



Manufacturing Intelligence:  
**Food Storage**





# Manufacturing Processes

Manufacturing Processes

Risk Features

Material Damage  
and Business  
Interruption Hazards

We know that your clients take risk management seriously and that it plays a key role in the service you offer. We've produced this guide to highlight the controls and prevention measures your clients can take to help reduce the risks associated with the storage of food.

## Trade overview

Storage of food can include anything from bulk ingredients, bottled and canned goods to frozen ready meals. These items can be stored in the temperature categories of ambient, chilled and frozen. Some larger premises can contain all three in different compartments. Premises can be stand alone, attached to food processing operations or be part of retail supermarkets or a cash and carry.

## Process

Processes within these environments are generally limited given they're effectively storage warehouses. Storage can be freestanding, palletised or high bay racked pallet storage with heights regularly from four metres up to 10 metres with significant storage volumes.

Machinery will be restricted but may include fixed, electrically-heated or portable gas-heated shrink-wrapping equipment. There will be extensive use of Liquefied Petroleum Gas (LPG) or electrically-powered mechanical handling equipment such as forklift trucks and ride-on pallet trucks. Increasingly, automated conveying systems may be present.

A logistic warehouse operating its own fleet of vehicles is likely to include a vehicle maintenance workshop usually within a detached building.

## Business Interruption

Total stock losses and the potential of a significant element of Business Interruption (often greater than property loss) can be encountered, even with relatively small incidents such as fire or flood due to contamination from smoke, fire-fighting water or heat rendering all stock unsuitable for sale.

Substantial time and money may also be required to return the premises to a fit state for future use due to strict hygiene and health and safety regulations governing food storage risks. In the case of chilled and frozen storage facilities, there may be a significant delay in re-trading as such premises aren't readily available.





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### Employers Liability

The main hazards tend to be slips, trips and falls, for instance due to ice or condensation in cool environments or even spilt foodstuffs. Low temperature stores present particular challenges. Staff working in such areas will require warm protective clothing that also allows them to carry out designated tasks safely. As with any warehouse facility where manual handling of goods is a feature, there's a risk of musculoskeletal injury. Task specific manual handling training should be considered where mechanisation of tasks isn't possible. The introduction of mechanised aids creates the potential for workplace transport (forklift) incidents including hand operated pallet trucks, order picking and moving equipment. There's also exposure from reversing and movement of vehicles and work equipment (shrink wrapping). Packaging lines also present potential machinery hazards.

### Public and Products Liability

Public Liability tends to be restricted to visiting delivery and collection drivers, visitors and vendor inspectors. Clear signage, signing-in protocols, appropriate induction and supervision must be considered.

Products Liability relates more to contamination of fresh/perishable produce, incorrect packaging and labelling and damage to pre-packaged goods. Temperature controlled storage and distribution is a key area to be controlled to prevent spoilage and loss of fresh and perishable goods. This will be of paramount concern to storage clients and operators as any failures will erode customer confidence. Good document management and records are considered essential controls.

### Material Damage

Battery charging is one of the main concerns in food storage premises, with high levels of combustible packaging possible. Electrical faults or overheating of chargers in close proximity to combustible goods can result in fire. Charging of batteries (particularly overcharging) can also result in the release of hydrogen gas, so good ventilation or sometimes appropriate mechanical extraction of air from the vicinity may be required.

In chilled or frozen food storage facilities, refrigeration systems can use ammonia gas which if released is combustible in air at the right concentrations. Combustible composite panels can be found in the external building structure (building envelope) which can contain a foam infill core of polyisocyanurate (PIR), polyurethane (PUR) and occasionally polystyrene (expanded – EPS or extruded – XPS). Ideally, such systems would be approved to Loss Prevention Standard LPS1181. Loss Prevention Standards are created by the Loss Prevention Certification Board (LPCB) to reduce the potential from fire of materials within the building structure.

Approved panels can be confirmed within [www.redbooklive.com](http://www.redbooklive.com).

Internally, demountable wall panels or cold store/freezer rooms will routinely incorporate polystyrene. The performance of these types of panels in a fire incident is well documented with molten burning droplets formed and rapid heat released. They have a tendency to re-ignite and cause ceilings to collapse. Internal walls should ideally comply with LPS1208.





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The tables below highlight some specific hazards present in food storage environments, along with the associated controls which will help prevent major loss of physical property. Generic risks resulting from arson, electrical sources and waste aren't mentioned here.

