



## Guidelines for the Safe Design of a Commercial Kitchen



Member of:



# Index

Section	Title	
	Introduction .....	Page 4
	Work Space Dimensions .....	Page 5
	Kitchen Flow Chart .....	Page 6
	Kitchen Equipment requiring Grease Management Systems .....	Page 7
<b>1</b>	<b>Spatial Planning</b>	
1.1	Spatial requirements .....	Page 8
1.2	Work Flow .....	Page 8
1.3	Provisions for adequate space .....	Page 9
<b>2</b>	<b>Food Safety</b>	
2.1	Temperature Measuring Devices .....	Page 10
2.2	Food handling .....	Page 10
<b>3</b>	<b>Water Supply and Drainage</b>	
3.1	Water supply .....	Page 11
3.2	Drainage .....	Page 11 - 21
<b>4</b>	<b>Fixtures, Fittings and Equipment</b>	
4.1	General requirements .....	Page 22
4.2	Installation .....	Page 22
4.3	Specific requirements .....	Page 23
4.4	Materials .....	Page 23
4.5	Cleaning sanitizing and maintenance .....	Page 23 - 25
<b>5</b>	<b>Waste</b>	
5.1	Disposal systems .....	Page 26 - 27
5.2	Storage .....	Page 27 - 28
5.3	Location .....	Page 28
5.4	Flooring .....	Page 28
5.5	Cleaning .....	Page 28
<b>6</b>	<b>Flooring</b>	
6.1	Floor finishes and serviceability .....	Page 29
6.2	Floor drainage .....	Page 29
9.3	Floor and wall intersections .....	Page 29
<b>7</b>	<b>Walls and Ceilings</b>	
7.1	Ceilings .....	Page 30
7.2	Walls .....	Page 30
<b>8</b>	<b>Ventilation</b>	
8.1	Natural ventilation .....	Page 31
8.2	Exhaust systems .....	Page 31
8.3	Airflow plan and design .....	Page 32
8.5	Environmental considerations .....	Page 32

Section	Title	
9	<b>Lighting</b>	
9.1	General Requirements .....	Page 33
9.2	Natural & Artificial Lighting .....	Page 33
9.3	Reflectance .....	Page 33
9.4	Light Fitting Considerations .....	Page 34
9.5	Emergency Lighting .....	Page 34
9.6	Environmental Considerations .....	Page 34
10	<b>Storage</b>	
10.1	Storage Requirements .....	Page 35
10.2	Hazardous Substances .....	Page 35
11	<b>Pest Control</b>	
11.1	Prevention .....	Page 36
11.2	Insect Control .....	Page 37
11.3	Monitoring .....	Page 37
12	<b>Signage</b>	
12.1	Emergency Signage .....	Page 38
12.2	Hygiene Signage .....	Page 38
12.3	Equipment Signage .....	Page 38
13	<b>Staff Amenities</b>	
13.1	Storage of Personal Items .....	Page 39
13.2	Changing Rooms .....	Page 39
13.3	Toilets .....	Page 39
13.4	Storage of Office Materials .....	Page 39
13.5	Hand Wash Basins .....	Page 39
14	<b>Fire Safety</b>	
14.1	Emergency Procedures .....	Page 40
14.2	Emergency Devices .....	Page 40 - 44
14.3	Fire Extinguishers .....	Page 41
14.4	Staff Training for Emergencies .....	Page 44
15	<b>Access &amp; Agress</b>	
15.1	Provision for Egress .....	Page 45
15.2	Process for People with Disabilities .....	Page 45
16	<b>First Aid</b>	
16.1	First Aid Kits .....	Page 46
16.2	First Aid Personnel Required .....	Page 46

**Design points for Commercial Kitchens developed from our experience in kitchen design commercial drainage solutions with over 60 years experience. The aim of this guide is to provide the hospitality (including managers, proprietors, designers and commercial kitchen users) with recommendations for implementing efficient, safe and best practice for the hospitality industry. Within each section are precautions, processes and recommendations that contribute to the efficient running of a commercial kitchen, whether it is for small, medium or large premises.**

These guidelines can be used when designing new kitchens or renovating existing commercial premises.

They present the hospitality industry with recommendations that will contribute to safe and efficient production of uncontaminated food.

They are guidelines only.

## **The Law in your Kitchen**

There was a time when all chefs had to worry about was cooking good food and meeting the gross profit target on top of kitchen costs. Chefs must also be aware of the current legislation concerning waste management in his kitchen. In the UK, the most important food hygiene regulations for your business are:

- Regulation (EC) No. 853/2004 on the hygiene of foodstuffs.
- The Food Hygiene (England) Regulations 2006 (as amended) (and equivalent regulations in Scotland, Wales & Northern Ireland).
- The Building Act 1984.
- Food Safety Act 2006.
- Environmental Protection Act 1990.
- Water Industry Act 1999.

Not only must the chef be aware of these regulations, they must make sure their premises and staff complies with these regulations.

## **CE Marking**

This is the small “CE” badge that all powered catering equipment sold in the UK and Europe must carry. It means that the manufacturer has certified that it meets European Union safety and, in some cases, performance standards. The EU standards are among the strictest in the world and are drawn up to ensure that kitchen staff have the least possible risk of injury.

Reputable brands of catering equipment bought from reputable dealers should always have the CE mark, but occasionally there is equipment offered for sale which looks the part but lacks that all-important CE badge. The regulation recognizes that many kitchens have well-maintained old equipment that predates the introduction of CE marking. That is why the legal requirement for kitchen equipment to be CE marked applies only to equipment manufactured after 1995.

# Work Space Dimensions

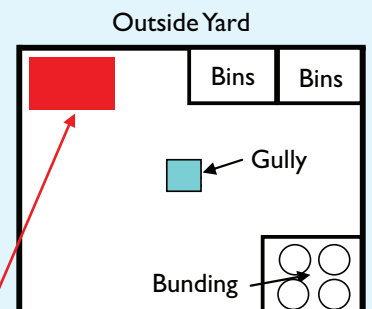
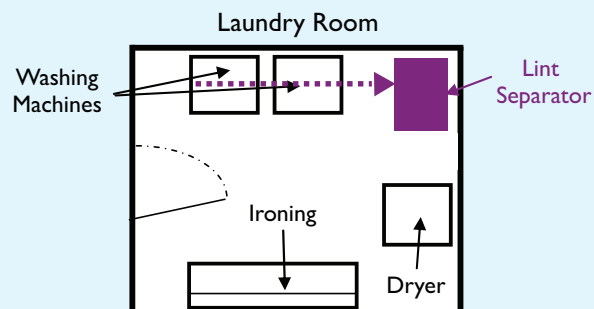
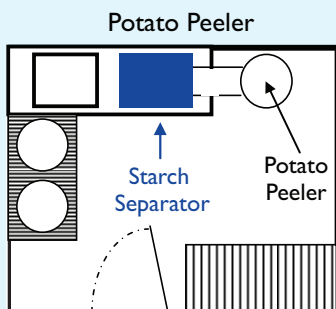
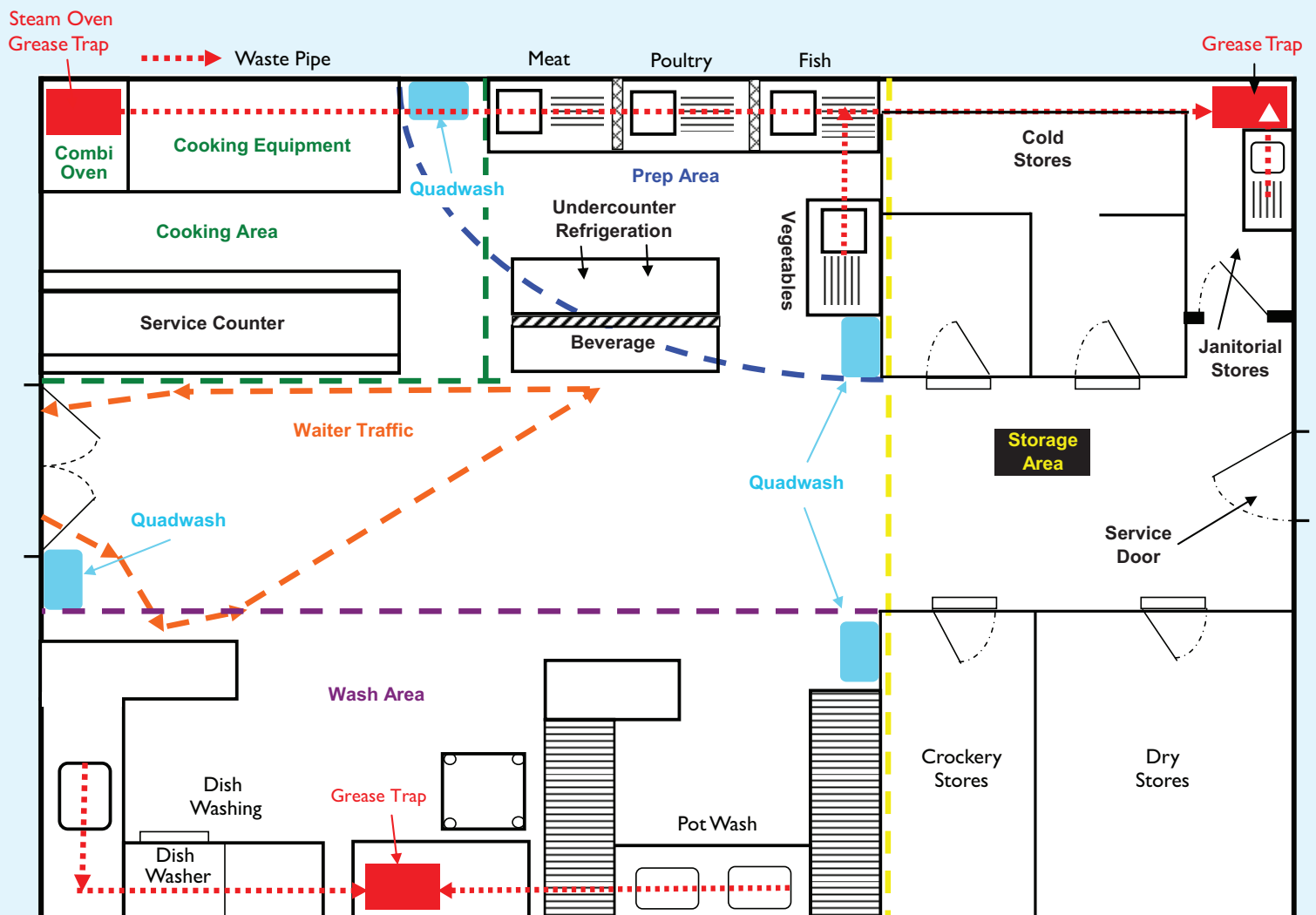
It is recommended that provision be made for the following:

## Clearances

- Up to 1200mm clearance in front of storage areas with a sliding door.
- 1200mm x 1200mm clearance in front of other rooms with swinging or folding doors (i.e dining room/service doors).
- Between work surfaces 900mm.

## Suggested Layout

This is a suggested layout for a large kitchen servicing a restaurant. The layout can be modified to suit small kitchens, pubs and clubs or expanded to suit larger commercial kitchens.



Grease Management System required if the area is used to wash down equipment

All equipment connected to waste should be trapped and ran through a Grease Management System.



# Kitchen Flow Chart

## Step by Step



Note: The area 3, 5 & 7 should be separate and not cross over in the flow design of a kitchen.

# Kitchen Equipment Requiring Grease Management Systems



Macerators should not discharge into the drainage system. A separate collection tank for this waste is required. A drain from this tank is advisable. Please refer to page 12 (design considerations) for further information.



**This section sets out criteria for the spatial planning of commercial kitchens. A well-planned kitchen will save time and effort in food preparation and reducing cross contamination while create a safe work environment.**

## **I.1 Spatial Requirements**

A well planned kitchen should:

- Provide adequate storage for raw materials.
- Provide adequate space for food being prepared.
- Provide adequate space food awaiting service.
- Provide adequate storage for equipment, utensils, crockery and cutlery.
- Be efficient and effective in terms of movement of staff, equipment, materials and waste management system in place Food, Oil & Grease (F.O.G)
- Provide an area for checking in stock.
- Janitorial store for kitchen, with janitorial sink in place and chemical store.

To maintain effective movement through spaces, the area per person according to use of the equipment has been established by the Building Act 1984/Workplace (Health, Safety and Welfare) Regulations 1992. It is recommended that in a kitchen each person needs 10m<sup>2</sup>.

## **I.2 Work Flow**

The premises shall be designed so that there is a continuous progression of food from delivery to storage, through to preparation and the finished product, with no cross over to avoid cross contamination.

### **I.2.1 Food Delivery or Receiving**

This includes the receiving of purchased goods, which involves: handling, checking, recording or storage. Some of these functions may be combined or not needed depending on the size of the kitchen.

