

Storage and Use of Pressurised Aerosol Containers

Aerosol containers, whether in use or held in storage, can present a significant fire hazard.

This document provides an overview of the main risk concerns and guidance to help reduce the risks of loss or damage when storing and using aerosol containers.

Storage and Use of Pressurised Aerosol Containers

Introduction

Aerosols are used in a range of applications, including paints, medicinal sprays, deodorants, polishes and cleaners. However, the contents of aerosols can be highly flammable and readily ignitable, and when heated, can expand, release their contents, and in some cases, explode.

Fires in aerosol storage areas can spread rapidly, with heated and ruptured aerosol containers often becoming projectiles and spreading fire to outlying areas. Fires of this nature can quickly overwhelm sprinkler systems and other fire protection equipment.

This Loss Prevention Standard discusses the main risks associated with the storage and use of aerosol containers, and provides guidance on reducing the potential for related loss events. This guidance does not include the risks associated with aerosol manufacture, filling or dispensing.

Note: This document relates to the storage and handling of pressurised aerosol containers and is focussed on property loss prevention and related risk management guidance. It is not intended to address liability exposures. The presumption is that all regulatory requirements, such as fire risk assessments and compliance with local building regulations, codes, or standards, have or will be met.



Understanding the Risks

Aerosol containers are typically made of metal with a plastic nozzle. The agents within the container include:

- **Aerosol.** A suspension of solid or liquid particles in a gas, which can be flammable.
- **Propellant.** The liquefied or compressed gas that expels the contents from an aerosol container when the nozzle is depressed. A propellant is considered flammable if it forms a flammable mixture with air or if a flame is self-propagating in a mixture of the propellant and air.
- **Other.** Some aerosols use nitrous oxide (NO) as the propellant. NO is a colourless gas (at room temperature and pressure), and an oxidising agent, meaning its release during a fire event could accelerate and exacerbate combustion.

Aerosol classification varies worldwide, however the following classifications apply in the United Kingdom:

- **Extremely Flammable.** Contains 85% or more flammable components and the chemical heat of combustion exceeds or is equal to 30kJ/g.
- **Flammable.** Contains 1% or more flammable components and the heat of combustion exceeds or is equal to 20 kJ/g.
- **Non-flammable.** Contains 1% or less flammable components and the chemical heat of combustion is less than 20 kJ/g.

Note: This information can normally be sourced from the products Material Safety Data Sheet (MSDS)/ Safety Data Sheets (SDS).

The storage and use of aerosol containers presents a wide range of hazards including, but not limited to:

- **Fire inception risk.** Flammable aerosol sprays can ignite upon contact with heat sources such as heaters, static, process heat, utilities, mobile plant, sunlight, etc. Aerosol containers can expand and breach when subjected to prolonged heat, emitting flammable vapours into the atmosphere. These can ignite upon contact with heat sources.
- **Explosion.** Aerosol containers can explode depending on the flammability of the agents within the container. This can ignite or damage other items within proximity.
- **Fire load.** The contents of aerosol containers can increase the fire load within a building. This can lead to significant fire losses, particularly within storage and warehouse facilities containing other combustible items or goods.
- **Missile Effect.** When exposed to a heat source, aerosol containers can release pressurised gas and become projectiles, launching at speed and creating multiple seats of fire, potentially leading to rapid fire growth and more significant fire losses. This type of event can occur rapidly and with little warning.
- **Contamination.** Even minor fire damage will typically cause contamination of wall, floor and ceiling surfaces as well as environmental impacts caused by contaminated firefighting water run-off and smoke.

Risk Assessment

Risk Assessment

Given the explosion/fire risks associated with the use and storage of aerosol containers, a risk assessment should be completed and any corrective actions implemented promptly.

In the United Kingdom this is typically addressed within the various home nation fire risk assessment-based legislations, and the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR), which requires identification of any “Hazardous Areas” of the premises where explosive atmospheres may be present, and classifying them as either Zone 0, 1 or 2 depending on the frequency upon which an explosive atmosphere may be present.

- This assessment should be completed by a competent person and any corrective actions monitored until completion.
- The aerosol types, hazards and locations should be assessed.
- Any hazardous areas should be clearly identified and signed.
- Any electrical equipment installed in these areas should be suitably designed and marked as being suitable for use in the appropriate zoned area.
- The risks of static discharge, sparking and related explosions should also be considered.
- Consideration should be given to motors, control panels, lighting, and other powered equipment in the hazardous areas.
- Any zoned or classified areas should be identified by appropriate markings and signage in the area.

