

Laundries

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Large commercial and industrial laundries provide a valuable service. However, large-scale washing, drying, and ironing need careful management to prevent and limit damage caused by fires.



Introduction

Laundries present a range of fire hazards, from steam boilers producing large quantities of hot water to flammable solvent-based cleaners for spot cleaning. Using heat and/or steam to dry and iron garments creates additional risks, including the potential self-ignition of garments. Undertaking regular risk assessments, training and maintenance is vital to reduce the likelihood of fires.



Understanding Laundries

Laundries handle an extensive range of garments.

They often specialise in washing, drying, and ironing contracts that include collections and deliveries of, for example:

- Towels, bed linen, tablecloths, etc. for hotels
- Sports kit for health/sports clubs
- Personal protective overcoats or overalls for electronic or pharmaceutical industries, and printing or engineering trades

Larger laundries are often located in industrial buildings within commercial areas. Because laundries regularly work **to short time periods to return finished garments**, these buildings are often designed as 'open plan', with little or no fire compartmentation provided. In some cases, laundries have little available space between machinery and storage areas, while yard space is frequently used to store metal cages/trolleys and incoming dirty garments.

Laundry Process – An Overview

Laundry items are typically collected in either metal mobile cages, trolleys, or in open-topped plastic mobile containers. These are delivered to the laundry, offloaded, and left for sorting. Sorted garments are then placed in mesh bags, conveyed, and dropped or placed into revolving washing machines that use a mix of soaps, detergents, oxidisers, and water softeners. Garments are subsequently dried in large revolving tumble dryers for a set time period, often with a pre-set cooling cycle which allows the garments to cool before removal. Garments are then laid out and conveyed through an ironing machine, which also automatically folds them.

Large 'calendering' machines using steam, heat and pressure rollers are used to finish large sheets and other laid-flat items, which are conveyed flat on rollers. The laundry is then conveyed and placed into folding machines. Some laundries use electrically operated tumble dryers, either vented or condenser type, or large drying tunnels where garments are placed onto wire hangers which pass slowly through a drying tunnel or chamber which is steam heated. Folded garments are conveyed to a collection point where they are sometimes packed and placed into trolleys. Finished laundry in trolleys is rolled onto the back of delivery vehicles ready for despatch to customers.

Hazards in Laundries

There are many hazards associated with laundries, including but not limited to:

- Construction (combustible materials)
- Gas/oil boilers
- Steam generators
- Flammable solvents and oxidising agents
- Electrical systems/portable electrical appliances
- Electrical motors/machinery: conveyors, washers, dryers, ironers, folders
- Fire/self-ignition
- Extract ventilation ducts
- Dust/fly
- External combustible storage/arson
- Storage tanks
- Large movements of vehicles
- Smoking

The following risk assessments need to be completed, regularly reviewed, and updated when necessary:

- Premises Fire Safety – Regulatory Reform (Fire Safety) Order 2005
- Control of Substances Hazardous to Health (COSHH)
- Dangerous Substances and Explosive Atmospheres Regulations (DSEAR)

Regular documented self-inspections in respect of fire, security and housekeeping also require completing. Examples of areas to be incorporated in the inspections are noted within the *Aviva Loss Prevention Standard: Fire Safety Inspections*.

Construction

Buildings, including drying tunnels or chambers, should be constructed of non-combustible materials. Due to the heat produced in laundries any timber materials can dry out and be easily ignited.

Fire compartmentation should be used, including separated storage of incoming and outgoing laundry. Each fire-resistant compartmented room/area should have openings protected by self-closing fire doors or automatically closing fire shutters, activated by a fire alarm/detection system. A 4-hour fire compartment is considered best practice if the area is not protected by automatic sprinklers.

Dedicated plant rooms, electrical switch rooms, boiler/steam generator rooms, etc., should be constructed to at least 2-hour fire resistance and fitted with self-closing fire doors of the same fire rating.

Where services such as ducting and so on pass through fire compartment walls, floors or ceilings, any holes need to be fire stopped using non-combustible materials to the full thickness, and same fire rating. Ventilation and other ductwork travelling through the premises should be fitted with appropriate automatic fire dampers and positioned consistently with the fire compartmentation philosophy, i.e. in place at fire compartment walls/floors. Dampers need to be routinely tested and serviced. Site ventilation systems should also be interlocked to shut down upon automatic and/or manual fire alarm activation.