### **I.2.2 Storage**

The amount of storage space and the type of storage will depend on:

- The size of the kitchen.
  - Menu.
  - The volume of business.
  - Delivery frequency.
  - The length of storage.
  - The type of storage (frozen, refrigerated or dry).
- Storage of meats, poultry and fish should be taken into consideration when designing the kitchen and kept separate from dry foods, vegetables, fruit and pastry.

### **I.2.3 Preparation and Cooking**

The main preparation areas in food premises are for:

- Meat preparation.
- Poultry preparation.
- Fish preparation.
- Vegetable preparation.
- Pastry/dessert preparation.

All food preparation areas should be separate from the cooking area. Each preparation area should have one single sink per station separated by a physical or air gap to reduce cross contamination. Hand basins should be in these areas. (See Page 5)



### 1.2.4 Clean Crockery

Storage for clean crockery should be close to the washing up facility to minimize excess movement around the kitchen and ideally in a separate room due to the air pollution in a kitchen.

### 1.2.5 Food Service

The type of service (a la carte, fast food, café or banquet) will direct how the serving function is performed. The most common service is plate service, which requires pick-up points next to the cooking area. The pick-up point arrangement should have a method to keep the dishes warm/cold.

There should be a separate pick-up point for chilled food such as desserts to be held in a refrigerated cabinet. The pick-up point arrangement is critical for an efficient in and out flow of waiter traffic. It is essential to design kitchen flow of service/waiters traffic in the kitchen layout. Waiting staff should not have easy access to the cooking area or preparation area.

### 1.2.6 Waste Food and Dirty Crockery

The dish washing area positioning is vital to the successful operation of any kitchen. The design of the dish washing area should have a large drop off area. This area should have the facility to cope with the waste from plates. This will depend on the number of covers and menu.

The following is a suggested list of possible cleaning/storing methods and equipment:

- Stainless steel racking for pots and pans. Open for ease of cleaning.
- Stainless steel racking for plates in separate enclosed area.
- Cutlery storage.
- Storage for mops and chemicals and a janitorial sink.
- Adequate sinks. When positioning sinks, drainage should be addressed e.g. Sinks should be in line, in order to reduce the number of Grease Traps required.
- Pre-wash hose.
- Extraction system.
- Waste disposal bin (differing bins for recyclables).
- Waste Management System.
- HACCP - Regulation (EC) No. 852/2004 on the hygiene of foodstuffs.

Food, Oil & Grease are by products of the kitchen and create drainage problems in kitchens. These substances create major problems for treatment plants. The best method of controlling this is at source. This should be addressed at planning stage to prevent problems from water companies, environmental agencies and public health inspectors.

## 1.3 Provisions for Adequate Space

Space shall be provided on the premises for staff to handle food and perform other activities that are part of the food business.

Space should be provided for:

- Food preparation and service.
- Separation of raw food preparation from cooked food preparation and other ready-to-eat food preparation areas.
- Washing and sanitizing operations for utensils and equipment.
- Separation of food storage and handling areas from areas for chemical storage, toilets, waste storage, office areas and other areas used for activities that could contaminate food or food preparation areas.
- F.O.G management systems.

It is recommended that wash hand basins should be located in the different areas where food is handled e.g. between prep area and cooking area. Wash hand basins should not be included in worktops. They should be separated with a physical or air gap in between to minimize cross contamination.

**This section covers the food safety program, food handling controls such as food processing, food display, food packaging and transportation of food, as well as food handling.**

### Glossary

<b>Food-borne disease:</b>	A disease that is likely to be transmitted through consumption of contaminated food.
<b>Food safety program:</b>	A program that is set out in a written document, and kept at the food premises, which includes records of compliance and other related actions.
<b>Potentially hazardous Food:</b>	that has to be kept at certain temperatures to minimize the growth of any pathogenic Food: micro-organisms that may be present in the food or to prevent the formation of toxins in the food.
<b>Process:</b>	The activity of preparing food for sale including chopping, cooking, drying, fermenting, heating, pasteurizing, thawing and washing, or a combination of these activities.
<b>Ready-to-eat food:</b>	Food that is consumed in the same state as that in which it is sold and does not include nuts in the shell and whole, raw fruits and vegetables that are intended for hulling, peeling or washing by the consumer.
<b>Temperature control:</b>	Maintaining food at required temperatures.

### 2.1 Temperature Measuring Devices

A temperature measuring device needs to be readily accessible and must accurately measure the temperature of food to  $\pm 1^{\circ}\text{C}$ .

The temperature of food should be maintained at:

- $8^{\circ}$  Celsius, or below. This is to minimize the growth of infectious or toxigenic micro-organisms in the food so that the safety of the food will not be adversely affected for the time the food is at that temperature; or
- $63^{\circ}$  Celsius, or above; or another temperature, only if the food business can demonstrate that the maintenance of the food at that temperature for the period of time for which it will be so maintained, will not in any way affect the microbiological safety of the food.

### 2.2 Food Handling

Staff must wash hands as they move from different area's in the kitchen e.g. preparation to cooking. This will help reduce cross contamination. Prepared meats, poultry, fish and vegetables must be refrigerated until needed and held in a refrigerated under counter unit in the cooking/prep area.

Ideally

- Use colour coded chopping boards and knives for raw and ready-to-eat food.
- Wash your hands before preparing food and after.
- Keep raw and ready-to-eat food apart at all times.

Any staff suffering from diarrhea / vomiting within hours must not be allowed into the kitchen area under any circumstance.

It must be assured that any staff member ignoring this safety requirement can be subject to instant dismissal along with their manager for condoning this. Staff can only return to work two days after the symptoms have passed.

This section refers to water supply and drainage in a commercial kitchen.

The design and installation of water supply and drainage systems must comply with statutory requirements. It is recommended that qualified hydraulic engineers and/or tradespersons are engaged to ensure compliance.

### Glossary

**Non-potable water:** Water that is not suitable for human consumption (grey water).

**Bio-film:** It is the coating found inside the waste pipes where the bacteria thrive.

### 3.1 Water supply

Water supply is required for the following:

- Drinking.
- Cooking.
- Ice making.
- Cleaning.
- Sanitizing.
- Personal hygiene.
- Fire suppression systems (fire hydrants, hose reels and sprinkler systems).

Separate non-potable water supplies are often used for fire suppression systems e.g. recycled rainwater.

Hot water must be stored at a minimum of 60°C to prevent growth of bacteria such as Legionella. (See page 24).

Water pressure must be adequate to meet all the demands of the commercial kitchen.

### 3.2 Drainage

Waste removal at source is a simple concept in a highly complex world

If waste which can be dealt with through composting or land fill is not dumped into our sewage systems the loading on the system is reduced.

It should also be considered that by saving water e.g. grey water for irrigation, etc and the natural reductions due to cost saving activities less water will flow through pipe systems to wash down solids and to dilute chemicals we allow into pipes.

Bacteria are the key to a proper functioning drainage system. Bio-film on the pipes assists the passage of flowing solids and reduces chances of blockages caused by organic materials. We are not referring to “commercial bacteria” dosed to enhance drainage systems but the natural bacteria contained in all living organisms.

The aerobic bacteria in pipes and tanks require oxygen to carry out its function of digesting organic materials flowing through pipe lines

- The oxygen supply can be damaged by excessive use of chemicals or oil (which contains no oxygen) this can remove the oxygen supply coating pipes and organics effectively killing bacteria by oxygen starvation.
- This can be best observed in pumping chambers where solid build ups form floating rafts or debris which will not sink as oil effectively water proofs floating solids and bacterial action is dramatically reduced.
- Waste disposal of solid and liquid forms have become a major problem in many cities. The cost of supplying services to this area of our life style is spiraling. Commercial kitchen management is well advised to ensure that the staff are aware of the need to reduce waste and how to dispose of it in a regulated manner.
- Commercial kitchen designers and architects have a duty of care to their clients and should include Food, Oil & Grease (F.O.G) management in their designs.

Authorities and municipalities are imposing charges and fines on polluters which are unlimited.

In environmental situations claims of ‘ignorance’ are no longer a defence, charges and fines will be imposed plus costs on every polluter. Simple actions such as making sure sink filters are supplied and used, oil and oil based products are not disposed of into waste outlets, sanitizers are not put into sinks or toilet outlets, hand wash is done by three stage process, i.e. soap wash, dry and sanities.

**Simply if oils and sanitizers are excluded from drainage many problems will not require remediation.**

A management plan for drainage and grease traps including a record card to show cleaning schedule should be included in any kitchen risk analysis.



In accordance with current guidance from UK Water Companies, Dishwashers and waste disposal units should not be connected to grease separators.

### Grease Traps

Surface mounted Grease Interceptors should be positioned to allow access for maintenance (and cleaning). Units are fitted to grease producing equipment within the kitchen to stop FOG (Food, oil and grease) from entering drainage system. Interceptors should be positioned at least 50mm from walls for cleaning. A 5 amp fused spur is required for installation of the dosing system. Electrical contractors should be consulted to determine whether this should be IP rated. Although it is commonplace to fit interceptors beneath a sink drainer, they can be installed in any position on the pipe run where space is available, (A recommended lid clearance of around 250mm is required to allow access for maintenance). Kitchen designers should recognize the need to specify fabrication design to accommodate the traps particularly in under sink locations i.e. no under shelf and tie bars to extremities where dimensions are critical.

### Bioremediation

Wherever practical, dosing should be fitted at the head of the drainage run. Tubing connection is into the top of the waste pipe using supplied fittings. The entry point is via pipe work with direct access to the interceptor. When dosing an outdoor trap, entry point should be within the kitchen at the head of the drainage run.

### Design Considerations

- Scrapping / Pre-rinse spray sinks (highest volume of waste from this sink).
- Pan wash / Dirty sink produces food, oil & grease waste.
- Steaming and Combi Ovens. SOGT interceptor or an underground grease (UG) trap should be installed e.g. 20 grid waste pipe is too low for an above ground grease trap.
- Butchers prep sinks produce grease.
- Bakers sink (where pies or savories are prepared, they produce food, oil & grease).
- Sinks where cream, milk, mayonnaise or salad dressings are used, they produce food & oil.
- The bigger the better (larger trap = larger settlement area, more water, oxygen and surface area for biological action to occur).
- Biological vs. Traditional (Small vs. Large capacity).
- Biological vs. Mechanical (Sustainable vs. Replaceable).
- Floor Gullies/Channels connected to UG grease trap (Waste pipes from sinks should be connected to sealed drainage connections with rodding access).
- Potato Peelers (starch, grit and skins).
- Waste disposal units should be piped into a waste food collector. This should not be introduced into the drainage system.
- Bratt Pans/Tilting Kettles. These produce F.O.G (Gullies should be connected to an UG trap)
- Wash hand basins (use plain soap and separate sanitizer for hands).
- Wok Ranges (They produce oil and food waste trapped at source).
- Yard Gullies (Grease Management System (GMS) required if area is used to wash down equipment).
- Sink Filters (reduce effluent in traps and pipes).
- For UG units, cover loadings / floor coverings must be considered.
- HACCP - Regulation (EC) No. 852/2004 on the hygiene of foodstuffs.



## Section 3 Sizing of Grease Traps

**Dishwashers should not be connected through traps, as this can result in an emulsification of contents reducing efficiency. Interceptors installed outside or underground should be specified as one size larger than the AG equivalent (to allow for an extended maintenance period).**

Aluline will provide you with complete specification for your consideration. Ideally this should be implemented at design stage whether new build or retro-fit.

Constructing tailor made solutions. Our services are entirely bespoke and based on individual delivery plans for each premises or project, we produce site surveys to ensure your understanding.

### Sizing Biological Grease Separators

In accordance with current guidance from Water Authorities, dishwashers and waste disposal units should not be connected to grease separators.

#### Sizing for Above Ground Grease Traps

Please refer to the chart on the relevant page for the grease trap sizes.

To determine the size of grease trap, calculate the volume of water; divide by the discharge time (2 minutes).

Example:

#### Sink Size

2 x 400 x 400 x (250), overflow height (OH) is 220.  
Volume is 2 x 400 x 400 x 220 = 70.4L

#### Sink Size

1 x 500 x 400 x (300), overflow height (OH) is 220.  
Volume is 31 x 500 x 400 x 220 = 44.0L  
Total Volume = 114.40L

#### Size of Grease Trap

114.4L divided by discharge time (2 Min) = 57.2L  
Use AG2 (115L) for Above Ground Series.  
L cubic m = 1 tonne -1000L

Sink Size (mm)		Overflow Height (OH)	Volume (Ltrs)
600 x 450 x 300	x	220	59.4
500 x 400 x 300	x	220	44
500 x 400 x 250	x	220	44
400 x 400 x 300	x	220	35.2
400 x 400 x 250	x	220	35.2
200 x 200 x 110	x	65	2.6

The calculation of Grease/Oil Interceptor size is not an exact science, factors to account for are: type of premises, cleaning regime, staff training, frequency of cleaning, available space for fitting, place of trap e.g above floor/below floor inside kitchen outside kitchen. Supplier should have experience to advise on trap sizing, training & cleaning frequency.