Also, premises where 150 tonnes or more of flammable aerosol containers are stored, need to be managed in compliance with the Control of Major Accident Hazards Regulations (COMAH).

Note: Risk assessments are deemed a minimum requirement, and following the recommendations in this document can help further reduce risk exposures.

Material Damage Risk Assessment

Before initiating risk management controls or installing any additional fire detection and protection systems, an assessment of the anticipated/potential financial losses, for both material damage and business interruption exposures, in the event of a significant or catastrophic loss event, should also be undertaken.

This helps ensure that risk controls, fire detection and protection systems, etc, are sufficient and reflective of the potential property loss estimates.

Refer to the Aviva Loss Prevention Standards **Material Damage Risk Assessment** and **Business Impact Analysis** for further guidance.

Managing Change

Any proposed changes to business activities, equipment and the premises for risk management purposes should be managed through a formal Management of Change process. This helps ensure all stages of the change are progressed with minimal exposure to the existing arrangements.

- These proposed changes should also be discussed with your Property Insurer and Insurance Broker.

Refer to the Aviva Loss Prevention Standards **Managing Change** for further guidance.

Managing the Risks

When considering how to control and manage the exposure of aerosol containers all aspects of the arrangements should be considered:

Ignition Source Control

Ignition sources should be strictly controlled in areas where aerosol containers are used. Potential ignition sources include, but are not limited to:

- **Arson/Malicious Damage.**
 - ✓ Ensure the premises security arrangements are adequate.
 - ✓ Ensure appropriate housekeeping arrangements/procedures are in place.
- **Electrical.** Electrical equipment includes fixed wiring and portable appliances.
 - ✓ Eliminate electrical equipment in such areas unless necessary, and ensure any remaining equipment is rated for use in areas where flammable vapours may be present.
 - ✓ Ensure equipment is subject to regular self-inspection, including the use of thermographic cameras, and formal maintenance arrangements to check for damage, faults, exposed cabling, etc.
 - ✓ Ensure workers are adequately trained on the risks of using unsuitable electrical equipment in areas where flammable vapours may be present.
- **Smoking.** Smoking should be prohibited internally and within proximity to any external aerosol container storage including empty and damaged containers.
 - ✓ Ensure adequate smoking locations are provided.
 - ✓ Check work areas for breaches of smoking rules during self-inspections.

- **Hot works.** Hot works include the use of welding equipment, blowtorches, grinders, drilling and brazing.
 - ✓ Hot works should be prohibited within any aerosol storage and handling area.
 - ✓ Any works should be removed to a 'safe' location or only be completed via 'cold' methods.
 - ✓ Where this is not possible, the hot works should be conducted in strict accordance with the Aviva Loss Prevention standard **Hot work Operations** after the area has been purged of any flammable vapours and aerosol containers cleared a distance of at least 10 metres.
 - ✓ Thermographic cameras should be used throughout the process and during fire watches.
 - ✓ Fire watches should be undertaken for up to 240 minutes after the hot works, and only reduced where supported by a specific risk assessment.
 - ✓ A minimum fire watch period of 120 minutes should be enforced.
- **Static.** Static electricity can be generated in a number of ways, including personnel movements and contact with synthetic materials; materials handling including shrink-wrapping, pouring or transferring of powders, granules or liquids; machinery operations including conveyors, mixing plant, etc, inadequate or damaged earth bonding, etc.

The potential for static discharges should be minimised:

 - ✓ Prohibit the pouring of powders, granules or liquids in such environments.
 - ✓ Enforce the wearing of anti-static clothing and personal protective equipment (PPE).
 - ✓ Ensure vulnerable machinery and processes are appropriately earth bonded.
 - ✓ Earth bonding should be routinely checked during self-inspections.
 - ✓ Conductive or anti-static flooring.
- **Lightning.**
 - ✓ Lightning protection should be installed to the building and infrastructure in line with local regulations, standards or codes.

Refer Aviva Loss Prevention Standard **Lightning Protections** for further guidance.

- **Lift-trucks.**
 - ✓ Forklift trucks should be compliant for use in areas where flammable vapours may be present.
 - ✓ Battery Charging should not be undertaken in such areas.
- **Hot Appliances.**

Stocks of aerosol containers should be kept away from sources of heat at all times (including when in storage, at order picking lines and at marshalling areas) including:

 - ✓ Any heat generated from work processes, utility pipes, heaters, etc.
 - ✓ Sunlight via roof lights, etc.

