



## FIRE SAFETY IN COMMERCIAL KITCHENS

### RISK MANAGEMENT GUIDANCE

#### Introduction

Fire hazards are common in commercial kitchens due to the variety of cooking processes that take place from within. This document identifies the key fire hazards in commercial kitchens and provides guidance on reducing the risks associated with these hazards.

#### The issues

Kitchen fires not only occur frequently, they also introduce the risk of serious personal injury due to the presence of flammable fats and grease. Once fires reach the kitchen extraction ducting they become very difficult to extinguish due to the rapid fire spread throughout hidden spaces and void.

Fortunately, the potential for large losses in commercial kitchens can be significantly reduced by following a risk management programme of identifying and minimising fire hazards. Many precautions are simple and low cost to introduce; we would recommend the installation of fire suppression systems where there is a high dependency on the location, high values are at risk or where there is sleeping accommodation or fire exit routes nearby.

#### Fire Performance

Most cooking appliances within a kitchen are constructed from steel. While steel will not directly contribute to a developing fire, the presence of oil and grease in extraction systems is a major fire hazard and will significantly contribute to any developing fire. Deposited fat and oil can readily alight from flames, sparks or hot gases. This hazard is further increased if the cooking appliances are fuelled by natural gas. It is not uncommon for commercial kitchens to be found in older buildings such as schools, hotels and offices. In these buildings, the extraction system can pass internally through internal partitions and timber floors, enabling fire to spread uncontrolled between compartments.

We suggest you search the internet for video clips on 'kitchen fires', as these will clearly demonstrate how ferocious a kitchen fire can be.

#### Identification & Next Steps

A simple self-checklist is attached overleaf, which will provide you with a summary of the issues, and suggestions for measures you can take to minimise the risk of fire. High standards of housekeeping and maintenance must be adhered to at all times.

## Checklist

### 1 – Unattended Cooking Equipment

All cooking equipment has the potential to be a source of fire. To minimise any risk of ignition, cooking equipment should never be left unattended and must be switched off before the end of the working day.

### 2 – Maintenance

All appliances, cooking equipment and kitchen fire safety equipment should be subject to regular maintenance, undertaken by a competent person, to a specification and on a frequency as recommended by the manufacturers, or at least annually. Please note that an annual gas soundness check or PAT test alone is not sufficient maintenance as this does not include an inspection and test of all safety devices.

### 3 – Fire Extinguishers

The use of an unsuitable fire extinguisher on a fire involving fats/grease can be dangerous. We recommend you obtain advice from your fire extinguisher maintenance contractor, typically a fire blanket and Class F 6 litre 'wet chemical' fire extinguisher (CE marked and to BS EN3) should be provided for each deep fat frying range. Fire extinguishers must be provided on the exit route from the kitchen.

### 4 – Deep Fat Frying Equipment Specification

All Deep Fat Fryers should be fitted with non-self-resetting thermal cut-out devices, to switch off the heat source in the event the fat temperature exceeds 230°C, thereby preventing auto-ignition of the fat. Deep Fat Fryers should also be fitted with flame failure devices to cut off the fuel supply in the event of flame failure. Oil or fat should be changed according to the manufactures' guidance and should only be changed when the equipment is switched off and cold.

The equipment should also be located a suitable distance away from other pieces of equipment to reduce the risk of ignition or water splashing into the oil. All fryers should be fitted with tightly closing lids to prevent accidental splashes/contact with the oil.

### 5 – Kitchen Extraction Systems - Filters

Lack of maintenance or inadequate cleaning within grease extraction units continue to be a major cause of fire or at least rapid fire spread within premises. To reduce the potential for fire, extract filters should be removed and the filters and plenum thoroughly cleaned at least weekly, however the frequency will depend on the use of a system as some heavily used equipment will require a daily clean. For further guidance refer to a Building and Engineering Services Association member contractor in accordance with their TR19 guidance.

No extraction filter will fully prevent oils and grease from spreading into the ductwork. Metal mesh filters are the least efficient at 40-50% and it is often worthwhile upgrading to Baffle filters which can achieve 65-80% efficiency and provide a better barrier against flame spread. Having said this, the most efficient are cartridge or water wash systems.



## 6 – Kitchen Extraction Systems – Extraction Ducting

The extract ducting (including canopy, plenum, ducting and fan) should to be completely cleaned, throughout its entire length, by a Building and Engineering Services Association member contractor or BRE/LPCB Loss Prevention Standard LPS2084 accredited contractor in accordance with the TR19 guide, we would suggest at least every 6 months, however the frequency will depend on the use of a system. Once cleaned, a completion certificate and report showing photographic evidence of cleaning, should be retained and kept available for inspection if requested by Protector Insurance Ltd, ideally this should be kept with any kitchen risk assessment documentation.