The actual loading should be assumed to be 60% of the above value, as most appliances and fixtures are not filled to the brim. In many cases, these fixtures are filled to less than 60% of the capacity, especially when water is at premium. Most large businesses reduce water consumption to attain economic and environmental benefits and reduce carbon footprint.

#### Sizing for Under Ground Grease Traps

We use the same methodology for the Under Ground series (however as a rule of thumb) we advise using one size larger to reduce the cleaning regime.

When specifying Under Ground Traps, the T-Dimension or invert level, it is important to ensure that the lid is at a finished level and increment cost can be calculated for bill of quantities.

Access to final position for cleaning is important during the specification stage.

#### Flow Rating

A 2 minute drainage period is acceptable for commercial fittings to fully discharge. To calculate the flow rating, simply divide the litre capacity of the kitchen fixtures and equipment by 2 (drainage period) to give flow rating in litres/minute then divide by 60 to calculate litres/second.

#### Example:

59.4 litres multiplied by 0.60 to give actual loading for a single catering sink = 35.64 litres. This is then divided by 2 = 17.83 litres per minute or 0.297 litre per second.

Under European Legislation, dishwashers are assumed to have flow rating 2 litres/second.

**The calculation of Grease/Oil Interceptor size is not a science. Factors to account for are:**

- Type premises.
- Cleaning regime.
- Staff training.
- Frequency of cleaning.
- Available space for fitting.
- Placing of trap e.g. above floor/below floor, inside kitchen-outside kitchen.

Suppliers should have experience to advise on trap sizing, training & cleaning frequency. The actual loading should be assumed to be 60% of the above value, as most appliances and fixtures are not filled to the brim. In many cases, these fixtures are filled to less than 60% of the capacity, especially when water is at premium. Most large businesses reduced water consumption to attain economic and environmental benefits and reduced carbon footprint.

In addition, it is extremely rare that all fixtures and equipment are discharge simultaneously.

### Flow Rating

A two minute drainage period is acceptable for commercial fittings to fully discharge. To calculate the flow rating, simply divide the litre capacity of the kitchen fixtures and equipment by 2 (drainage period) to give flow rating in litres per minute then divide by 60 to calculate litres per second.

Example:

59.4 litres multiplied by 0.60 to give actual loading for a single catering sink = 35.64 litres

This is then divided by 2 = 17.83 litres per minute or 0.297 litres per second.

Under European legislation, dishwashers are assumed to have flow rating 2 litres per second (source BS EN 1825-2)

### Bioremediation

As stated in the PDI Guide “The concept of bioremediation is sound, trap greases and digests them in the interceptor to convert the grease permanently into the by-products of digestion”.

The normal by-products of bioremediation are carbon dioxide and water, produced as the bacteria in Aluzyme dosing systems begin to degrade the digestible waste materials.

This is an important consideration when sizing grease separators, as the process allows smaller units to be installed. Even when the separator is overloaded, the organic material contained within is coated by a bio film. When these organic materials pass through the grease separator they are continually being degraded as they flow away.

Another key benefit of bioremediation is that the process introduces bacteria into pipe systems allowing additional treatment to take place. The bacteria collect on any wet surface and multiply, resulting in a bio film being created within the pipes.

### Selection of the Nominal Size

For more guidance and information on selecting the nominal size for a grease separator and formula for calculating the required size, please refer to our calculation for nominal size hand book attached.

## Section 3 Grease Trap Comparative Analysis

Aluline Grease Trap Advantages		Mechanical Devices Disadvantages	
✓	Aluline Interceptors are environmentally designed to prevent and stop excess food, oil and grease from entering the drain system through it's waste treatment at source technology.	X	Grease Guardian or Pelican series contain electronic moving parts.
✓	Biological treatment of retained food, oil and grease in an interceptor will reduce the frequency of maintenance.	X	The access into the units can be restricted for staff to clean them. They cause difficulty to dislodge, i.e the units fill up with solids and cause mechanical parts to seize and fail. After the equipment fails the electronic motor and PCB board burns out and can cause damage to the property.
✓	The Aluzyme's biological action activates the bacteria to be degrade and digest the waste into H2O and Co2 in the tank and enhances the performance of pipeline systems and waste treatment tanks.	X	The automatic grease convertors do not adopt the technology of bioremediation.
✓	Pipelines running several meters from the food production area to the main manhole or the pumping stations remain clean and trouble free.	X	An automatic Grease Trap must be sized as a conventional trap. The cleaning cycle only works once per day.
✓	Easy to maintain and clean by client / service engineer as per Aluline service training provided during installation and routine follow ups.	X	It is uncertain if these traps are pressure tested on site. if it appears that they are not air tight then they should not be used inside a kitchen.
✓	Stainless steel and air tight design plus the training given on hygiene allows aluline traps to be fitted in the wash up areas in kitchen and the underground floor mounted grease traps do not overflow.	X	The daily cleaning (removing basket, employing and replacing) if this is carried out by untrained staff it may have health implications.
✓	Aluline cleaning systems allows the solid waste from these traps to be placed in clients waste skips	X	The inclusion of electricity in a wet environment area where staff have little time to be careful, such as wash up area in kitchen is highly questionable.
✓	Aluline advises clients on contractors who collect waste oils.	X	Has this type of unit any approval or acceptance from food and hygiene departments?
✓	Aluline traps can be easily relocated even if it is floor mounted in the basement.	X	The cleaning of these traps to remove accumulated waste not addressed by the wheel can prove difficult and isolation of electricity is a must.
✓	Aluline grease traps are easy to install and becomes the responsibility of the kitchen chef and the service manager who are actually generating the waste.	X	The use of an outside tub / container may not give any air seal and gas etc. can escape into the kitchen.
✓	Aluline traps can be opened for inspection and cleaning at any time by removing the clips as per the training provided.	X	Any blockage or stoppage in the outlet can cause flooding as unit is not air sealed.
✓	Aluline traps can be opened for inspection and cleaning at any time by removing the clips as per the training provided.	X	The quality or seal etc. to these units leaves a lot to be desired.
		X	If your company is interested in the type of unit, we advise a visit to an establishment where the unit has operated over 18 months. New units do not give a fair representation in fact this should be the advice for all units no matter which manufacturer or what type of unit.

## Section 3 Sizing of Grease Traps

Premises	Operation	Minimum Requirements
Auto Repairs	Oil, Grease & Petrol	Fit Oil Separators
Plant Operator	Hydrocarbons, Metals, Suspended Solids	Fit Oil Separators
Bakery	Suspended Solids, Grease & Oil	Fat Oil Separators
Beauty / Spas Nail Boutiques	Suspended Solids Wax, Oil, Mud Pack, Hair	Fit Filter system to suit operation
Building Construction Sites	Cement, Oils, Paints, Chemicals	Check with drainage authorities any entry to sewer system should have a trap fitted.
Cafe	Sugar, Mayonnaise, Coffee Grounds, Milk, cream, butter, chemicals	Fit Grease Traps
Chicken / Fresh	Suspended Solids, Gut Grease, Blood	Fit Grease Traps
Cutting Preparation	Suspended Solids, Grease, Oil Finings	Fit Grease Traps
Coffee Shop	Coffee Grounds, Milk, Sugar, Cream Syrups	Fit Grease Traps
Catering Kitchen	Suspended Solids, Oil, Grease, Chemicals	Fit Grease Traps
Community Facilities	Suspended Solids, Grease & Oil	Fit Grease Traps
Ceramics /Plaster	Suspended Solids	Fit Filter System
Delicatessen	Suspended Solids, Grease, Mayonnaise, Butter	Fit Grease Traps
Dentists	T.B.A	Check with Drainage / Health Authority
Doughnuts	Grease, Sugar, Oil	Fit Grease Traps
Dry Cleaners	Solvents etc.	Check with Drainage / Health Authority
Fish Retail	Suspended Solids, Scales, Fish Gut	Dry Filter System
Fish Restaurant	Suspended Solids, Grease, Oils	Fit Grease Traps
Fast Food	Suspended Solids, Grease, Oil Fining's, Chemicals	Fit Grease Traps
Florist	Suspended Solids, Herbicides	Check with Drainage / Health Authority
Hotels	Suspended Solids, Sauces, Mayonnaise, Butters, Oil, Grease, Chemicals	Fit Grease Traps
Ice Cream Parlour	Suspended Solids, Milk, Fats, Oils, Cream	Fit Grease Traps
Garbage Areas	Suspended Solids, Oils, Chemicals	Check Disposal System Fit Grease Trap
Glass Finishing	Ground Glass / Chemicals	Fit Filter System
Hair Dressing	Oil, Hair	Fit Filter System
Hospital	Suspended Solids	Check with Drainage / Health Authority
Jewellery	Plating, Cutting, Grinding, Suspended Solids	Check with Drainage / Health Authority
Laboratory	Chemicals	Auto Clave Balancing Tank, check with Drainage / Health Authority
Laundry	BOD, suspended solids (int.) Ammonia, Boron etc.	Lint Separator, check with Drainage Authorities
Medical Centre	Suspended Solids, X-ray (slider)	Check with Drainage / Health Authority
Morgue		Check with Drainage / Health Authority
Night Clubs with Food	Chemicals, Suspended Solids, Oil, Grease	
Nursing Home	Chemical, Suspended Solids	Fit Authorised Grease Trap
Options (Grinding Glass)	Ground Glass, Suspended Solids	Fit Air Filter
Shell Fish Factory	Suspended Solids, Fish Gut, Shell	Fit Filter System to remove Suspended Solids
Photographic Processing	Suspended Solids, Chemicals	Check with Drainage Authorities
Pizza Shop	Suspended Solids, Oils, Mayonnaise, Sauce	Fit Grease Traps
Sandwich Shop	Suspended Solids, Mayonnaise, Butters	Fit Grease Traps
Service Station (food)	See Auto Repair; Suspended Solids, Coffee, Sugar, Juices	Fit Grease Traps
Ship to Shore	Sanitary & Kitchen waste should be handled separately	Check with Drainage / Health Authority
Swimming Pool	Suspended Solids/Chemicals	Silt Tank, Check with Drainage Authorities
Vehicle Washing	Silt, Oil, Chemicals	Fit Oil Separators
Veterinary	Suspended Solids, Animal Feeces	Check with Drainage / Health Authority



1. Alutrap fitted above floor excludes the requirement to cut the floor slabs. Cutting slabs may affect the integrity of steel reinforcement / waterproof seals and hanging traps can interrupt services in unit situated below slab.
2. Using an above floor Alutrap reduces blockages in pipes embedded in concrete or in ceiling voids.
3. Alutrap is air sealed. (If main pipes are properly vented traps require no venting).
4. At design stage care taken to position sinks and pipe work from the equipment requiring trapping may reduce the number of Alutraps required. A space of at least 250mm is required above the lid to facilitate cleaning. Sink U-bends must not touch the grease trap lids and a minimum space of 35mm is required between the U-trap and the lid.

## Pipe Work

1. Main pipe work within commercial kitchens should be 50mm.
2. Short connections of appliances to main pipe work should be 40mm.
3. Wash hand basin connections to pipes should be 32mm.
4. Pipe work should be a minimum of 20mm from wall to allow for clearing underneath.
5. All pipe runs should be provided with adequate supports.
6. The fitting of concealed pipes in block walls "by chasing method" must be authorized by a structural engineer to ensure wall integrity.
7. Extreme care should be taken to ensure walls are not chased too deeply on each side to accept services.
8. Connections from fittings should enter walls between 200mm - 250mm from finished floor level.

## Floor Gullies/ Channels

In the kitchen it is recommended that these to be kept to a minimum and wherever possible should have a sealed lid.

Channels are suitable for large commercial or industrial kitchens where wash down is carried out using hoses or large quantities of water. As a potential health hazard if not properly maintained, gullies and channels should be given careful consideration in terms of their requirements.

## Sinks

1. Waste pipes from sinks/grease traps should not discharge into floor gullies.
2. We recommend that they are connected to a roddable stub stack.
3. Pipe work should be manufactured to a recognized standard required for the job in hand and when laid in the floors, walls or under concrete floor slabs. Care should be taken to ensure that rodding points are installed in case of blockages in locations where access is difficult.
4. P-traps should be installed under all items of equipment connected to the drains to prevent malodors backing up through pipes.

## Appliances

Dish/Glass Washers, ensure an adequate trap is fitted between machine & waste-pipe inlet to ensure an odour / air borne bacteria seal, Ice makers, Combination ovens, steamers must all have an air brake to prevent waste water (bacteria) entering the chambers.