## Material Damage and Business Interruption Hazards

Features always present

Hazard	Control
Fire risk from mechanical handling plant battery charging.	<ul style="list-style-type: none"><li>▪ Battery charging area to be clear of combustible materials to at least 2 metres (guard rails and floor markings often work well to assist in control).</li><li>▪ Adequate natural or mechanical high-level ventilation to be provided and the charger to stand on an impervious, non-conductive and non-combustible base.</li><li>▪ In larger premises, a separate charging compartment with fire rated walls and roof may be necessary. Hydrogen gas detection systems linked to automatic charging isolation may be needed.</li></ul>
Own staff or third-party contractors working on-site (building maintenance/repair/extension), with no or inappropriate hot work controls and without recognition of the fire risk, particularly from combustible insulation in composite panels.	<ul style="list-style-type: none"><li>▪ Thorough vetting, selection and induction of contractors to include method statements with consideration of adequate controls to manage fire risk.</li><li>▪ Confirmation of contractors Public Liability insurance.</li><li>▪ Use of appropriate hot work permits (available via AXA).</li></ul>
Large undivided floor areas with high piled storage.	<ul style="list-style-type: none"><li>▪ Sprinkler protection may be appropriate in certain large-scale environments and/or an early warning air sampling smoke detection system.</li><li>▪ Consider fire compartmentation with at least two hours fire resistance.</li></ul>





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Features sometimes present

Hazard	Control
<p>High fire risks from the use of polystyrene composite wall and ceiling panelling and internal insulation forming “compartments” within the production area (i.e. a freestanding structure within the building envelope).</p> <p>Also possible such panels are present in areas where temperatures of 5°C or below require to be maintained (i.e. chillers or freezer units) as polystyrene (expanded or extruded) has good thermal performance as an insulator.</p>	<ul style="list-style-type: none"><li>▪ A site plan to locate such panels within the premises.</li><li>▪ Replacement of the existing panels with LPCB approved products (LPS 1181 or LPS 1208). This can be a phased approach starting with the highest risk areas. Further guidance is available on this subject from AXA.</li><li>▪ Suitable panel management system to be adopted including regular panel inspections and maintenance to prevent further deterioration in the panel condition.</li><li>▪ Where panel breaches are found, the core to be protected. Any services passing through the panel should be encased in suitable non-combustible collars/glands.</li></ul>
<p>Inappropriate comfort heating.</p>	<ul style="list-style-type: none"><li>▪ Appropriate fixed heating should be in place.</li><li>▪ Portable systems to be removed.</li></ul>
<p>Fire risk due to storage and use of Liquefied Petroleum Gas (LPG).</p>	<ul style="list-style-type: none"><li>▪ Storage of cylinders to be held in secure external locked cages, protected from direct sunlight, strict no smoking policy near to the cages or use of any naked flame or ignition source.</li><li>▪ Bulk LPG tanks to be located away from the main building on raised or level ground to allow any leaks to dissipate naturally.</li><li>▪ Operatives of the bulk tank to be trained and authorised for any refuelling processes.</li></ul>





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Features sometimes present

Hazard	Control
Portable gas-heated shrink-wrapping equipment.	To be avoided or suitable controls in place: <ul style="list-style-type: none"><li>▪ Away from storage areas</li><li>▪ Extinguishers present</li><li>▪ Automatic shut-off (dead man's handle) » Two persons present » End of day checks.</li></ul>
Presence of hot food preparation adjoining the storage risk.	<ul style="list-style-type: none"><li>▪ Hazardous processes to be carried out in a separate area away from the storage risk, preferably divided by fire resisting compartmentation.</li></ul>
Large contracts (i.e. large supermarkets) as this may increase their reliance on single customers.	<ul style="list-style-type: none"><li>▪ Consider Business Continuity Planning; first assessing the impact and other potential control mechanisms, such as fire compartmentation or splitting storage to different buildings to increase business resilience.</li></ul>





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### Employer's Liability and Public Liability

Hazard	Control
Work in cold environments i.e. cold stores and slips, trips and falls.	<ul style="list-style-type: none"> <li>Safe limits established for working in cold environments with appropriate breaks. Medical screening of employee may be required to ensure fitness to work and operate in cold stores.</li> <li>Correct personal protective equipment (PPE) to be provided i.e. gloves, body warmers etc.</li> </ul>
Segregation of people from vehicular traffic. Musculoskeletal risk.	<ul style="list-style-type: none"> <li>Clearly marked traffic routes, all employees/visitors issued with appropriate PPE i.e. high visibility jackets/vests.</li> <li>Appropriate level of training for all employees using workplace transport.</li> <li>Monitoring and control of vehicle movements around the storage and unloading/loading areas.</li> <li>Good level of employee training and importantly monitoring of handling operations by management.</li> </ul>

### Products Liability

Hazard	Control
<p>The potential that the food product being stored is contaminated or spoiled.</p> <p>Control of temperatures during storage, transport and delivery operations.</p> <p>Be aware of cross contamination issues arising from transportation vehicles not being cleaned or graded for carrying foodstuffs.</p>	<ul style="list-style-type: none"> <li>Controlled access to storage areas.</li> <li>Robust maintenance of chiller plant and temperature control equipment.</li> <li>Formal temperature recording systems/procedures.</li> <li>Systems of inspection, batch testing.</li> <li>Formalised product recall procedure in place.</li> <li>Management and product quality controls systems and records to be kept.</li> </ul>



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