Laundry chutes should be constructed of non-combustible materials and, when they pass between fire compartments, fitted with self-closing fire doors or automatically closing fire shutters, at the bottom and the top of each chute, activated by the operation of the fire alarm/detection system.

Fire Protection/Detection Systems

Most fires within laundries occur when they are closed. Therefore, depending on the values at risk, fire loads and business dependency, an automatic sprinkler system and automatic fire alarm/detection system should be installed to all areas/compartments of the building.

This should be designed and installed to an internationally recognised standard, or if applicable an Aviva standard, whichever is the greater. Both the detection and protection systems should have remote dual path signalling to suitably accredited Alarm Receiving Centres, which are insurance-company approved.

Conveyor systems need to be interlocked to automatically shut down on operation of the fire alarm/detection system. Drying tunnels or chambers should also be interlocked to automatically shut down, but with a timed shutdown to allow garments to exit the tunnel before the tunnel/chamber shuts down. These interlocks should also be designed to prohibit garments entering the tunnel/chamber once activated.

Smoke extraction vents, when sprinklers are installed, should be manually operated (when the sprinkler system has performed as designed), when advised it is safe to do so by the fire brigade.

High-level stratification fans should automatically stop on activation of the fire alarm/detection system.

Incoming Inspections

All laundries must thoroughly inspect all incoming laundry to ensure:

- Any items left in pockets are removed to avoid metal objects causing sparks or lighters/matches igniting
- Garments are not already overheating and potentially reaching self-ignition stage
- Separation of rubber, foamed-rubber or garments/sheets with water resistant coatings that include wax or oils to make sure these are not placed in dryers
- They are made aware of customers using any flammable solvents, combustible oils, greases, etc., and making sure garments impregnated with solvent, oil and grease are separated for washing and inspection before drying – any impregnated garments, if not properly cleaned, must be rewashed before drying

Boilers/Steam Generators

Boilers and steam generators must be regularly serviced and maintained. They should be kept separate and located in dedicated plant rooms, each having at least 2-hour fire resistance enclosures using fire resistant materials and self-closing fire doors of the same fire rating. They should also be fitted with safety features, such as:

- Gas leak detection interlocked to automatic safety shutdown devices
- Flame failure
- Steam pressure relief valves steam expansion tank
- Low/high water pressure monitoring
- Manually operated emergency shut off devices located in readily accessible locations. The location and number of emergency shut off devices should be determined by risk assessment.

Flammables

Removal of stubborn stains is often achieved using relatively small quantities of flammable solvents, although many of these may have been replaced by non-hazardous alternatives.

Where flammable solvents are used, they should be limited to small quantities. Bulk supplies should be stored in an appropriate designated area:

- At least 10 metres away from the building
- In a secure, well ventilated, non-combustible building
- It should have suitable lighting, signage and electrical earth safeguards for use in potentially flammable atmospheres using appropriate retention bunds/contained areas

Using Flammables Safely

- Use appropriate self-closing safety containers
- Make sure they're used only in areas that have been appropriately risk assessed, fitted with safe electrical systems appropriate for use in potentially flammable atmospheres, and equipment fitted with the appropriate anti-static straps/electrical earth safeguards
- When not in use smaller quantities of flammable solvents must be stored separately from other materials and kept in appropriate proprietary flammable liquid safety cabinets, which need to be kept locked

Storage, decanting and use of solvents should be in accordance with the appropriate national safety codes, such as the joint Fire Protection Association/RISCAuthority documents:

- [RC55: Recommendations for fire safety in the storage, handling and use of flammable and highly flammable liquids](#)
- [RC56: Recommendations for fire safety in the storage, handling and use of highly flammable and flammable liquids : storage in containers other than external fixed tanks](#)

Oxidising agents need to be stored separately from combustibles, including all flammables, in a dedicated well-ventilated room stored with similar safeguards to flammables when kept inside buildings. Refer to the joint Fire Protection Association/RISCAuthority document:

- [RC43: Recommendations for fire safety in the storage and use of oxidising materials](#)

Machinery such as drying presses may use combustible/flammable hydraulic oils. When these escape under pressure they can cause a fine mist of flammable oil, which is a severe fire hazard. Depending on the capacity of the **machine's oil reservoir**, **flexible** rubber hydraulic connections should be replaced with metal connectors and be subject to regular inspection to assess their condition. Machinery should be fitted with safety shutdown interlocks to automatically shut down on loss of pressure and/or on operation of the fire alarm/detection system. Consider the use of non-flammable hydraulic fluids.