## Pipes through a Structural Floor

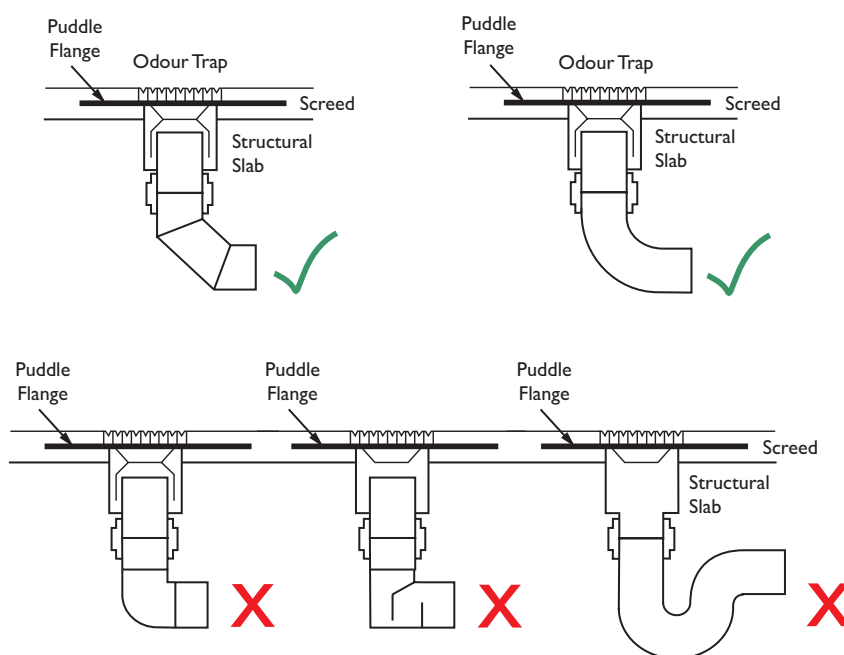
Structural engineer must give permission for any floor penetrations.

In multi-story blocks the civil authority regulations must be consulted on Fire Regulation / Protection.

Pipes taken through slabs may require puddle flanges to prevent water penetration through the slab.

Pipes passing under floors must have a long radius bend fitted to assist cleaning (if it is required).

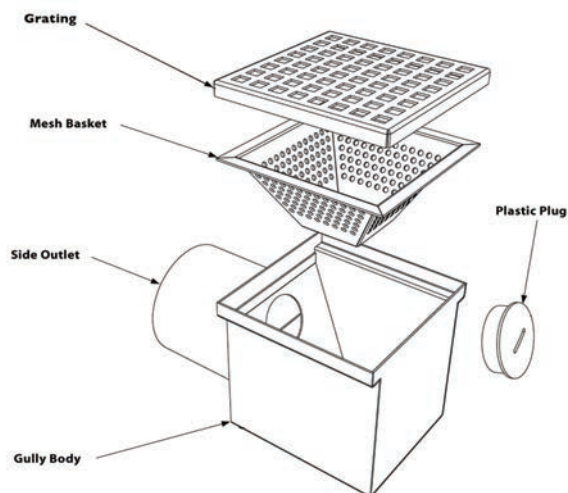
If gully is fitted through the floor, trap must give access for rod cleaning of the long radius bend and pipe run.



## Guidance for Underground Pipe Work

Guidance for underground pipe work

1. It is important to specify & ensure fitting of pipe work to a recognized standard.
2. It is sensible to ensure contractor / subcontractor understands regulation & your installation requirements.
3. At design stage ensure access points will be accessible in the finished project & that these are actually fitted.
4. Maintenance on drainage system is large part of budget. Design/installation could substantially reduce this cost.
5. Design / installation should ensure bends / tees / junctions have long radius or swept feature to allow easy access for rodding / cleaning jetting function. This will also reduce potential for blockage.



## Gullies

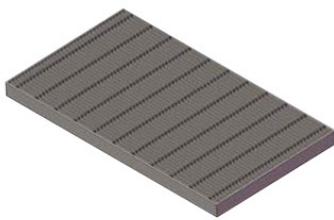
Gullies are height adjustable for ease of installation and incorporate removable gratings, odor traps, rodding ports and waste baskets, allowing full bore access. Outlets are vertical or horizontal. Gullies are ideal for Commercial and Industrial Kitchens, Food & Beverage, Chemical, Pharmaceutical Industries, Building Exteriors, Parking Buildings, Underground Garages, etc.

## Gratings

Gratings are especially suitable for direct discharge from equipments. The free drainage area is up to 90% of the surface area achieving a virtually anti-splash installation. Smooth Mesh is available in standard and heavy duty for use in general drainage and fork lift area, Non-Slip Mesh is used in kitchen and production areas, Perforated is used in production and bare foot pedestrian areas.

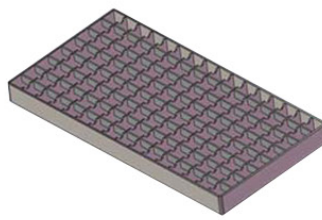
### **ALU-SM** **Square Mesh** **Smooth 23mm x 23mm**

(Ideal for garbage room and warehouse applications)



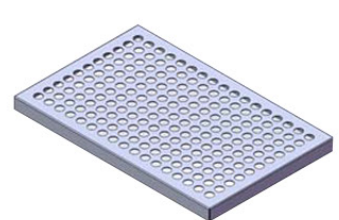
### **ALU-NS** **Square Mesh** **Non Slip 23mm x 23mm**

(Ideal for commercial kitchen and industrial areas)



### **ALU-LD** **Perforated**

(Ideal for bare feet and shower applications)



## Channels

Drainage Channels are designed with a built in fall and a range of edge profiles to accommodate all types of floor finishes. Anchors and leveling bolts are provided to ease installations. Lengths are only limited by transportation logistics.

The excellent smooth surface finish of stainless steel provides a self cleansing velocity for liquids at very shallow gradients. The self-cleansing velocity is 0.75 m/s. Velocities below this figure require manual flushing.

Widths of channels will depend on the splash area below discharging equipment or appliances and should be a minimum 200mm wide overall for wash down installations.

The discharge of the drainage channel is relative to the flow rate capacity of the outlet gully. Discharge capacities of both channel and gully will be reduced when conveying water-borne solids. Typical gradients are 1%. (1:100) for liquid waste, 2% (1:50) for water-borne solids.

The channel edge detail will depend on the floor finish, examples being tile, resin or vinyl. Channels can be designed to provide vinyl one side and resin or tile the other.

For applications where heavy loads and/or thermal shock are anticipated, an expansion frame around the perimeter is recommended.

The expansion frame is supplied factory tack welded to all profiles.

- All our drainage products are manufactured in Stainless Steel Grade 304 or 316.
- Can be made to suit site requirements.
- Back and Side Inlets can be fitted to clients requirements.
- Falls can be incorporated to suit floor depth.
- Channels over 2.5m will have flanged joints.
- Filter baskets are recommended for all outlets.
- We manufacture and design Gullies and Channels for commercial kitchens.
- All Gullies and Channels are designed to allow easy rodding access and maintenance once installed.
- Gratings for channels are made to fit dishwashers for cleaning and sterilizing.
- Width Standard 150mm, 200mm, 300mm, 400mm, 450mm.

Aluline recommends the use of grease separators to ensure that all your clients are fully compliant with current environmental legislation. According to Part H of the current edition of the Building Regulations in England and Wales, Drainage serving kitchens in commercial hot food premises should be fitted with a grease separator complying with BS EN1825-1, and designed in accordance with BS EN1825-2, or other effective means of grease removal.

The Scottish Building Standards are even more explicit in their call for separators, stating:

**Where a discharge into a drainage system contains oil, fat, grease or volatile substances, for example from a commercial kitchen, there should be facilities for the separation and removal of such substances. Separator systems are used in a wide variety of situations to fulfill a number of different requirements. It is important to establish why a separator system is needed and what specific function it is expected to fulfill before selecting the appropriate size and type of installation.**

**Separators should be constructed and installed in accordance with the following draft European standards.**

**A: BS EN 858-1: 2002 for light liquids such as oil or petrol**

**B: BS EN 1825-2: 2002 for fat or grease**

Companies who advocate dosing systems without grease traps are effectively encouraging non-compliance in relation to these regulations. They argue that by dosing the drains, clients are adopting “other effective means of grease removal”. In addition to the regulations currently in place, if a commercial kitchen has a blockage or pollutes the drainage system, the relevant authorities’ have the power to fine the restaurant operators (and in extreme cases the individuals working within the kitchens). If that site has no grease separator installed, then they have little or no protection from these fines and charges (which can vary from hundreds to thousands of pounds depending on the severity of the pollution. Therefore an installed and well maintained grease separator indicates to authorities that operators have used due diligence.

## In Practice

The idea of biological dosing or bioremediation is sound, and in theory it can be argued to be an effective solution, however in practice, it has its limitations.

In our experience, dosing as a stand alone solution does not work effectively. This is due to the amounts of food waste discharged into the drainage system, which the bacteria cannot digest in the time allowed. Some of the types or strains of bacteria used in biological drain dosing solutions can digest food particles, but they take a very long time to do so, and require the right conditions.

A second, significant limitation of dosing only systems is that the bacterial liquids that they dispense into the drains flows directly into the sewer system. This means that there is nothing by way of retention time to allow the bacteria to colonize within pipes. By the time the dosing liquids have reached a point within the drainage system where they can treat a retained amount of water (e.g. in a manhole or pumping station, other pipes have branched into the drain run, and more often than not transport antibacterial chemicals from hand wash basins, or harsh chemicals from floor gullies within the waste water. These chemicals then kill or retard the bacteria making them much less efficient.

In truth, biological drain dosing would be an “effective means of grease removal” if no food waste was discharged into the drainage system (which is unrealistic) and if no anti-bacterial chemicals were present in the drains to kill them off or slow their action (i.e. all staff in catering establishments adopted dry cleaning rather than wet cleaning and only used paper towels when cleaning and sanitizing, rather than cloths which are then rinsed in sinks). In the real world this is difficult to enforce.

You and your clients are aware of the problems also. Following recent problems at a site in the West Midlands where no grease trap was installed, food waste, oil and grease (FOG) collected in the drains (along with some building debris) and caused the drains to block, resulting in the need to dig out the drains at large expense. While a grease trap would not have made any difference in respect of the builders’ waste within the drains, it most certainly would have assisted in this case by preventing the quantities of FOG from collecting in the pipes.

One of the biggest problems facing operators is that the performance of a dosing system cannot be measured immediately. For example, it may take a very high volume site 6 months to block the drains, while in other sites it could take three times as long. This can give the impression that a system is working when in fact it is not.



# Grease Separator Systems

Drainage serving kitchens in commercial hot food premises should be fitted with a grease separator complying with BS EN 1825-1:2004 and designed in accordance with BS EN 1825-2:2002 or other effective means of grease removal.

The reasons that grease separator systems have been historically effective are simple.

- The separator catches food waste and retains oil and grease for treatment, removal and disposal.
- Due to its location within the pipe system, the grease trap presents a body of water to be dosed, allow retention time for the bacteria to digest the fat and grease. Also, if located correctly, the grease trap can be installed in a position that prevents large quantities of antibacterial or other harsh chemicals from affecting it (e.g. where hand wash basins and dishwashers can be allowed to bypass the traps).

In essence a grease trap allows problem areas (wash up sinks, combi ovens etc) to be isolated and dealt with, all whilst being above ground, so that if a blockage were to occur, it is in an easily accessible area and can be dealt with relatively cheaply and quickly.

We understand that operators can be critical of grease traps, finding them unpleasant to maintain at times. The most frequent complaint we get is that they smell or become blocked, and both of these problems are directly attributed to excess food waste being collected within them. The easiest thing to do is to ask yourself, “If the grease trap was not present, where would all of that food waste go?”

## Biological Grease Traps

The reasons for dosing grease traps are threefold:

- Using bacteria in the grease traps assists the breakdown of fat and grease making the trap more efficient, but this is due to the retention time that the trap affords.
- As the grease trap is made more effective by including dosing, a smaller unit can be used when using dosing (Alubio-Traps) which allows compliance with BS EN 1825-1:2004.
- The bacteria within the grease trap helps to prevent the build up of anaerobic bacteria (which create the foulest odours) resulting in an improvement in the odours when maintenance is required and the lids or covers are removed.

## Benefits of Aluline Equipment and Service

All Alutrap above ground grease separators are manufactured and designed to be airtight, to prevent airborne bacteria escaping from the trap. This ensures that (so long as the seals are intact) no odours or water can escape into the kitchen. Our separators are made this way to satisfy environmental health concerns and prevent any contamination within the kitchens.

Aluline's policy of training staff when commissioning new installations ensures that operators not only know how to maintain the equipment, but also how to assess when it is required. Our engineers then provide a reactive service to supplement this training. Also, by providing a health & safety approved cleaning kit, staff can maintain the equipment in a safe manner and prevent cross contamination within the kitchen.