Dedicated Storage

Bulk aerosol storage, typically palletised sales stock, should ideally be held in a separate, detached, purpose-built building. Aerosol containers should not be stored with other materials and should be segregated from other storage and other occupancies.

The building should be of non-combustible, and preferably fire resisting construction, and sited at least 10 metres from other buildings or valuable assets. This can help reduce the exposure and the risk of explosion and fire damage to any neighbouring structures/assets.

If directly adjoining, within another building, or within 10 metres of other buildings, the aerosol storage building or compartment should be fire rated to at least 90 minutes' fire resistance (insulation and integrity).

Where the fire compartment adjoins or is within another building, and has openings such as doors, vehicle routes etc, these should be protected by listed/approved fire doors and/or automatically operating shutters, also providing a commensurate fire resistance rating. Consideration and thought should be given to the potential for a projectile aerosol passing through the opening, within the early stages of a fire and before the door/shutter has fully closed, and ensure the area is maintained clear of combustible items.

Attention should be paid to the means of automatically closing the fire door at the earliest stages of a fire, e.g., interlocked automatic smoke detection, and keeping any doors and shutters closed outside of use/outside of operating hours.

Based on the risk assessments (or the requirements of any associated protection systems), the aerosol store may need to be fitted with explosion relief panelling, with physical protection in place to contain the aerosol cans and prevent them from becoming missiles launched out of their storage location.

Refer Aviva Loss Prevention Standards **Fire Compartmentation, Fire Doors, Fire Shutters and Fire Dampers** and **Heat and Smoke Venting Systems** for further guidance.

Non-dedicated Storage

Where a dedicated separate cannot be provided, the following measures should be implemented:

- Stocks of aerosol containers should be held within closed caged areas:
 - ✓ Built from metal/wire mesh at a size no-greater than 25 mm x 25 mm.
 - ✓ Held against an external wall away from all other stock.
 - ✓ Careful attention should be paid to the entrance of the cage.
 - This should be kept closed at all times.
 - The door should be fitted with a self-closing device.
- Aerosol container stocks should be strictly segregated and other commodities excluded from the cages, including high hazard materials, such as flammable or combustible liquids/gases, oxidising agents, etc.
- Aerosol containers should be stored on pallets, ideally timber rather than plastic pallets.
- Spent combustible packaging should be removed if the pallet is broken down as part of a pick & pack operation.
- Storage spaces for aerosol containers should be maintained at low levels closest to the ground, in lower tiers of racking, etc, to help prevent vapour dispersal from high to low areas.
- Storage in aisles should be prohibited.
- Block stacking is not recommended.
 - ✓ If needed, the maximum height of block stacking should be determined to prevent pile instability, collapse and spill in any block stack.
 - ✓ The aisle space between block stacks should be considered in relation to stack height.

Important: Temporary storage arrangements that do not follow the guidance above should be prohibited. A related loss event is likely to be significant and potentially catastrophic to the organisation.

Ventilation

The compressed gases contained within aerosol containers are generally heavier than air. As such, low level ventilation extraction should be provided (within 300 mm of the floor) and to supplement this high-level ventilation inlets should also be provided.

If the ventilation is mechanically provided, the nature of the ventilation should form part of the risk assessment, to ensure all ignition sources are minimised. Appropriately rated electrical and non-sparking mechanical devices may be required.

Note: Based on the potential for vapour accumulation at low levels, the use of basement levels for storage, the proximity of basements to ground level storage and the presence of any internal drainage systems, should be carefully considered in any risk assessments and the ventilation provision. It is not recommended to store aerosol containers in, or near, any basements or drainage systems.

Storage - Small Quantities

Even when present in small quantities, aerosol containers should always be considered in relevant risk assessments.

General aerosol consumables within work areas should be stored in approved flammables cabinets when not being used. These should be located in areas remote from hazardous activities or extensive combustible storage. For small stocks of consumables, a storeroom with adequate resilience to fire would be suitable. A fire resistance rating (insulation and integrity) of at least 60 minutes should be considered. Stocks of aerosol containers should however be kept as low as possible at all times.