Electrical Systems/Portable Electrical Appliances

Electrical faults remain one of the main causes of fire. It is essential that systems are risk assessed, routinely inspected and tested as per national safety standards/codes. These should include documented thermal imaging inspections to check for hot spots and loose connections.

Control and distribution panels must be readily accessible, with a minimum clearance of 1.5 metres from any combustible materials/storage. As the laundry is likely to have a high reliance on utility supplies such as gas, water, steam and electricity, contingency standby supplies should be provided.

Electrical Motors/Machinery (Conveyors/Washers/Dryers/Ironers/Folders)

As well as routine electrical inspections and tests, motors and machinery need to be kept clean, and routinely serviced and maintained:

- Appropriate anti-static straps should be fitted as static electricity can be a concern, particularly when dryers are unloaded
- Pilot lamps need to be fitted to indicate the machines are operational, this includes individual irons used for delicates
- **Employees require adequate training to ensure that machinery is turned off at the end of the day's work**
- Timed automatic isolation can also be installed as an alternative safeguard to ensure all machinery and non-essential plant is shut down
- Machinery must be kept at least 1.5 metres clear of any storage
- Adequate numbers of spares for critical equipment should be kept either on site or retained by the designated supplier

Fire/Self-ignition

Drying temperatures need careful monitoring and control to ensure the garments are not left too wet or overheated, which can then self-ignite. Garments can self-ignite in dryers not fitted with timed interlocked doors to prevent opening before the garments are allowed to sufficiently cool:

- Avoid tumble drying activities near to the close of business nor let cycles run-on out of hours
- Dryers should have automatic cooling cycles rather than rely on manually operated cooling
- The cooling cycle should not be capable of being over-ridden by unauthorised persons, and then only following an appropriate risk assessment, and adoption of any recommended control measures
- Once the drying cycle has finished, the laundry should be unloaded as soon as possible and not left in the dryer
- Dryers should be left open and empty when not in use
- Special care needs to be taken with garments, like industrial overalls, that could be impregnated with solvents, such as turpentine or vegetable oil, e.g. linseed oil. These can self-ignite quite quickly, often within 24 hours of being discarded into containers and left waiting for collection and cleaning
- Ensure wash temperature and detergents are suitable for the optimum removal of contaminants from garments when washing at low temperatures
- Items heavily soiled with oils should be washed at higher temperatures wherever possible
- Dried garments need to be separated from each other to allow any heat to dissipate
- Garments should be folded as soon as possible after removal from the dryer
- Laundries must allow dried garments that are over-hot a sufficient amount of space and time to cool down before folding and packing. Towels, for example, once washed and dried, can be piled in mobile open-topped containers and, if left over a period, can self-heat and ignite, particularly during busy periods
- Mobile laundry containers should be metal and not plastic

Extract Ventilation Ducts

Extract hoods and ductwork require regular routine cleaning for the entire length of the duct, to maintain efficiency and to remove the build-up of combustible lint, fly and/or dust. The frequency of the cleaning regime should be determined by risk assessment and condition of the area following the previous clean. Inspection hatches need to be provided along the length of the ductwork to allow access for cleaning.

Dust/Fly/Lint

Regular cleaning is to be undertaken in all parts of the laundry and particular care taken to remove dust/fly from electric motors and plant in general, ducts, roof trusses and other surfaces such as horizontal structural elements on which dust/fly may accumulate. Cleaning should be undertaken using EX rated vacuum cleaning equipment, rather than compressed air to avoid disturbed dust and fibre particles creating a potentially explosive atmosphere. The frequency of cleaning programmes should be determined by a risk assessment.

Calenders or dryers generate fly/lint, which if not extracted will overheat and catch fire. Fly/lint should be regularly removed from such machinery, and from extraction bag housing, to an outside waste container kept at least 10 metres from the building.

External Combustible Storage and Arson

Arson remains a serious risk and therefore external storage should be limited and kept at least 10 metres from buildings or twice the storage height, whichever is the greater distance, particularly if left overnight, at weekends or holiday periods:

- Sites should have perimeter security fencing and gates that are kept locked
- During normal working periods access to the site and buildings must be restricted to authorised persons only
- Buildings should have an intruder alarm system installed and maintained in accordance with national standards, having remote signalling to a constantly manned centre, which is insurance-company approved

Storage Tanks

Storage tanks need to be kept separate and secured from unauthorised use. Where the tanks contain flammable, toxic, or corrosive substances, they should be double-skinned or provided with spillage containment to at least 110% of the total capacity.