This section covers the installation, material, maintenance and cleaning of fixtures, fittings and equipment in commercial kitchens.

Commercial kitchens are required to provide adequate fixtures, fittings and equipment necessary for the production of safe and suitable food. Fixtures, fittings and equipment covered in this section are those items installed as part of the fit out, such as refrigerators, preparation benches, display units and shelving, and not loose utensils such as chopping boards, cutlery or mixing bowls.

### **Glossary**

Installation: The process of being placed in position for service or use.

Process: An activity of preparing food for public consumption.

### **4.1 General Requirements**

Fixtures, fittings and equipment within a food premises must be adequate for the safe production of food. All surfaces must be non Porous, i.e. stainless steel (Wood is not to be used in the kitchen area).

The operations of a kitchen require adequate fixtures, fittings and equipment for the following operations:

- Serving food.
- Packaging.
- Transporting.
- Storing recalled food or food for disposal.

Depending on the activities undertaken, the following equipment may be required:

- Cool rooms and refrigerators for chilled storage.
- Benches and work tables for preparation.
- Ovens, stoves and other such equipment for cooking.
- Hot boxes and ovens capable of holding food at 63°C or above (hot hold).
- Display units that protect food from contamination and hold the food at 63°C or above (hot display).
- Display units that protect food from contamination and hold the food at 5°C or below (chilled display).
- Blast chillers that can reduce the temperature as specified in local regulations.
- Portable RCDs (if electricity supply for movable equipment is not RCD protected).

### **4.2 Installation**

All equipment should be installed so that it can be easily cleaned and prevent any food spillage building up behind or underneath the equipment.

All equipment should be:

- Be easily moved for cleaning.
- Built against the wall or other equipment and the joints must be sealed. Where feasible, all equipment on lockable castors with significant length of gas hoses to allow equipment to be moved to enable to clean and service easily. (e.g. Combi's have a waste pipe, to allow the lining up of the waste from the combi oven to help ensure no spillage on the floor after cleaning. A simple solution would be a tundish secured on a locating bracket fixed to the floor).
- Two castors located at the back with legs at the front. Note: The weight of the unit must be considered for Health & Safety.

### 4.3 Specific Requirements

- Refrigerated counters; (either a number of refrigerated cabinets or a frame in one piece), are required to have one continuous top of stainless steel, free of open or rough joints, cracks and crevices and rough surfaces.
- Counters and bars, food display units, window displays and self-service display cabinets and bain-marie are required to have all surfaces (including internal surfaces) smooth, durable, impervious and free from cracks, crevices and cavities.
- Cupboards and cabinets should have a smooth, washable finish for all surfaces and removable shelves.
- Counters for food selection and/or preparation by the customer are required to have a protective barrier to provide a physical barrier between the customer and the food, e.g. sneeze guards.
- Dumb waiter (food conveyors) must have a smooth impervious surface, free of crevices and open joints. Vertical conveyors must have the wall of the shaft made from a smooth material, free of any crevices or cracks. Access must be provided for cleaning.

### 4.4 Materials

Surfaces in contact with food must be easily cleaned, and not be able to absorb grease, food particles or water. Stainless steel: suitable in direct contact with food. It is durable and can withstand chemicals. It is available in various grades which should be chosen based on the application.

#### **Stainless Steel**

Should only be used in a kitchen with 304 grade steel. This has a low content of iron and will not rust.

#### **Iron and mild steel**

Should not be used in the kitchen.

#### **Timber products**

Timber should not be used in a kitchen. Only in specific circumstances such as butchery and some bread-making operations should timber be used.

#### **Plastics**

Plastic laminate and solid surface materials are suitable surfaces for food preparation. All surface should be non porous to ensure ease of cleaning. Note; when surface becomes scored or scratched it should be replaced.

### 4.5 Cleaning, Sanitising and Maintenance

A food business must maintain food premises to a high standard of cleanliness and ensure there is no accumulation of food waste, dirt, grease or other visible matter.

A clean and sanitary condition is the condition of a surface or utensil where it is clean, and has undergone application of heat and chemicals or other processes, so that the number of micro-organisms on the surface or utensil has been reduced to a level that does not compromise the safety of the food with which it may come into contact and does not permit the transmission of infectious disease. Sanitiser should only be used with a dry wipe and spray and should never be put down the sink or drains.

#### 4.5.1 Cleaning and Sanitising of Equipment

A food business is required to sanitise eating and drinking utensils and food contact surfaces that are likely to contaminate food. A food premises is required to provide equipment for cleaning and sanitising.

All food premises require that each prep area should have their own dedicated sinks and wash hand basins to prevent cross contamination. Wash hand basins should be separate with a physical/air gap to stop cross contamination.

### Walls & Floors

Practice of sanitising walls can cause problems when disposing of the sanitizer as this should never go into the drainage. It has been documented that bacteria within three hours have re-colonized on these areas where organic matter has not been cleaned. The use of sanitiser is not recommended as a proper cleaning method, the areas should be thoroughly cleaned, removing all organic matter. Using sanitizer to clean floors and walls is not recommended. A cleaning agent that will remove all organic matter from walls and floors leaving a clean surface with no material for germs to re-colonize is advised (new products actually containing bacteria are being designed for this purpose). Sanitiser solution should never enter the drainage network.

### Touch Surfaces

All touch surfaces e.g. handles, table tops, doors, wash hand basins, switches, cutlery boards should be sanitised using a spray bottle and paper towels, again the removal of all organic matter is paramount. Sanitising of all knives, cooking, drinking utensils should be done in the dishwasher / glass washer. It is advisable that all staff have their own plates, mugs, cups, etc, to help with preventing cross contamination. Any common utensils should be sanitised after each person uses it.

### Wash Hand Basins – WHB

Wash hand basins should be positioned in such a way that the water droplets from hand washing, do not come in contact with surrounding work surfaces or any places where gram negative bacteria can colonize.

The practice of clean wash hand basins is a cause for concern. The new especially designed Quadwash units will ensure proper hand cleaning / sanitising and greatly reduce the risk of infection. It will also reduce water use, the cost of paper towels and disposal. These units can be fitted with monitors to teach hand washing practice. They can also be fitted with a control unit recording hand wash usage of individual staff. The recording system can be set to register toilet visits and can be used to track staff movements throughout the facility, especially in food production facilities, hospitals, etc.

### Legionella

Proper cleaning of wet areas will reduce the risk of water borne diseases e.g. Legionella, E. coli and other nasty infections which can be transmitted through water.

#### 4.5.2 Sinks

Sinks should be provided to suit the largest piece of equipment being cleaned. Larger pot sinks may be required to supplement standard sinks.

Sinks are required to have water at these temperatures:

- Between 46°C - 48°C for washing operations.
- Not less than 80°C for sanitising (only where sanitizing takes place at the sink).

Adequate space should be provided adjacent to sinks for holding, draining and drying.

#### 4.5.3 Janitorial Sink

A janitorial sink with hose connections should be provided for disposal of waste water in a separate room (from floor washing etc.)

#### 4.5.4 Dishwashers and Glass Washers

The dishwasher and glass washer need to be able to wash and rinse in one continuous operation and dry rinsed utensils by the end of the cycle.



### **Wash Temperature**

This is the temperature inside the dishwasher when it is washing. The wash temperature is typically between 55°C and 56°C.

### **Rinse Temperature**

This is the temperature of the final rinse. To provide thermal disinfection the dishwasher must rinse at 82°C or above, for at least 12 seconds.

### **Rinse Temperature Interlock**

Fitted to the higher specification machines, this device extends the wash cycle (if needed), to ensure the correct rinse temperature is reached before the dishwasher can complete the wash, then go into the rinse cycle. Machines without rinse temperature interlocks can wash and rinse before they are fully up to temperature and produce unsanitary wash results.

**This section refers to the appropriate disposal systems for specific waste products, adequate storage, ideal location and recycling. Proper storage and disposal of waste in the kitchen is vital in achieving a sanitary and pest-free environment that will reduce contamination.**

### Glossary

Impervious: A material that is, or is made to be, resistant to wet substances penetrating its surface in any way.

### 5.1 Disposal Systems

Disposal systems are the actions performed to remove waste in a commercial kitchen from the premises. The kitchen's waste disposal system should be developed to prevent the occurrence of injury resulting from manual handling tasks (e.g. lifting of waste containers).

**Appropriate measures need to be taken to dispose of the following:**

- Food for disposal.
- Grease.
- Garbage.
- Recyclables.

Food for disposal is food that is:

- Previously served.
- Unsafe or suspected of being unsafe.
- Unsuitable or suspected of being unsuitable.
- To be recalled or returned.
- Out of date.

#### 5.1.1 Food / General Waste Disposal System

Food disposal system procedures ensure that food for disposal is not used in any food preparation. All food for disposal must be clearly identified.

**Food for disposal must be isolated until it is:**

- Returned.
- Destroyed.
- Disposed.
- Altered in a way that deems it unsuitable for human consumption.

The disposal system for food begins with identifying and then accumulating the waste.

**There should be waste facilities located:**

- At the food preparation area.
- Near the washing area for the served food that has not been eaten.

Waste facilities are usually bins with lids lined with green bio-degradable bags. Garbage chutes may also be used.

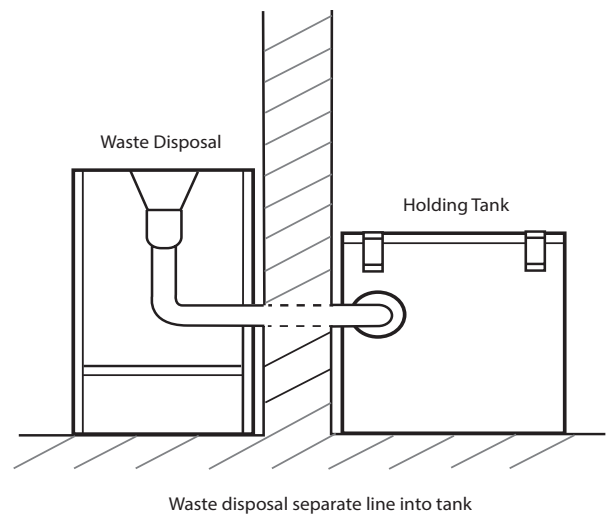
**Bins must be easily accessed:**

- Accessible to all areas in the kitchen.
- All bins in the kitchen must have a lid.

Waste disposal/Macerator, when used in the kitchen should only be piped into a holding tank and under no circumstances should it go into the drainage. The holding tank should be located in a separate room from the kitchen. This will enable the emptying of the waste food and rule out any cross contamination within the kitchen area.

Waste should then be relocated to a dedicated waste disposal area, which is usually outside the back door or in a separate room. When transporting the waste it should never pass through the kitchen or restaurant area. It is common practice to take the bins or green bio-degradable bags outside to an industrial bin where they are emptied. If the entire bin were taken outside it should preferably be on wheels for easy transport.

Industrial bins must be enclosed, sealed tightly with a lid, and opened only when filling. Exposed waste left outside will attract animals and pests. To avoid unpleasant smells from the decomposition of waste, a garbage contractor should collect it at adequate intervals.



### 5.1.2 Recyclable Disposal System

When disposing of recyclable materials such as bottles and cans, it is common practice to fill bins or crates within the kitchen before moving the crates or bins outside or into a separate room for collection. If a room is used for waste collection, it should be away from food storage and preparation areas to avoid contamination.

### 5.1.3 Grease Disposal System

Qualified/trained persons should empty grease traps and arrestors on a regular basis.

### 5.1.4 Garbage Chutes

Where garbage chutes are used for waste disposal, they should be made of stainless steel. If any part of the chute is inaccessible, it should include a built-in washing facility.

## 5.2 Storage

### 5.2.1 Waste Storage Containers

Every commercial kitchen requires both internal and external storage containers to hold waste and recyclable material that the kitchen produces, until it is dealt with accordingly. To reduce the possibility that waste collection will lead to food contamination and/or attract pests.

#### Waste containers should be:

- Sized to handle the expected volume of waste.
- Made of an impervious material (e.g. stainless steel, plastic will hold bacteria).
- Clearly identified.
- Appropriate for the contents.
- Adequate to fully enclose its contents.
- Able to be cleaned with ease and with adequate results.
- Designed and maintained so as to be safe and not to risk health and safety.

### 5.2.2 Storage areas

Waste storage containers require dedicated storage areas. They can be kept in an area outside the kitchen or in a room that is designated for that purpose. If an internal room is used it should:

1. Be located away from food locations to avoid possible contamination.
2. Have adequate ventilation.
3. Prevent the entry and harbouring of pests.
4. Ensure water that has been used in cleaning the area exits only through a drain into grease trap and does not escape into other areas.

### 5.3 Location

Storage areas for waste should be located away from food storage and preparation areas to avoid contamination. Waste material should never pass through the kitchen or restaurant area.

### 5.4 Flooring

The Floor of waste collection area should be:

1. Of solid construction.
2. Made of impervious material.
3. Have bunds for waste oil.
4. Graded into drainage point with an underground grease trap.