Damaged Aerosol Containers

The handling of any damaged aerosol containers should be considered in the site's risk assessment and waste management practices. Depending on the scale of damage:

- Remove damaged aerosol containers to an open area, preferably at least 10 metres from building and valuable assets to allow natural dispersion of any flammable vapours.
- Ensure lift trucks used for such movements are suitable for use in areas where flammable vapours may be present.
- These areas should be separated from vehicle routes and other activities with temporary fencing, bollards, etc, and warning signs posted.
- Unless completely empty, the aerosol containers should be treated as hazardous waste and removed by approved waste handling contractors/companies as soon as possible.

Moving Aerosol Containers

Bulk aerosol container deliveries may be held in staging areas before relocation to storage, and in marshalling areas pending loading on to delivery vehicles. The exposure created by these movements should be carefully considered and risk assessed.

Consideration should be given to the use of:

- Caged or fire compartmented receiving and shipping areas.
- Caged or fire compartmented staging areas.
- Portable cages or metal boxes for inward transportation between caged or fire compartmented storage areas, etc.
- The type of lift truck fittings that are appropriate, i.e. clamp or claw type fittings should not be used.

Housekeeping

Housekeeping in aerosol storage spaces should be strictly maintained with waste and ordinary combustibles, such as packaging, removed from the storage.

Aisles between storage piles or racks should be maintained clear and sterile at all times.

Empty aerosol containers, e.g. general consumables such as lubricants, cleaners, etc, can be stored with normal metal recycling, however they are pressurised vessels and may contain some flammable residues. Ensure waste receptacles are:

- Not located within 10 metres of buildings or other valuable assets.
- Not located directly on vehicle routes.
- Protected from heat sources including direct sunlight.
- Not located in proximity to hazardous areas, e.g. fuel islands, external welding or hot works areas, smoking shelters, etc.
- Emptied regularly.
- Not used for the depositing of other combustible waste, card, paper, rags, etc.

Refer to Aviva Loss Prevention Standard **Housekeeping** for further guidance.

Training

All employees should be appropriately trained, including temporary workers. Consider:

- Hazards relating to aerosol products.
- Correct handling techniques.
- Appropriate housekeeping and waste handling practices.
- Emergency procedures including liaison with the local Fire and Rescue Service.
- Procedures for handling and dealing with damaged or leaking items.
- Risks of using electrical equipment in areas where flammable vapours may be present.

Automatic Fire Detection and Automatic Fixed Fire Protection

As a minimum, automatic fire detection should be provided in all fire compartments containing aerosols, and be connected to a reliable and continuously monitored and/or attended location. There should also be a manual means of raising the fire alarm.

Based on the values and business impact exposed, automatic sprinkler protection fed by a dedicated and reliable fire water supply should also be considered. This should be designed in accordance with an internationally recognised standard **LPC Rules for Automatic Sprinkler Installations Incorporating BSEN12845** in the United Kingdom.

Attention should be given to the following:

- Commodity classification including packaging arrangements.
- Storage height.
- Building height and roof slope.
- Clearance from commodity to sprinkler deflector and building height.
- Aisle spaces between loads or racks.
- Flue spaces within the storage – longitudinal and transverse.
- Distances to any other commodities.
- Cage restraints or fire compartments.

All designs and installations should be completed by approved/listed companies using equipment that is approved/listed to internationally recognised standards.

Refer to your property insurer and broker for specific guidance on automatic fire detection and fire suppression systems.

Self-Inspection

There should be a formal and audited self-inspection programme including aerosol storage areas, to ensure:

- Site rules and policies on storage and handling are being followed, and any arising issues are appropriately addressed.
- Detection and protection equipment are functioning normally and not impaired.
- Other control measures, including fire shutters, remain in normal working order.
- Storage cages are undamaged.
- Thermographic cameras are used to check for unusual heat patterns.

Refer to Aviva Loss Prevention Standards **Self-Inspections** and **Use of Thermographic Cameras – General Considerations and Checklist** for further guidance.

Fire and Rescue Service

Local Fire and Rescue Services are often amenable to inspecting premises with bulk aerosol storage to evaluate fire risk exposures, firefighting response and offer guidance.

It is also important to maintain suitable access for the Fire and Rescue Services and consider the distances and location to the nearest source of fire water or hydrant that they may need to use.

- The location and number of fire hydrants in the proximity of the premises should be documented in an emergency response plan or shown on appropriate drawings.