Vehicle Movements and Smoking

Vehicles and pedestrians must be kept separate with dedicated, clearly signposted routes. Ideally, there should be separate entrances and exits, and car parking areas for staff and visitors which are separate from collection and delivery vehicles.

The sites/buildings must have a strict no smoking policy. Drivers and visitors must not be allowed to smoke in their cars or cabs.

Emergency Site Response Teams

The site should have an Emergency Response Team on duty covering all shifts, sickness, and holiday periods. The team needs regular planned training and should cover the following:

- Fire awareness training
- Training on the practical use of fire extinguishing equipment
- Appointment of Crisis Duty Manager with agreed designated reporting lines and responsibility for calling the Emergency Services
- An agreed Emergency Site Plan indicating:
 - main isolation points (gas/electricity/water/etc.)
 - high hazard storage locations
 - position of fire hydrants
 - location of main fire alarm panel
 - sprinkler pumps/tanks and installation alarm control valves
- Appointment of trained engineers on duty to assist the Fire & Rescue Service and to check sprinkler pumps are operating correctly, if safe to do so

Business Continuity Planning

The organisation should have a documented Business Continuity Plan (BCP), to aid the recovery of the business operation in the event of a loss. The plan should be reviewed, tested, and updated at least annually. Copies of the plan should be readily available on site and protected in a fire safe with at least 2-hours fire resistance rating. Additional copies should be kept offsite or outside the building in a secure location and in a different fire area.

Checklist

A generic Laundry Checklist is presented in Appendix 1 which can be tailored to your own organisation.

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Sources and Useful Links

- [The Regulatory Reform \(Fire Safety\) Order 2005](#)
- [The Dangerous Substances and Explosive Atmospheres Regulations 2002](#)
- [Equipment for potentially explosive atmospheres \(ATEX\)](#)

Additional Information

Relevant Loss Prevention Standards include:

- Fire Safety Inspections
- Fire Compartmentation
- Fire Doors, Fire Shutters and Fire Dampers
- Heat and Smoke Venting Systems
- Business Continuity

To find out more, please visit [Aviva Risk Management Solutions](#) or speak to one of our advisors.

Email us at riskadvice@aviva.com or call 0345 366 6666.*

*Calls may be recorded and/or monitored for our joint protection.

Appendix 1 – Laundry Checklist



Location	
Date	
Completed by (name and signature)	

	Laundry Checklist	Y/N	Comments
1.	Is the laundry building constructed from non-combustible materials?		
2.	Which of the following on the premises have fire segregation/compartimentation: <ul style="list-style-type: none"> • Incoming areas? • Outgoing areas? • Plant rooms? • Storage areas? 		
3.	Are all fire exits/routes clear and unobstructed?		
4.	Is an automatic fire protection system installed?		
5.	Is an automatic fire alarm/detection system installed?		
6.	Do you have portable fire extinguishers to the following scale, which are regularly serviced and maintained: <ul style="list-style-type: none"> • At least 1 x 9 litre water extinguisher to every 200m² plus CO² for use on electrical equipment? 		
7.	Are automatic shutdown safety interlocks fitted to: <ul style="list-style-type: none"> • Fire shutters and conveyors? • Drying tunnels/chambers – with timed shutdown to allow travelling garments to exit the tunnel/chamber and prohibit entry? 		

	Laundry Checklist Contd.	Y/N	Comments
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8.	<p>Do incoming inspections ensure that each of the following happens:</p> <ul style="list-style-type: none"> • A list of flammable solvents/combustible oils/greases which are used by customers is kept and is up to date? • Flammable solvent-impregnated garments are inspected prior to washing and after washing (soiled garments rewashed)? • Flammable solvent/oil impregnated garments are washed separately and prioritised? • Pockets of garments are checked and cleared? • Rubber, foamed rubber or garments/sheets with water resistant coatings that include wax or oils are not placed into dryers? 		
9.	<p>Are the following hazard risk assessments up to date:</p> <ul style="list-style-type: none"> • Building Fire Safety? • COSHH? • DSEAR? 		
10.	<p>Are self-inspections regularly completed, e.g. housekeeping, fire and security?</p>		
11.	<p>Are boilers/steam generators:</p> <ul style="list-style-type: none"> • Serviced and maintained? • In dedicated fire-resistant plant rooms? • Fitted with automatic shutdown safety interlocks? 		
12.	<p>In respect of flammable liquids, are:</p> <ul style="list-style-type: none"> • Safe storage/decanting arrangements in place and are the liquids used and stored in accordance with Fire Protection Association/Risc Authority guidance, or other national standards? • Safe electrical systems and electrical equipment for use in potentially flammable atmospheres? • Restrictions on the quantities of machinery hydraulic oils used? • Procedures to ensure that automatic shutdown safety interlocks are working and tested, where appropriate? 		