### 5.5 Cleaning

Whether internal or external, the waste collection areas and waste containers will need to be washed down regularly. It is recommended they are washed down daily. For this reason there should be a tap and hose connection in the vicinity. It is recommended that the bins are also washed daily and graded into a drainage point with and underground grease trap.

The design of wash down areas must include special provisions to prevent contaminants and cleaning chemicals entering the storm water or sewage system. A grease trap could be fitted.

This section provides information on flooring within a commercial kitchen area, including drainage and selection of materials.

### Glossary

<b>Coving:</b>	The curving of a floor material at the intersection of the floor and wall surfaces, so as to make a smooth and continuous curved skirting.
<b>Epoxy resins:</b>	A resin based floor material that is sealed for commercial kitchen use and is impervious to moisture and does not promote the harboring of dirt or mould.
<b>Flooring substrate:</b>	Base surface to which flooring material is applied.
<b>Impervious:</b>	A material that is or is made to be resistant to wet substances penetrating its surface in any way.
<b>Welded joints:</b>	Joins in plastic-based floor materials heat-treated to create a joint that will not harbour moisture, dirt or mould when cleaned. The term also applies to metal floor surfaces.

### 6.1 Floor Finishes and Serviceability

Floors in food premises must be able to be cleaned effectively and thoroughly, must not absorb grease, food substances or water, harbour pests, and should be laid so as not to cause pooling of water.

Following is a list of suitable commercial kitchen flooring surfaces:

- Stainless steel with a non-slip profile and welded joints.
- Ceramic tiles with epoxy grouting.
- Quarry tiles with impervious sealer.
- Polyvinyl sheet or tiles with heat welded joints.
- Steel trowel case hardened concrete with epoxy sealant.

The use of PVC sheets or tiles should be avoided adjacent to hot fat appliances such as deep fryers.

It is imperative that all commercial kitchen floors and staff amenities floors have a non-slip surface. These surfaces should meet the requirements of BS EN 13036-4:2011.

In all cases, installation should be undertaken by appropriately qualified tradespersons to ensure proper adherence to the substrate, and adequate sealing of joints to maintain an impervious surface.

Flooring should be cleaned and maintained on a daily basis in accordance with manufacturer's instructions in order to maintain slip-resistance.

### 6.2 Floor Drainage

The substrate of commercial kitchen floors should preferably be concrete, and graded to floor drainage outlets to prevent pooling of water.

Special attention should be given to the installation of floor finishes at the junction drainage outlets to prevent the build-up of dirt and grease and maintain the integrity of the waterproofing.

### 6.3 Floor and Wall Intersections

The junction of floor and wall surfaces can become a source of contamination through the build-up of grease and dirt. It is recommended that the junction be coved to assist with cleaning.



The internal walls and ceilings of a commercial kitchen must be appropriately designed and constructed to achieve required hygiene levels.

### Glossary

<b>Coving:</b>	The curving of a floor material at the intersection of the floor and wall surfaces, so as to make a smooth continuous curved skirting.
<b>Epoxy grout:</b>	A resin and generally cement based material that adheres and seals tiles for commercial kitchen use and is approximately 99% impervious to moisture.
<b>Fire resistance level:</b>	The time it takes for a structural element to catch on fire.
<b>Impervious:</b>	A material that is or is made to be resistant to wet substances penetrating its surface in any way.
<b>Sealed:</b>	A material that has been coated in a particular way so as not to let moisture penetrate its surface.
<b>Suspended acoustic tile ceiling:</b>	A ceiling that is suspended from the roof or floor above, and comprises individual ceiling tiles in a grid.
<b>Welded joints:</b>	Where joins in plastic based floor materials are heat treated to create a join that will not harbour moisture, dirt or mould when cleaned or after having something spilt on them.

### 7.1 Ceilings

The minimum height for a ceiling in a commercial kitchen should not be less than 2400mm. This includes ducting, all preparation and storage areas. All ducting should be enclosed above the ceiling to prevent dust and insects collecting and falling in food.

The finished ceiling surface must not have any perforation or exposed joints, cracks or crevices. This is to prevent the contamination of food and enable effective cleaning of the surface. This also ensures that the ceiling is pest proof.

Suspended acoustic tile ceilings are not permitted in food preparation areas or where food is displayed or served. They are difficult to clean to the required hygiene standards and may harbor dust, grease and insects at the top of the drop ceiling.

The wall-to-ceiling junction must be tightly joined and sealed. The junction must be constructed so that no dust, grease or food particles can collect in the joint.

Where a sealant is used in the ceiling joint it must be made of a material that is impervious and washable.

### 7.2 Walls

The finishes on the walls must be impervious to grease, food particles and water.

The finish must be smooth and even. The surface should have no buckles, ledges or exposed fixings.

The finished surface of the walls must be easy to clean.

Recommended finishes include:

- Ceramic tiles with anti-bacterial grout.
- Stainless steel or aluminium sheet with welded joints and sealed fixings.
- Laminated plastic sheeting.
- PVC sheeting, this is welded at the seams.

This section refers to the management of air quality inside a commercial kitchen, the amount of airflow, its supply and the exhaust of airborne cooking waste.

An effective commercial kitchen ventilation system requires 'air balance', in which the exhausting of fumes, smoke, grease and steam is balanced by the introduction of fresh, clean air. In busy kitchens where people are generally working close together there is a need for some form of controlled ventilation and air conditioning. The kitchen exhaust system is an essential part of the cooking process. The presence of fumes, smoke, grease, steam and vapours pollutes the atmosphere, may interfere with food flavours and aromas, and cause distress to staff.

### Glossary

<b>Airborne:</b>	Transported by the air.
<b>Duct:</b>	Tube or channel for conveying air.
<b>Make-up air:</b>	The air needed to replace the waste air that has been extracted from the room.
<b>Vapour:</b>	The air-like substance into which certain liquid or solid substances can be converted by heating.
<b>Vent:</b>	An opening allowing air to pass out of or into a confined space.

### 8.1 Natural Ventilation

An adequate supply of clean air must be provided and maintained within a commercial kitchen using gas. The simplest form of ventilation is natural, involving the use of windows, vents and skylights. These should allow sufficient airflow to maintain a healthy working environment. All vents should be screened to prevent flies and be rodent proof.

If no replacement air by natural or mechanical means, the ventilation will suck the air from the restaurant drawing in the warm air / cool air from the restaurant increasing the running cost. Replacement air provides the airflow required by exhaust systems. If replacement air doesn't come into the room, then the exhaust hood may not capture and contain airborne cooking waste due to the reduced airflow. This could allow cooking odours and waste air to escape into the dining area. If there is no replacement air in kitchen, when using gas appliances, lack of replacement air can cause the gas burners to go out because of lack of oxygen.

Considerable care should be taken where doorways and windows are used for natural ventilation that fumes, dirt and rodents from surrounding premises are not drawn into the kitchen.

### 8.2 Exhaust Systems

Exhaust systems are made of a number of interdependent units. Exhaust hoods, exhaust fans, make-up air units, and packaged rooftop HVAC (Heating Ventilation Air Conditioning) units all need to operate within defined parameters to complement one another and to maintain peak performance.

The exhaust canopy must cover all cooking appliances with an overhang of 150mm to capture the cooking fumes.

An effective exhaust system should get rid of:

- Heat.
- Particulate matter.
- Grease laden steam.
- Cooking vapours.

Exhaust hoods should be placed above cooking equipment and have the ability to capture and contain the airborne waste matter produced by cooking equipment.

Exhaust fans must be capable of removing the collected airborne wastes at a rate equivalent to their generation, and make-up air units need to be capable of replacing an equivalent volume of the extracted waste fumes. The replaced air can be heated, cooled or dehumidified as necessary by the HVAC unit working in unison with the other units.

The important issue here is interlocking. This means that where there is a ventilation hood over the cooking area, there is a gas supply cut-out mechanism between the cooking equipment and the ventilation hood. If the extraction fan should fail, the gas supply to the kitchen equipment will be automatically turned off.

Interlocking regulations now prevent the operator from turning on the gas equipment without turning on the ventilation. If the ventilation fails there is a bypass system which gives a limited time in order to get an engineer to fix the problem. The rules say that any new kitchen using a fan-assisted extraction system must have this interlocking gas cut-out system. Also, if more than half of the appliances are replaced in existing kitchens, then an interlocking gas cut-out system must be fitted.

The location of make-up air units in the commercial kitchen should be positioned as far away as possible from the source of the pollutants to maximize cross ventilation. All exhaust gases should be discharged to the atmosphere through ducts and careful consideration should be given to the separation of exhaust discharge from air-intakes and from neighbouring properties.

### 8.3 Airflow Plan and Design

It is important that all commercial kitchens have an effective airflow plan. The plan should take into account all equipment that produces waste air (cooking equipment and dishwasher) and then balance this with clean make-up air. The extraction of waste air and intake of clean air should form a stable airflow pattern inside the kitchen. The kitchen staff should all be aware of this plan, understand how it works and be prepared to act if any problems arise.

### 8.4 Mechanical Air Replacement

Mechanical Air Replacement (MAR) intake must be located as far from the exhaust outlet from the kitchen as possible and consideration of the surrounding buildings e.g. paint/car body shops, due to the odours these create.

MAR should have a very fine filter to prevent the smallest flying insects entering the kitchen. These can destroy prepared food.

Contractors must record all maintenance activity in maintenance schedules.

### 8.5 Environmental Considerations

To reduce energy consumption through back air conditioning, food premises should consider the following in the specification and design of ventilation systems:

- Utilise natural ventilation where possible and where air conditioning is required use efficient central plant with local controls over package units if possible. Where this is not possible, select energy efficient package units.
- Undertake an energy audit prior to a new fit out and develop an energy reduction strategy as part of the fit out services design brief.

This section provides recommendations for the design of lighting in a commercial kitchen.

### Glossary

<b>Diffuser:</b>	A cover over a light fitting which promotes an even distribution of light throughout the area.
<b>Glare:</b>	Light that is too bright or intense.
<b>Illuminance level:</b>	The amount of light falling on a surface.
<b>Luminance level:</b>	The amount of light that is reflected from a surface, such as walls, floors and ceiling.
<b>Splash back:</b>	An area of impervious material such as metal, tiles etc which is fixed to a wall behind a workbench or sink.

### 9.1 General Requirements

Adequate and properly designed lighting is essential in a commercial kitchen for staff to efficiently do their tasks including cooking, cleaning, food preparation and presentation. The area should be as free from glare and unwanted reflections as is practicable.

The design of a lighting system should take into account:

- Available natural light.
- Required luminance levels (lux) for the tasks being performed.
- Reflectance of surfaces.
- Emergency lighting requirements.

A properly designed lighting system will help to reduce energy costs and improve the working environment for staff. In addition, electrical supply systems and emergency lighting must comply with BS 5266: part 1:1999. It is recommended that qualified electrical engineers, designers and/or tradespersons are engaged to ensure compliance.

### 9.2 Natural and Artificial Lighting

The relationship between natural and artificial lighting is important to consider when lighting a commercial kitchen. While artificial lighting will normally be the main source of light, it is desirable to include natural light sources. Ideally windows in the kitchen should not be less than 10 percent of the total floor area, and should look out onto the sky or open space.

Windows and skylights can provide views and allow light into a space, improving the staff working environment, however they can also be problematic as a source of glare. Careful consideration should be given to the positioning of windows and the interaction between natural and artificial light levels.

The recommended luminance level for a commercial kitchen's general working area is 160 lux. For food preparation, cooking and washing areas the luminance should be 240 lux. Dessert presentations and cake decorating require 400 - 800 lux.

### 9.3 Reflectance

Interfering reflections and glare can cause reduced visibility and become a source of distraction and annoyance.

Light will reflect off walls, ceilings, floors and work surfaces. Therefore, the colour, material and type of finish of these surfaces should be carefully considered. The reflectance from these surfaces contributes to the overall luminance level of the area.

Taking these considerations into account will result in good visibility conditions for the kitchen.

Ceilings occupy a substantial amount of the field of view. For large areas where there is indirect light penetrating the space, it is advisable to render the ceiling white or near white. Regardless of the size of the rooms the ceiling should have a reflectance level as close to 70 percent as possible.

Wall reflectance is important even though its contribution to the distribution of light is small. The colours and finishes should be selected taking into account contrasts between surfaces. For example, there should be a difference between the bench and wall. Finishes should not provide glare yet provide enough reflective light for staff to safely and effectively carry out their tasks.

### 9.4 Light Fitting Considerations

Light fittings need to be installed in such a way that will not contribute to food contamination. They should also be designed and installed in a way that facilitates ease of cleaning. Fittings should be generally recessed or surface mounted in ceilings, the fittings should have a sealed unit to stop the dust falling from the lights e.g. Perspex cover. Suspended fittings will collect dust and become a source of contamination to food.