It is also good risk management practice to know what water supplies are available for the Fire and Rescue Service to use. Therefore, site management should always establish:

- What firefighting water supply is available.
- The static pressure, flows and residual pressure test results.
- Whether additional resources, such as a private hydrant system or water storage tanks are necessary.

Please refer to the Aviva Loss Prevention Standard **Manual Fire Fighting Water Supplies** for further guidance.

Emergency Response

An emergency response plan should be specifically developed to outline key responsibilities and actions in an emergency event. The emergency response plan should include responses to all likely property and business interruption related events as described in this Loss Prevention Standard. It should also include the actions key individuals should take during emergency events.

The emergency response rules should be documented and training provided.

Refer to Aviva Loss Prevention Standard **Emergency Response Teams** for further guidance.

Business Continuity Planning

Business Continuity Plans should be reviewed to ensure disaster recovery and continuity arrangements remain adequate. Any actions generated should be addressed promptly.

Refer to the Aviva Loss Prevention Standard **Business Continuity Management** for further guidance.

Key Actions

- Undertake all regulatory risk assessments and a material damage risk assessment.
- Segregate aerosol container stock in a dedicated building wherever possible, and at least 10 metres from other buildings and valuable assets.
- Where the aerosol container store adjoins other buildings, ensure fire compartmentation measures provide at least 90 minutes fire resistance (insulation and integrity) between the areas.
- Where dedicated storage cannot be achieved install suitable aerosol container storage caging in warehouse areas.
- Ensure appropriate automatic fire detection and protection systems are adequate.
- Ensure ventilation systems are adequate and rated for use in areas where flammable vapours may be present.
- Formalise procedures for handling damaged aerosol container stock with close attention to waste management areas.
- Carry out regular self-inspections for breaches of site rules and guidelines.
- Train workers on the associated risks.
- Adopt appropriate emergency response procedures.

Checklist

A generic **Storage and Handling of Pressurised Aerosol Containers Checklist** is presented in Appendix 1 which can be tailored to your own organisation.

Specialist Partner Solutions

Aviva Risk Management Solutions can offer access to a wide range of risk management products and services at preferential rates via our network of Specialist Partners.

For more information please visit: [Aviva Risk Management Solutions – Specialist Partners](#)

Sources and Useful Links

- HSE Guidance HSG71: [Chemical Warehousing – The storage of packaged dangerous substances](#)
- The British Compressed Gases Association Code of Practice 18 document [The Safe Storage, Handling and Use of Special Gases](#)
- [RiscAuthority Document RC19 Recommendations for the Storage of Aerosol Products](#)

Note: Whilst UK standards and legislation are referenced in this document, other international standards and legislation should be referenced where applicable.

Additional Information

Relevant Aviva Loss Prevention Standards include:

- **Contamination Following a Fire - Property**
- **Management of Combustible Waste**
- **Electrical Installations - Inspection and Testing**
- **Emergency Response Teams**
- **Fire Compartmentation**
- **Fire Doors, Fire Shutters & Fire Dampers**
- **Heat and Smoke Venting Systems**
- **Hot Work Operations**
- **Housekeeping**
- **Manual Fire Fighting Water Supplies**
- **Self-Inspections**
- **Business Continuity Management**
- **Material Damage Risk Assessment**
- **Lightning Protection**
- **Use of Thermographic Cameras - General Considerations**
- **Use of Thermographic Cameras - Checklist**

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.*

*The cost of calls to 03 prefixed numbers are charged at national call rates (charges may vary dependent on your network provider) and are usually included in inclusive minute plans from landlines and mobiles. For our joint protection telephone calls may be recorded and/or monitored.

Appendix 1 - Storage and Handling of Pressurised Aerosol Containers Checklist

Location	
Date	
Completed by (name and signature)	

	Assess the Risks	Y/N	Comments
1.	Have all aerosol container stored or proposed to be stored been identified?		
2.	Have Material Safety Data Sheets (MSDS) been obtained for all aerosol containers?		
3.	Have the types and quantities of aerosol containers been quantified, assessed and classified?		
4.	Are the expected quantities to be stored below thresholds for any regulatory requirements such as COMAH Directive?		
5.	Have all storage locations for aerosol containers been identified, including: <ul style="list-style-type: none"> • High volume or bulk stocks of aerosol containers? • Locations for aerosol containers used in work processes? • Small quantity locations? 		
6.	Unless appropriately arranged in accordance with this document, are temporary storage arrangements prohibited?		
7.	Have risk assessments been completed for the safe handling and storage of aerosol containers?		
8.	<ul style="list-style-type: none"> • Has a fire risk assessment been completed? • Does this include the aerosol containers and the aerosol container storage areas? 		
9.	Has a Dangerous Substances and Explosive Atmosphere (DSEAR), ATEX or similar type of risk assessment been completed?		