	Laundry Checklist Contd.	Y/N	Comments
13.	Are electrical/thermal imaging inspections and testing regularly undertaken and any faults or deficiencies promptly rectified?		
14.	Are electrical motors/machinery, e.g. conveyors, washers, dryers, ironers, folders: <ul style="list-style-type: none"> • Clean, routinely serviced and maintained? • Fitted with static electricity straps which are undamaged and regularly inspected? 		
15.	In respect of the risks posed by fire/self-ignition, do you ensure: <ul style="list-style-type: none"> • Drying is not undertaken near to the close of business, nor outside of business hours? • Wash temperature and detergents are suitable for the optimum removal of contaminants? • Items heavily soiled with oils are washed at higher temperatures wherever possible? • Drying temperatures are monitored and controlled? • Dryers are fitted with automatic timed interlocked doors to allow thorough cooling? • The cooling cycle programme cannot be over-ridden by unauthorised persons? • Dried garments are sufficiently cooled before folding and packing? • Items of laundry are not left in dryers? • Dryers are left open and empty when not in use? • Mobile laundry containers are constructed from metal and not plastic? 		
16.	Are all extract hoods and ductwork: <ul style="list-style-type: none"> • Regularly cleaned along the entire length of the duct as part of a scheduled cleaning programme? • Fitted with inspection hatches along the entire length of the duct? 		
17.	Dealing with dust/fly: <ul style="list-style-type: none"> • Are high and low levels of dust routinely removed from structural steelwork and from the tops of cable trays and machinery? • Are motors kept free from dust? • Are dryers which generate fly and lint regularly extracted and cleaned, with such items removed each day from the building? 		

18.	<p>Arson: in respect of the external storage of combustible materials is:</p> <ul style="list-style-type: none"> • There a perimeter security fence with gates which are kept closed and are they all in a good state of repair? • Storage maintained at least one metre from site fencing? • There a system to control access to the site and buildings to authorised persons only? • Storage limited and kept 10 metres from buildings or two times the storage height whichever is the greater distance? • An intruder alarm installed in accordance with national standards to protect the premises? 		
19.	<p>Are storage tanks:</p> <ul style="list-style-type: none"> • Kept separate and secured from unauthorised use? • Double-skinned or provided with spillage containment to at least 110% of the total capacity? 		
20.	<p>With regards to vehicle movements, are:</p> <ul style="list-style-type: none"> • Vehicles and pedestrians kept separate with dedicated routes, clearly signposted? • There separate entrances and exits and car parking areas for staff and visitors which are kept separate from collection or delivery vehicles? 		
21.	<p>In respect of smoking:</p> <ul style="list-style-type: none"> • Is there a strict smoking policy in place? • Is there evidence of any illicit smoking? • Are drivers and visitors informed not to smoke in their cars/cabs? 		

	Laundry Checklist Contd.	Y/N	Comments
22.	Emergency Site Response Team: <ul style="list-style-type: none"> • Is there a response team already set-up? • Is it always on duty, covering all shifts, sickness, and holiday periods? • Are the training programmes adequate and up to date? • Does it include a Crisis Manager with agreed designated reporting lines and responsibility for calling the Emergency Services? • Has it produced an Emergency Site Plan? • Is there a trained engineer on duty ready to assist the Fire & Rescue Service and to check sprinkler pumps are operating correctly? 		
23.	Business Continuity Planning: <ul style="list-style-type: none"> • Does the site have a formal BCP, which is reviewed, tested, and updated at least annually? • Are copies of the BCP on site and in a protected fire safe with at least a 2-hour fire rating? • Are copies of the BCP held offsite and confirmed to be available at all times? 		
24.	Additional comments:		

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