Properly designed diffusers should be installed to assist with even distribution of light and contain fragments in the event of a globe shattering.

The luminance level should be made at least 100 lux higher than the recommended level, because of a light loss factor that occurs over time.

### 9.5 Emergency Lighting

- Emergency lighting ensures that patrons and staff are able to be safely and effectively evacuated from the premises.
- Emergency lighting turns on automatically from its own power supply whenever there is a power failure.
- The emergency lights must be positioned at exits, at any point where there is a potential hazard (e.g. a change in floor level) and at regular intervals to maintain minimum lighting levels.
- The location of emergency lights should not cause excessive glare and interfere with a person trying to leave the premises.

Emergency lighting systems must be maintained on a regular basis and maintenance checks recorded in a log book.

### 9.6 Environmental Considerations

To reduce energy consumption through lighting in commercial kitchens, consideration should be given to the following in the selection of lighting elements:

- For new lighting to kitchen, storage and all back-of-house areas select T5 fluorescent lamps with electronic ballasts.
- For front of house areas consider replacing incandescent lamps with low energy lamps (e.g. compact fluorescent wherever possible)
- Use T5 fluorescent lamps in signage and menu boards.
- In existing fluorescent fittings, re-lamp with tri-phosphor lamps and undertake re-lamping and cleaning programs on a regular basis
- Install movement sensors to store rooms etc. to ensure lights are turned off when not in use.
- Commercial kitchen managers/owners should contact their local energy provider and consider switching to greenpower.
- Undertake an energy audit prior to fit out and develop an energy reduction strategy as part of the fit out services design brief.

The most important consideration is to decide on a project by project basis what will provide the optimum solution considering all environmental issues in a holistic manner.

- Direct energy use.
- Selection of materials and equipment that minimize embodied energy.
- Allow for achieving a full useful life through ease of maintenance.
- Provide an optimum quality of light for the users of the space.
- Provide for re-use and recycling at end of life of the entire installation.
- Consider quantity and materials of lamps and light sources consumed in the life of the installation.

The relative weightings of these criteria should be considered and matched to each project. The result will be a compromise based on experience and judgement taking into account relevant legislation.



This section describes the storage areas that need to be provided for food items in a controlled environment and to separate other items that may be the source of contamination of food, including chemicals, clothing and personal belongings.

### Glossary

**Process:** The activity of preparing food for sale including chopping, cooking, drying, fermenting, heating, pasteurising, thawing and washing, or a combination of these activities.

**Ready-to-eat food:** Food consumed in the same state as that in which it is sold and does not include nuts in the shell and whole, raw fruits and vegetables that are intended for hulling, peeling or washing by the consumer.

### 10.1 Storage Requirements

The need for separate storage rooms will depend on the scale of the kitchen, however, consideration should be given to specific storage needs for the following:

- Dry goods.
- Chilled and frozen foods.
- Fresh fruit and vegetables.
- Returned/recalled foods.
- Packaging material.
- Cooking utensils and equipment.
- Cleaning equipment and chemicals.
- Clothing and personal belongings of staff.
- Garbage and recyclable materials.
- Storage facilities must allow the safe retrieval of stored items.
- Waste oil storage (bundling).
- Staff lockers.

Waste/Refuge storage	Chilled goods storage	Ambient (dry goods) storage	Total
0.04 – 0.06 m <sup>2</sup> /seat	0.21 – 0.26 m <sup>2</sup> /seat	0.21 – 0.26 m <sup>2</sup> /seat	0.46 – 0.58 m <sup>2</sup> /seat

### 10.2 Hazardous substances

Hazardous substances, including cleaning agents and pest control chemicals must be stored in an area (cupboard or separate room) dedicated to that use, and located away from food storage and preparation areas. Hazardous substances (including decanted hazardous substances) must be clearly and appropriately labeled.

This section refers to preventing pests in a commercial kitchen. The major reasons for pests entering a kitchen are to search for food, water and shelter. It should be noted that it will usually cost more to remove pests than it will to prevent them entering in the first place.

### Glossary

<b>Air curtains:</b>	Machine typically mounted above an opening, (although vertical mounting is also possible) that creates an air draft across an opening, which prevents flying insects from entering.
<b>Bait:</b>	Product designed to lure and kill pests.
<b>Fly door:</b>	Door that allows air to flow through but not pests.
<b>Fly strips:</b>	Row of over-lapping plastic strips that hang in a doorway preventing entry by flying pests.
<b>Harbour:</b>	Refuge, shelter, secure.
<b>Penetration and service areas:</b>	Areas where pipes and wires etc go through walls, floors, roofs etc.
<b>Pests:</b>	Nuisance animals, insects etc.
<b>Traps:</b>	Device used to seal passages so that substances can't escape.

### 11.1 Prevention

Live animals (except shellfish and the like used in food preparation) are not permitted in any commercial kitchen. Food premises should be designed to minimize the possibility of any animal or pest entering or harbouring within.

The following measures should be adopted to minimize the risk of pests entering the food premises.

#### *Externally*

1. Prune back trees that over-hang the roof.
2. Maintain a minimum 1200mm wide free draining paved surface around the premises.
3. Avoid storing waste bins against external walls.
4. Install rodent proof strips at all entrance doors.
5. Install self-closing devices on entrance door.
6. Cover external vents with wire mesh.
7. Seal service penetrations (electrical and plumbing services) in external walls.
8. Install profiled sealing strips at the junction of roofs and external walls.
9. Ensure windows are tightly fitting and install fly screens where they can be opened.

#### *Internally*

1. Ensure floors in wet areas are properly graded to prevent ponding of water.
2. Repair cracks and gaps in walls which may harbour pests.

#### *Waste management*

Implement a controlled waste management system (refer to section 11 of this document).

#### *Storage areas*

In regards to pest control in storage areas, the following actions should occur:

1. Inspect stock daily.
2. Rotate stock on a regular basis.
3. Install appropriate exhaust systems.
4. Position store room racks 600mm from the walls.

### 11.2 Insect Control

Despite best efforts and good practice, insects may still enter the kitchen.

Flying insects can be eliminated through the use of insect control devices, e.g. electronic insect killers. It is recommended that such devices are located at entrances to eliminate the insects on entry. Ideally the insect control device will contain the insects although if the device kills the bug causing them to drop, consideration must be given as to where the insects will land so that they do not contaminate food or food preparation areas (UV bulbs must be changed as manufacturer instruct).

Ventilation intake must have a filter fitted to stop flies and other airborne insects being introduced to the kitchen area e.g. prep sweet areas.

Crawling insects can be controlled through the use of baits, e.g. cockroach baits. Some food premises choose to keep permanent baits on the floor where food is likely to be dropped, around ovens for example. Others use baits only when there is a concern. Baits should not be placed anywhere where they could contaminate food.

### 11.3 Monitoring

Every commercial kitchen should have a documented, serviced and verified pest control program. A registered service should be contacted for an appraisal. Components and pest control regimes should be monitored by a licensed pest controller who is QA accredited, food safety assured, has the appropriate insurance and is approved.

**This section aims to increase awareness and provides detailed information concerning the importance and the different types of signage that can be found in a commercial kitchen or in a food business premises.**

### Glossary

Directional: A line or a path in which a person moves.

Signage: Something that indicates a fact or requirement that is not immediately obvious.

### 12.1 Emergency Signage

#### 12.1.1 Exit Signs

Exit signs are required to direct people to exit doors in the case of an emergency.

They must be installed so they are clearly visible at all times. Where the location of the exit is not readily apparent, the exit sign must also include directional arrows to indicate the path of travel.

The design of exit signs must comply with the requirements of Health and Safety at work Act 1974.

#### 12.1.2 Fire Emergency Signage

It is necessary in a commercial kitchen to provide signage that tells the occupants what to do in the event of a fire. These include:

- Signs detailing the emergency evacuation plan for the business. Staff should be made aware of where emergency evacuation procedures are written down.
- Instructional signs adjacent to fire extinguishers, fire blankets and fire hose reels detailing their correct use.

#### 12.1.3 First Aid Signage

- Signs should be installed to clearly mark the location of first aid kits. It is important that all staff be made aware of the location and use of first aid kits.
- It is also recommended that a poster be displayed to explain the correct procedures of CPR (Coronary Pulmonary Respiration).

### 12.2 Hygiene Signage

#### 12.2.1 Personal Hygiene Signage

Personal hygiene of staff is important to prevent contamination of food.

Posters or signs should be displayed in kitchens to make staff aware of:

- The correct procedures for washing hands, and when this must be done
- What to do in the event of a minor illness (for example, a cold)
- The business's policies regarding grooming, clothes, wearing of jewellery, tying of hair etc.

#### 12.2.2 Kitchen Hygiene Signage

Posters should be displayed that detail the procedures necessary to keep the kitchen clean and hygienic. These posters should include guidelines for different areas of food preparation, processing and storage. They should also provide a detailed description of the cleaning requirements of each area.

#### 12.2.3 Check Lists

To keep track of hygiene and cleanliness issues, a checklist of procedures is recommended. The checklist should provide a brief description of what is required, with other relevant information such as the cleaning procedure, and the cleaning product used to achieve the best result.

### 12.2.4 Cleaning Chemicals Signage

As different cleaning products generally perform different duties it is important to display a sign in the commercial kitchen explaining the use and potential hazards of each product. Cleaning chemicals must have a separate lockable area for storage. It is advisable to colour code chemicals as to which area they can be used in.

### 12.3 Equipment Signage

It is recommended that signs be installed adjacent to equipment that explains their correct use including safety requirements, and procedures for cleaning.

**This section describes the amenities that should be provided for the staff of a food business.**

### 13.1 Storage of Personal Items

Staff should be provided with adequate and secure storage for clothing and personal belongings. If not located in dedicated staff change rooms, lockers should be located away from food preparation and storage areas to prevent possible contamination of food.

### 13.2 Change Rooms

Staff should be provided with dedicated change rooms, particularly when they are required to wear uniforms. Gender specific change rooms are not necessary for small businesses; however they should be provided for larger food businesses, and may be incorporated into toilet areas. Change rooms should not open directly onto kitchen areas.

### 13.3 Toilets

It is essential that staff have access to toilets.

For a small business located in a shopping centre, use of the centre's public toilets may be adequate. For larger businesses, staff may share the toilet facilities provided for patrons; however, it is recommended that dedicated staff toilets be provided. Where no more than 10 staff are employed, a unisex toilet may be provided. A unisex toilet must include one pan, one basin and means of disposing sanitary products.

Where more than 10 staff are employed, separate male and female toilets should be provided. The number of sanitary fixtures (toilet pans, urinals and basins) that must be provided depends on the number of staff and is set out in the Building Act 1984.

Toilets must not open directly into kitchens or food storage areas and should be accessed via airlocks with self-closing doors.

Toilets must be adequately ventilated in accordance with the Building Act 1984.

### 13.4 Storage of Office Materials

Office materials and paperwork should be stored in a room designated for office use, or located in cupboards that are dedicated to store office materials, and be located away from the food preparation, cooking areas.

### 13.5 Wash Hand Basins

Staff must have access to wash hand basins / Quadwash facilities after visits to the toilets/smoking areas (contamination from lighters / cigarette packets).

Wash hand basins must be located where staff move from one area to another e.g. from prep area to cooking area. Taps / handles / push plates / light switches should be sanitized on a regular basis during the day (record frequency on daily sheets)



**Information on fire and evacuation processes is listed below, and only covers what is required for commercial kitchens. The requirements for the rest of the building must be incorporated throughout the kitchen. This is supplemental information.**

Basic fire precautions are:

- All areas should be kept clean from dust, dirt and oil to limit fire damage.
- All cooking and high-risk appliances should be watched when in use.

### 14.1 Emergency Procedures

All kitchens must have a written emergency evacuation plan in place. This plan should detail the following actions:

- When the alarm is activated the restaurant's fire warden should receive the first warning.  
(or if part of a larger building their fire warden)
- Until the nature of the alarm, whether false or real, is known, employees and customers should continue as per usual.
- Once the fire warden has assessed the problem, he or she must call the appropriate services and decide upon evacuation.
- Staff and customers are then to be evacuated in an orderly fashion as planned and practiced on previous occasions.
- Once evacuated, staff are to assemble in a predefined place and await further instructions.
- The fire warden is to stay and wait for emergency services and assist them if possible.
- A debriefing should occur after each evacuation (training or real) to identify problems with the process as well as to point out the positive aspects.
- All areas of restaurants **MUST** have at least one trial every 12 month period.

#### 14.1.1 Emergency Manuals

All manuals for emergency devices, solutions to dangerous situations and other emergency instructions etc. should be kept in the same place. They must be clearly labeled, well organized and easy to understand. If instructions are attached to the device, it is advisable to keep a separate copy with the other manuals.

### 14.2 Emergency Devices

- Emergency devices should be dispersed around the kitchen, not all in the same area.
- Emergency equipment should be serviced at least once a year.