	Assess the Risks Contd.	Y/N	Comments
10.	<ul style="list-style-type: none"> Are aerosol container storage volumes maintained to as low a level as possible at all times? Is this a constant and repeated challenge to the business? Is this audited? Is stockpiling prohibited? 		
11.	Are all potential heat and ignition sources identified, and risk assessed?		
12.	Has the risk posed by the aerosol container storage (including fire, explosion and smoke contamination risk) been assessed for their exposure to neighbouring processes and structures?		
13.	<ul style="list-style-type: none"> Has the risk posed by aerosol container storage (including fire, explosion and smoke contamination risk) been assessed for liability and life safety exposures? Has this identified the propellant gases that could be present? 		
14.	<ul style="list-style-type: none"> Has the risk posed by aerosol container storage (including fire, explosion, fire water runoff and smoke contamination risk) been assessed for environmental impact? Does this include an assessment of local water courses and surface water drains? 		
15.	Are all recommended actions generated from any risk assessments been completed?		
16.	Is lightning protection provided for the buildings in line with local building regulations?		
17.	Is the storage of aerosol containers externally in the yard prohibited?		
18.	<ul style="list-style-type: none"> Has a dedicated detached or fire compartmented store been designed for the storage of the type, and volume of aerosol containers on site? Is this as a minimum at least a rated fire resisting structure providing at least 90 minutes fire resistance (insulation and integrity)? 		
19.	Is the structure located a sufficient distance away from other structures or buildings to reduce the risk of blast-damage and fire spread?		
20.	<ul style="list-style-type: none"> If there is no dedicated storage, are aerosol containers held in a dedicated room or chamber? Is this a fire resisting compartmented structure? 		

	Storage Arrangements	Y/N	Comments
21.	Where fire compartments are provided are all openings and penetrations appropriately protected with fire stopping, automatically closing fire doors/shutters, etc.?		
22.	<ul style="list-style-type: none"> Are fire compartments or cages kept closed at all times? Are any doors provided automatically closing? Are any doors provided in an arrangement with 2 doors in series, similar to an air lock, where one door can only open when the other is fully closed? Are the automatic closing mechanisms enabled to close on the most appropriate variable, to ensure the door is only open for the minimum amount of time? 		
23.	Has low level and high level ventilation, suitable for use in environments where flammable vapours might be present, been installed to a recognised standard?		
24.	Based on the gases present within the aerosol containers being heavier than air, are aerosol containers stored closer to the ground in racked storage arrangements?		
25.	<ul style="list-style-type: none"> Are any basements and sub-ground areas identified? Does the ventilation consider the aerosol container storage at ground level and the potential for vapours accumulating in the basement? Is aerosol container storage prohibited? 		
26.	<ul style="list-style-type: none"> Has an assessment for explosion exposure and associated relief been completed? Have explosion relief panels been installed? 		
27.	<ul style="list-style-type: none"> Are all aerosol container stocks held inside self-closing metal cages (consisting of metal meshing/welded metal with gaps no-greater than 25mm x 25mm)? Are any openings protected by approved/listed appropriately rated automatically and self-closing fire doors and/or shutters? Is the actuation mechanism for these doors understood? Is the actuation arranged to close the door to prevent rocketing aerosol containers passing through the opening? Are all doors closed when not in use, at the end of the shift, etc.? 		

	Storage Arrangements Contd.	Y/N	Comments
28.	<ul style="list-style-type: none"> Are stores of aerosol containers held away and segregated from other stored commodities? Including other high hazard commodities such as flammable liquids? 		
29.	Are plastic pallets prohibited?		
30.	Are aerosol container stores held against an external wall?		
31.	<ul style="list-style-type: none"> Are all potential heat and ignition sources identified? Are all aerosol containers stored well away and segregated from ignition and heat sources? 		
32.	Are all aerosol containers stored: <ul style="list-style-type: none"> ✓ Out of direct sunlight? ✓ Away from heaters or heated surfaces? 		
33.	Where small quantities of aerosol containers are stored are these held in normally closed approved/listed flammable liquids cabinets, such as those stored in a workshop or maintenance department, etc.?		
34.	Are aerosol containers stored in the lower tiers of any racking?		
35.	Are measures in place to prevent aerosol containers falling from racks?		
36.	Is storage prohibited in aisleways?		
37.	Is lighting located over aisleways and not over the racking?		
38.	Are there formal racking inspections to check for rack damage and leg integrity?		
39.	<ul style="list-style-type: none"> Is the storage of aerosol containers in solid piles prohibited or at least limited? Are the pile heights based on pile stability and the potential for collapse? Are the aisle spaces based on pile height? 		

