ANSI Z50.1. Safety Standards

12. Frying Equipment

12.1 Automatic Frying Machine. The automatic frying machine may be used to automatically fry donuts, pies, and honey buns and is generally equipped with feed devices, exhausters, and ducts.

12.1.1 Design and construction

12.1.1.1 All frying machines shall be either insulated or properly guarded at necessary locations to prevent burns to persons.

12.1.1.2 Where live flame is used to heat the fat, the machine shall be equipped with properly designed flues to carry off products of combustion.

12.1.1.3 Automatic thermostats shall be installed to control frying temperatures.

12.1.1.4 The machine shall be equipped with a device that will prevent excessive frying medium temperatures in case of thermostat failure. This device shall be preset at the factory at a temperature below the flash point of the frying medium and shall be of a manual reset type.

12.1.1.5 The machine shall be equipped with a safety device to prevent igniting of the frying fat owing to insufficient fat coverage of heating tubes or elements.

12.1.1.6 If forced draft is used or automatic damper, or both, for exhausting products of combustion, the machine shall be equipped with interlocking controls to prevent ignition of the burners until the exhauster is functioning.

12.1.1.7 If the machine is designed with a voluminous, closed combustion chamber (no secondary air, premix air gas), a time delay relay shall be used in connection with the exhauster, to purge the chamber before the burner can be ignited.

12.1.1.8 Where cutter heads are provided, a readily accessible stop switch or clutch shall be installed at the cutter.
12.2 Installation. Gas piping and valves serving fryers shall be installed in accordance with ANSI Z223.1.


12.2.2 Machine Installation
(1) The machine should be installed on a noncombustible floor. If this type of floor is not available, the machine shall be raised a minimum of 6 in (152.4 mm), and a metal pan flanged on four sides shall be installed under the legs of the machine.
(2) Machine shall be readily accessible from all sides [3 ft (0.91 m)] except where other equipment is required to be connected thereto.
(3) The floor shall be maintained around the machine in a nonslip condition.
(4) Steps of metal grate should be used where height makes proper operation awkward or difficult.


12.2.4 Operation

12.2.4.1 Written operating instructions, as supplied by the equipment manufacturers, shall be delivered to the user, and the operator shall be instructed in the use of the equipment by a qualified person.

12.2.4.2 A non-heat-conducting implement shall be provided to remove damaged product from the fryer.

12.2.5 Maintenance

12.2.5.1 Fryers and auxiliary equipment shall be maintained in accordance with the manufacturer's instructions and good operating practices.

12.2.5.2 The following should be performed on a periodic basis:
(1) Fryer properly cleaned of all accumulated gum or other substances to prevent fire.
(2) All controls checked for proper operation.
(3) All gas burners cleaned of dirt and dust, and adjusted for proper operation.

12.3 Indirect Heated Fryers. Indirect heating may be of the pressure-type or nonpressure-type.
(1) Nonpressure-Type. A nonpressure-type system is one where there is no pressure in the system when the circulating pump is not in operation, regardless of the heat transfer fluid temperature,
(2) Pressure-Type. A pressure-type system is one where hot transfer fluid causes the pressure, even when the circulating pump is not in operation.

12.3.1 Nonpressure-Type Systems

12.3.1.1 When a separate heat exchanger is used, the unit shall be designed in conformance with 12.1 and applicable sections of 12.1.1 and in conformance with 12.2.1, 12.2.2 and 12.2.3.

12.3.1.2 To prevent heat transfer fluid from leaking into the fryer fat, welded seams of the plate coils on the frying kettle shall not be contiguous with welded seams of the kettle proper.

12.3.2 Pressure-Type Systems. Paragraphs 12.3.1.1 and 12.3.1.2 shall apply, and the installation of the pressure system shall conform to the applicable sections of the American National Standard Power Piping, ANSI/ASME B31.1.

12.4 Open Frying Kettles

12.4.1 Except for a variation in configuration or size, open kettle machines are essentially the same as hotel and deep fat fryers, and the applicable parts of 11.1 shall apply.

12.4.2 Open frying kettles shall be constructed and installed according to the applicable sections of American National Standard for Gas Food Service Equipment - Deep Fat Fryers, ANSI Z83.13.

12.5 Fat Filters

12.5.1 Filters operated under pressure shall comply with the ANSI/ASME Boiler and Pressure Vessel Code, Section VIII.

12.5.2 A warning sign shall be prominently displayed at each filter location, alerting the operator to the danger if hot oil is spilled or splashed.
12.5.3 In the case of portable filters where hot fat is discharged through a nozzle, an insulated handle shall be provided offset to the nozzle flow.

12.5.4 Casters shall be provided on portable filters which are equipped with locking devices to prevent movement away from the discharge point during operation.

12.5.5 Hoses on filters shall be of such quality that they will not break down during normal operations, even when hose clamps are the mode of shutoff.

12.5.6 Hand protection shall be provided the operator handling hot fat filters.