

TECH SHEET

Fire Suppression For Commercial Cooking

EMC Insurance Companies®

History

On November 21, 1994, an Underwriters Laboratories (UL)® test standard entitled UL 300, Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas®, went into effect. This standard came about as a result of changes in fire hazards involving commercial cooking equipment.

Pre-engineered chemical suppression systems were originally developed in the 1960's for the protection of commercial cooking equipment. UL® developed a series of fire tests for these systems designed to duplicate the potential commercial cooking fire hazards. These tests establish specific requirements (and limitations) affecting extinguishing agent, fire detection, piping, nozzle coverage, etc., for each manufacturer who submits its system for UL® testing.

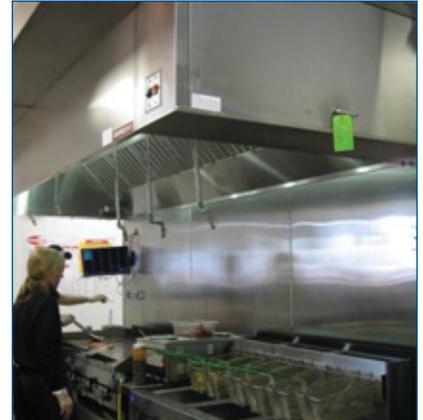
Fats and Temperature

At the time the earlier tests were developed, animal fat (lard) was typically used to fry in commercial kitchens. Commercial cooking operations, appliances and supplies have changed greatly since the 1960's. Health concerns have reduced the use of lard; efforts to cook faster have caused the use of insulated, more efficient fryers that heat faster and cool slower. Restaurant suppliers now estimate that 70-75% of all commercial kitchens use vegetable oils for frying in high-efficiency fryers.

These changes have significantly altered the fire hazards in cooking areas. Lard has a large percentage of saturated fat, whereas vegetable oils have a very low percentage. The ignition temperature of most animal fats is 550-600 F compared to 685° F or more for most vegetable oils.

The extinguishing agent in the earlier systems was alkaline based. Fat combined with alkaline to produce a soapy blanket, cutting off the oxygen supply and containing the fire until the fuel (animal fat) was cooled below its ignition temperature.

A similar fire involving vegetable oils creates a different set of circumstances. With only a limited amount of fat, the soapy action is greatly reduced and the higher temperature of such fires, enhanced by the insulation in a high efficiency fryer, causes the soap blanket to break down. Thus, the extinguishing capability of the earlier fire suppression system is reduced.



Continued

System Change Guidelines

Over the last few years, many questions have arisen about changing an existing dry chemical extinguishing system to a listed UL 300® wet chemical system. Updating your suppression system should be considered if any of the following has occurred:

- The hazard to be protected has changed;
- Newer energy efficient cooking appliances have been installed, which keep cooking oils and metal appliances hotter — longer;
- Vegetable oils are being used for cooking in place of animal fat;
- There are no longer parts or agent available for service of the existing system, thereby voiding its listing.

For Additional Information

National Association of Fire Equipment

Distributors: www.nafed.org

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