



**CITY OF BLAINE**  
**SAFETY SERVICES**  
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## **INDUSTRIAL OVENS**

**General:** The installation and operation of industrial ovens and furnaces shall be in compliance with Minnesota State Fire Code (MSFC) Chapter 21 and NFPA Standard 86. The terms oven and furnace are interchangeable in this chapter. An operational permit is required for Class A, B, C and D industrial ovens as defined below.

**Class A Furnace.** An oven or furnace that has heat utilization equipment operating at or near atmospheric pressure wherein there is a potential explosion or fire hazard that could be occasioned by the presence of flammable volatiles or combustible materials processed or heated in the furnace.

**Class B Furnace.** An oven or furnace that has heat utilization equipment operating at or near atmospheric pressure wherein there are no flammable volatiles or combustible materials being heated.

**Class C Furnace.** An oven or furnace that has a potential hazard due to a flammable or other special atmosphere being used for treatment of material in process. This type of furnace can use any type of heating system and includes a special atmosphere supply system. Also included in Class C classification are integral quench furnaces and molten salt bath furnaces.

**Class D Furnaces.** An oven or furnace that operates at temperatures from above ambient to over 5,000 degrees Fahrenheit and at pressures normally below atmospheric using any type of heating system. These types of furnaces can include the use of special processing atmospheres.

### **Location:**

**Ventilation.** Enclosed rooms or basements containing industrial ovens or furnaces shall be provided with combustion air and ventilation air in accordance with the Mechanical Code and Fuel Gas Code.

**Exposure.** When locating ovens, oven heaters and related equipment, the possibility of fire resulting from overheating or escape of fuel gas or fuel oil and the possibility of damage to the building and injury to people shall be considered.

**Ignition Source.** Industrial ovens and furnaces shall be located so as not to pose an ignition hazard to flammable vapors or mists or combustible dusts.

**Temperatures.** Roofs and floors of ovens shall be insulated and ventilated to prevent temperatures at combustible ceilings and floors from exceeding 160 degrees Fahrenheit.

**Fuel-gas Piping.** Fuel-gas piping serving industrial ovens shall comply with the Fuel Gas Code. Piping for other fuels shall comply with this section.

**Shutoff Valves.** Each industrial oven or furnace shall be provided with an approved manual shutoff valve in accordance with the Mechanical Code or Fuel Gas Code. Valves for fuel supply lines shall be located within 6 feet of the appliance served. The design of manual fuel shutoff valves shall incorporate a permanent feature which visually indicates the open or closed position of the valve. Valves shall not be equipped with removable handles or wrenches unless the handle or wrench can only be installed parallel with the fuel line when the valve is in the open position.

**Interlocks:** Interlocks shall be provided for Class A ovens so that conveyors or sources of flammable or combustible materials shall shut down if either the exhaust or recirculation air supply fails.

### **Fire Protection:**

**Required Protection.** Class A and B ovens which contain, or are utilized for the processing of, combustible materials shall be protected with an automatic fire extinguishing system. (see 2002 NFPA 13, Special Situations, 13.16-13.16.2)

**Fixed Fire Protection Systems.** Fixed fire extinguishing systems shall be provided for Class C and D to protect against such hazards as overheating, spillage of molten salts or metals, quench tanks, ignition of hydraulic oil, and escape of fuel. It shall be the user's responsibility to consult with the code official concerning requirements for such protection.

**Fire Extinguishers.** Portable fire extinguishers complying with MSFC Section 906 shall be provided not closer than 15 feet or a maximum of 50 feet from ovens and related equipment.

### **Operation/Maintenance:**

**Furnace System Info.** An approved, clearly worded, and prominently displayed safety data form or manufacturer's nameplate shall be provided stating the safe operating condition for which the furnace system was designed, built altered or extended. The safety data plate for Class A solvent atmosphere ovens shall include the following information: 1) the solvent used, 2) number of gallons used per batch or per hour of solvent entering the oven, 3) the required purge time, 4) the oven operating temperature, 5) the exhaust blower rating for the number of gallons of solvent per hour or batch at the maximum operating temperature.

**Training.** Operating, maintenance and supervisory personnel shall be thoroughly instructed and trained in the operation of ovens and furnaces.

**Equipment Maintenance.** Equipment shall be maintained in accordance with manufacturer's instructions.

For additional information, please contact a fire inspector at (763) 785-6187.