#### 14.2.1 Fire Extinguishers

- The most common cause of serious fires in commercial kitchens is the over-heating of deep fryer oil.
- It is recommended that all extinguishers/blankets used in the kitchen are suitable for hot oil fires.
- How many extinguishers?
- The number of extinguishers is dependent on the size of the kitchen.

#### Location

- They should be in a main thoroughfare, preferably along the exit route.
- They need to be easy to access in a hurry.
- They should be 100mm high off the floor; the top of the extinguisher should be 1200mm from the floor.
- For electrical fires the extinguisher must be closer than 40m from the appliances.
- For cooking oils and fats the extinguishers must be placed between 2 and 20m from the risk. In a commercial kitchen 20m is too far away, it is safer to keep them within 10m.

## Section 14 Fire Extinguisher Table

Type of Extinguisher	Type of Fire →	<b>A</b> FOR USE ON:  Wood, Paper and Textiles	<b>B</b> FOR USE ON:  Flammable Liquids	<b>C</b> FOR USE ON:  Flammable Gases	<b>D</b> FOR USE ON:  Flammable Metals	 FOR USE ON: Electrical Hazards	<b>F</b> FOR USE ON:  Cooking Oils and Fat
Water		✓	✗	✗	✗	✗	✗
Foam		✓	✓	✗	✗	✗	ABF Foam Only
ABC Dry Powder		✓	✓	✓	✗	✓	✗
Special Dry Powder		✗	✗	✗	✓	✗	✗
Co2		✗	✓	✗	✗	✓	✗
Wet Chemical		✓	✗	✗	✗	✗	✓

**\* A Powder Extinguisher will leave a residue that can damage sensitive electrical equipment.  
If possible, use a CO2 Extinguisher.**

### Maintenance / Servicing

Servicing of fire extinguishers must be in accordance with British Standards by a licensed engineer. It is recommended that a company that schedules regular visits for maintenance is used (or contracted) to ensure the equipment is kept to standard.

### Service record

A permanent record must be kept of all servicing that will sequentially record all maintenance carried out on each fire extinguisher, including:

- Type of extinguisher, e.g. BE powder.
- Date of manufacture.
- Record of the last service. After 6 years a new extinguisher is needed. 12 years is acceptable only when the extinguisher is not subject to environmental extremes, such as steam or high temperatures. This extension is permitted if agreed upon by owner and servicer.
- Any defects and the action taken.
- A record of missing or misplaced extinguishers.
- Any other related comments.

This record can be a logbook, a computer-based record system or another permanent record that is easy to interpret for reports and for referencing to an individual extinguisher.

The owner/agent and the service person shall sign each record.

Record tags are not acceptable as maintenance record system, though record tags must also be kept on an extinguisher.

### Marking

Each extinguisher must show a permanently fixed, unique identification mark which can be referenced back to the maintenance records. The mark can consist of:

- Written numbers, letters or a combination of both.
- Barcode.
- Magnetic or electronic strip e.g. smart chip.

### Other

For extinguishers installed where the temperatures can reach above 50°C or below 5°C the extinguisher must be enclosed in a thermally protected case.

### 14.2.2 Fire Blankets

Fire blankets are only to be used to extinguish small cooking and clothing fires.

#### Primary information

Each fire blanket must be marked with:

- The words 'fire blanket' in letters greater than 25mm in height, in a contrasting colour to the background
- Instructions on how to extinguish a cooking fire in picture form:

1. Gently cover the fire completely with the fire blanket.
2. Turn off the source of heat.
3. Leave the fire blanket in place until cool.
4. Call the fire brigade.

- Illustrations on how to extinguish a clothing fire (on fire Blankets larger than 1.2 x 1.8m):

1. Stop victim from moving.
2. Quickly wrap the fire blanket around the victim.
3. Drop victim to the ground until the fire is out.
4. Roll the victim on the floor.
5. Seek medical assistance.

- A message in contrasting colour that says: 'Warning: this fire blanket is not of adequate size for adult clothing fires' or words to a similar effect on blankets that are smaller than 1.2 x 1.8m.
- Instructions regarding disposal of the blanket after use.

#### Secondary information

Blankets are kept in mounted bags, marked with the following:

- Name and address or registered trademark of the supplier and the manufacturer's trademark if different.
- Manufacturer's batch identification code or date of manufacture.
- Size of the blanket in metres by metres.
- The words 'not for electrical fire' if the material has less than 1 MW electrical resistance.
- Folding instructions preferably in picture form.

How many fire blankets?

In commercial kitchens with five or less fire hazards in the same area one fire blanket will suffice. In a larger kitchen more are necessary. They must be close enough to the hazards to be accessed quickly.

#### Location

Fire blankets must be in an obvious and accessible place. This area must not endanger the user when they reach for it in an emergency, e.g. not the far side of deep fryer. If more than one fire blanket is kept in the kitchen then they should not all be kept next to each other. This allows more than one person to help fight a fire.

The mounting of the blanket must be strong enough to withstand someone pulling the fire blanket from its container. There must also be enough room to quickly open the blanket without obstruction.

### Size

- Fire blankets must be either rectangular or square with no side bigger than 1.8 m and no smaller than 0.9 m.
- A fire blanket cannot weigh more than 10 kg.
- It will have handles with which to hold the blanket.
- It MUST be folded correctly so that when needed, it can be opened in less than four seconds.
- It must comply with BS 9999:2008.

### Maintenance / Servicing

Inspection of fire blankets / emergency lighting must happen every 12 months.

This can be done in conjunction with fire extinguisher servicing.

This check shall include:

#### 1. Accessibility

- Can the blanket clearly be seen?
- Can it be easily accessed?
- Is it where it should be?
- Has it been installed correctly?

#### 2. The Fire Blanket Sign

- Is it visible?
- Does it conform to the BS EN 1869:1997?

#### 3. Fire Blanket Bag

- Is it secure in place? This includes the support.
- Is it clean and undamaged?
- Are the instructions clear and legible?
- Is the maintenance tag attached?

#### 4. Blanket

- Is there any damage?
- Is it folded correctly?
- Are the handles secure and undamaged?

#### 5. Information for fire wardens

- Oil storage.
- Cardboard / Paper storage.
- Gas cylinder storage.

### Servicing record

All maintenance and amendments must be recorded on the maintenance tab.

### 14.2.3 Other Equipment

#### Fire hose

Fire hoses are not generally used in a kitchen primarily because water is volatile against fats, oils and electrical fires, but if used it must comply with BS EN 15889:2011.

### Gas suppression systems

A gas suppression system works well. These generally have a pipe system that goes up the wall with nozzles in the rangehood. These are expensive but a great investment as they are directly over the hazard and are usually heat activated.

As with most fire safety devices, if used in a confined space, then there is a risk of asphyxiation as well as limiting visibility. Once used and the fire is out, leave the room until dangerous vapours disappear. If more than one fire blanket is kept in the kitchen then they should not all be kept next to each other. This allows more than one person to help fight a fire.

### **Sprinkler systems**

Sprinkler systems as with fire hoses are not generally used unless the kitchen is large, mainly due to their high expense. If a sprinkler system is used, a misting type is generally recommended. They are however, very important for the eating area. Restaurants and cafés must comply with all fire safety standards for this occupancy type. If a sprinkler system is required in the restaurant.

### **Fire detection systems**

These are more of a precaution than a solution. Smoke detectors do not work very well in kitchens. Steam and other vapours disrupt the efficiency of smoke detectors. Also small, easily contained fires are a common occurrence in commercial kitchens that may unnecessarily trigger a smoke alarm. It is recommended to use heat detectors instead. Smoke/heat detectors are not to be placed more than 20 m apart and not more than 10 m from any wall. Gas shut off valve. This shuts off the gas to appliances in the kitchen. This should be situated at the exits of the kitchen easily seen and accessible.

### **14.3 Emergency Signage**

For Emergency Signage information turn to the section titled Signage, then find the heading Emergency Signage on page 38.

### **14.4 Staff Training for Emergencies.**

#### **14.4.1 Fire Extinguisher Training.**

At least one staff member who is trained in the proper use of a fire extinguisher shall be present while the kitchen is operating.

The more who are trained, the safer the kitchen will be.

#### **14.4.2 Evacuation Training**

Each staff member should be trained in the skill and knowledge to help them cope in emergency situations.

They should be trained in the following:

- What each of the alarms means: Are different colours for different emergencies? What is the evacuation alarm?
- Preparing for emergencies: If a fire blanket is not where it is supposed to be, what should be done?
- How and to whom should emergencies be reported.
- Reacting safely to emergencies.
- Evacuating from dangerous or soon to be dangerous areas.
- Emergencies that may occur.
- What are unsafe situations.
- How to fix or report unsafe situations.
- Responsibilities of the wardens.
- Where to assemble after evacuation and what happens once there.



This section refers to the requirements for access and egress from commercial kitchens.

### Glossary

Egress:	A way out.
Exit:	A doorway leading to a road or open space.
Fire Compartment:	A part of a building separated from the remainder by barriers to fire such as walls and floors with an appropriate resistance to the spread of fire.

### 15.1 Provision for Escape

The design of any commercial kitchen must allow:

- Safe and convenient movement about the workplace
- Safe egress from the workplace in an emergency
- Safe access to any part of the workplace.

Provision must be made for safe routes out of the building in case of fire or other emergencies. It is important to ensure that these exits remain unobstructed and that the escape route is easy to pass through.

Where no point on the floor is more than 20m from an exit, only one exit is required, otherwise at least two exits are required. Where two or more exits are required, the distance between alternative exits must comply with local building regulations.

An exit must lead to a designated safe area/muster point.

The unobstructed height of the path of travel to an exit must not be less than 2000mm.

The unobstructed width of the path of travel to an exit (except the actual doorway) must not be less than 1000mm.

Suitable barriers should be put in place to prevent vehicles from blocking the exit, or access to it.

### 15.2 Access for People with Disabilities

As far as is reasonable, a commercial kitchen should be designed to provide safe, equitable and dignified access to people with disabilities.

This section describes the requirements for first aid kits in food businesses and requirements for staff training in first aid. Restaurants, hotels and clubs are in 'Group A', the lowest risk group in regards to first aid. All the following information adheres to the Health and Safety (First-Aid) Regulations 1981, other states will have similar laws that should be complied with. It is useful to know where the appropriate external medical or occupational health services are in case of an emergency, where the closest appropriate hospital or clinic is, how long it will take to get there and how an employee would be transported.

## 16.1 First Aid Kits

### 16.1.1 How Many?

One Basic First Aid Kit must be kept on the premises for every 50 staff who are working at one time. For 50 to 100 staff an Occupational First Aid kit is required. If more than 100 then two kits are required. The ratio of kits per people must be maintained when the number of staff increases. In addition to the kit it is highly recommended that a burn module and eye module also be included. For over 400 staff a first aid room is necessary.

### 16.1.2 Location

The kit/s must be in an obvious and easily accessible location at all times. The kit would be more useful if it were of the wall mountable type as is common practice, so it is always in the same place. However a mobile kit meets legal requirements. All staff must have a first aid kit within 100m of their regular work position. At least one kit must be on each alternate level of a multi-level kitchen.

## 16.2 Number of First Aid personnel required.

1. From your risk assessment, what degree of hazard is associated with your work activities?	2. How many employees do you have?	3. What first aid personnel do you need?
<b>Low Hazard</b> e.g. offices, shops, libraries	Less than 25	At least one appointed person
	25-50	At least one first-aider trained in EFAW
	More than 50	At least one first-aider trained in FAW for every 100 employed (or part thereof)
<b>Higher Hazard</b> e.g. light engineering and assembly work, food processing warehousing, extensive work with dangerous machinery or sharp instruments, construction, chemical manufacture.	Less than 5	At least one appointed person
	5-50	At least one first-aider trained in EFAW or FAW depending on the type of injuries that might occur.
	More than 50	At least one first-aider trained in FAW for every 50 employed (or part thereof)

The Aluline Group cannot accept responsibility for any errors or omissions contained in this information.



Grease Management Services



Brussels Legislation (EU Standards) BS Specifications  
EN1825-1:2004 & EN1825-2

The Water Industry Act, Part H Building Regulations  
& BS EN 1825-2: 2002, BS EN 1825-1 2014, EN 124:1994 & EN1253-4

### **Grease Separators**

shall be fitted with access covers which  
comply with EN124:1994, EN1253-4

Grease Separators inside buildings shall have  
**odour tight covers.**

Therefore any Grease Interceptors which are not (odour) airtight  
should not be used in a kitchen due to airborne bacteria.

For example Mechanical Grease Traps should comply with BS EN 60529 also.

Contact Aluline Grease Management Services for  
professional helpful advice on how to remain compliant

**Tel: 01928 563532 Fax: 01928 580224**

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**Check out our website: [www.alulinegms.com](http://www.alulinegms.com)**  
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