistant curtain that slides open and be of a color that contrasts with the color of the tent (MSFC 3103.12.3).
- Egress paths and aisles must be provided, kept clear and unobstructed. They must also maintain widths to a safe area at least 20 feet away from the tent (MSFC 3103.12.5.1 and 3103.12.8).
- The fire code official can require a seating and site plan (MSFC 3103.6).

Specific egress provisions for small dome “igloo” tents

In order to maintain outdoor seating during cold weather, some eating and drinking establishments are using small, dome tents (often called “igloos”) to provide shelter for a single table. Tent openings typically consist of a flap that can be zipped open or closed, similar to a recreational camping tent.



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Because smaller tents historically have not been used for commercial purposes, Chapter 31 of the MSFC does not address the size of exit openings in tents having fewer than 10 occupants. In such cases, the fire code official has the authority to set a minimum standard for the safety of occupants (MSFC 102.9).

The State Fire Marshal (SFM) division recommends approval of a single, 28-inch-wide exit opening for smaller tents serving fewer than 10 occupants, under the condition that zippered openings are not allowed to be closed (sealed by the zipper) when the tent is occupied (MSFC 1104.7.1 and 1031.2).

Tent and membrane materials must be documented as flame resistant. Many smaller tents that could potentially be used for single-table seating were not manufactured for commercial use and may not meet the flame propagation performance standards of NFPA 701. Proper documentation of flame resistance must be provided. (See the fire retardant requirements on page 1.)

Operational features

The following operational features are applicable:

- Contact the local fire code official prior to operating a temporary tent or membrane structure. A permit and inspection may be required (MSFC 3103.2).
- The occupant load allowed shall be determined in accordance with MSFC Chapter 10 (MSFC 3107.11).
 - See the SFM [info sheet regarding occupant load determination for bars and restaurants](#).
- Portable fire extinguishers (MSFC 3107.9).
- Proper use of electrical equipment and extension cords (MSFC 604).
- No hay, straw, shavings or similar combustible materials are allowed inside tents or membrane structures (MSFC 3107.2).
- The MSFC specifies that the maximum allowable use of a temporary tent or membrane structure is 180 days within a 12-month period on a single premises (MSFC 3103.5).

Questions:

Contact the SFM 651-201-7221 or by email at fire.code@state.mn.us.



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