If access to clean throughout the length of the ducting is not possible then additional access hatches should be installed to provide hatches every 3 metres along the length of the ducting.

New installations - Any new extraction installations should be designed to meet BRE/LPCB Loss Prevention Standard LPS1263 and Building and Engineering Services Association Specification DW172. To minimise the risk of grease build up, ducts should take the most direct route to atmosphere with the fewest number of bends. The system should be constructed of galvanised or stainless steel, with all joints liquid tight and should have smooth surfaces to allow effective cleaning. Dampers and fire rated ductwork should also be installed where ductwork passes through fire compartments.

## 7 - Baffle

In order to reduce the risk of water spill into a fryer, either all deep fat fryers need to be located away from water pans and gas cooking ranges or alternatively a stainless-steel baffle plate can be fitted between the two pieces of equipment.

## 8 – Gas Supply

To assist staff, in the event of an emergency, an isolation valve should to be fitted on the gas supply to the kitchen (on the evacuation route), so that the supply can be easily shut off.

## 9 – Fire Detection

Due to the increased risk of fire within commercial kitchens, automatic fire detection should be provided, ideally to L1/P1 standard. Any fire detection systems should be configured so that they automatically isolate the kitchen fuel supplies and also provide remote signalling to an alarm receiving centre.

## 10 – Fixed Fire Protection

A suitable automatic fixed fire extinguishing system is recommended, or may be required for larger/high value properties or those locations with persons living/working in a floor above, or where the kitchen is located close to an evacuation route. These systems should be installed in accordance with, or the equivalent of, LPCB standard LPS 1223: Issue 2, to protect the cooking equipment and extraction system ductwork. The system must include the following design requirements: automatic activation by a detection system and manual activation at a manual release point, detection and discharge system to be installed over the cooking equipment and within the extraction hoods and ductwork that are located within the confines of the building structure. The catering equipment heat source should be shut down upon manual or automatic activation of the detection system as well as the extract fan.

The protective equipment must be subject to a suitably documented maintenance and cleaning programme.

## 11 – Electrical Systems

Damaged or faulty electrical systems can easily lead to fires in commercial kitchens. Cooking equipment should be installed, operated and maintained in accordance with the manufacture's guidelines, by a competent person. Portable appliance testing should be undertaken annually by a competent person. When electrical equipment is installed or tested, IET Wiring Regulations: BS7671 (2008) must be complied with. All fixed wiring systems should be connected to an independent isolator fitted with a Residual Circuit Device of suitable fuse rating.

## 12 – Training

Users are to be trained in the safe use and cleaning of all kitchen equipment and fire protection systems. Staff training should be renewed at least annually.

## 13 – Fire Risk Assessment

A Risk Assessment should be completed specifically for the kitchen fire risks. This should include: maintenance, operation, location, electrical installations, construction materials and housekeeping.

## 14 - Compartmentation

Stored goods should be located in a separate area to the kitchen and the kitchen should have non-combustible walls, floor and ceiling. Cooking should be undertaken in a dedicated fire compartment where possible. Gaps around pipes or cables that leave the cooking area should be sealed with suitable material to provide the same level of fire resistance as the element of construction adjacent

Further information and guidance on this subject is available from:

- The Health and Safety Executive - <https://www.hse.gov.uk/catering/>
- The Fire Protection Association - <https://www.thefpa.co.uk/>
- The Building and Engineering Services Association - <https://www.thebesa.com/>
- DWE172 Specification for Kitchen Ventilation Systems - <https://www.thebesa.com/knowledge/shop/products/dw-172-specification-for-kitchen-ventilation-systems/>
- TR19 Guide to Good Practice – Internal Cleanliness of ventilation systems - <https://www.thebesa.com/knowledge/shop/products/tr-19-guide-to-good-practice-internal-cleanliness-of-ventilation-systems-updated/>

### Disclaimer:

Please note that the Information contained herein has been provided to you for general information purposes only and is considered confidential and/or privileged information, which you must not distribute to any third party, in whole or part, without Protector's express written permission. Whilst all reasonable care has been taken to ensure that the information in this document is comprehensive and accurate, Protector makes no representation, warranty or undertaking, express or implied, as to the accuracy, reliability, completeness or reasonableness of the Information. Any assumptions, opinions and estimates expressed in this document constitute Protector's judgment as of the date thereof and are subject to change without notice. Any projections and/or proposed risk mitigating solutions contained in this document are based on a number of assumptions as to existing risk conditions and there can be no guarantee that any projected outcomes will be achieved, nor that no other risks exist. Protector does not accept any liability for any direct, consequential or other loss arising from reliance on the contents of this document, and provides no guarantee that recommended remediation measures supersede, or replaces any statutory obligations.