	Waste and Damaged Aerosols	Y/N	Comments
40.	Is training provided to workers on how to identify damaged aerosol containers?		
41.	Are there formal risk assessments and procedures for identifying, handling and managing damaged or waste aerosol containers?		
42.	<ul style="list-style-type: none"> Has a dedicated space been established for damaged aerosol containers, empty containers and returned stock? Is this located externally, a safe distance from any buildings and combustible storage? Are appropriate fire precautions in place? 		
43.	<ul style="list-style-type: none"> Is there a dedicated external area or appropriately arranged internal area for holding and degassing damaged aerosol containers? Is this appropriately vented? Are appropriate fire precautions in place? 		
44.	<p>Are the arrangements for the storage of damaged/empty/returned aerosol containers in line with the arrangements for storing undamaged aerosol containers?</p> <ul style="list-style-type: none"> Construction? Fire compartmentation? Fire doors? Cages? Ventilation? Location? Ignition sources, etc.? 		
45.	Are stores of damaged/empty/returned aerosol containers held away and segregated from other stored commodities and undamaged aerosol containers?		

	Staging and Internal Movements	Y/N	Comments
46.	<ul style="list-style-type: none"> Has the process of receiving aerosol containers, staging them, moving them through the building to storage and then the reverse when they are shipped out been risk assessed? Has this assessment considered what would happen if there was a fire during any of these activities and how the aerosol containers need to be segregated? 		
47.	Is the staging and dispatch area fire compartmented or protected with appropriate cages?		
48.	Is the movement of aerosol containers internally within cages?		
49.	<ul style="list-style-type: none"> Are conveyors used at all in the movement of aerosol containers? Has aerosol containers damage and/or falling been considered from the conveyor? 		
50.	Are forklift trucks and battery charging areas appropriately risk assessed, rated and arranged?		
51.	Is the lifting of pallets using any shrink wrapping prohibited?		
52.	Are clamps and claws prohibited in the lifting or movement of the aerosol containers?		
53.	<ul style="list-style-type: none"> Has a fire been considered starting on the delivery vehicle in transit through the building and on the export vehicle? Have the exposures caused by this been risk assessed? 		

	Management Programmes	Y/N	Comments
54.	<ul style="list-style-type: none"> Is security considered for the potential threat of malicious damage and arson? Does this take into account any yard storage or external waste arrangements? 		
55.	<ul style="list-style-type: none"> Is there a formal smoking policy? Is smoking prohibited internally and within 10 metres of any yard storage where external? 		
56.	<ul style="list-style-type: none"> Are fixed wiring tests of the electrical system completed and up to date? Are all recommended remedial measures addressed and completed? Are electrical systems and equipment rated for use in areas where flammable vapours may be present? 		
57.	Are all portable appliances regularly inspected and tested as part of a formal testing regime?		
58.	Are thermographic surveys completed on the electrical and heating systems?		
59.	<ul style="list-style-type: none"> Is hot work prohibited from within 10 metres and inside all aerosol container storage areas? Are only 'cold' working methods used within aerosol container storage areas? 		
60.	Are items such as mobile phones, matches, lighters and e-cigarettes prohibited in aerosol container storage areas?		
61.	Is static electricity considered as a potential ignition source and are these exposures mitigated?		
62.	<p>Are regular, formal (recorded) and informal inspections completed of all aerosol container stores? Do such inspections cover:</p> <ul style="list-style-type: none"> Condition of stored aerosol containers (checking condition of cartons to identify pierced/damaged containers)? Condition of the storage space (including condition of walls/roofing)? Condition of storage arrangements? Condition of any storage cages? Adherence to local site rules (smoking controls, prohibition of mixed storage in aerosol container storage spaces)? Housekeeping, including ensuring that aerosol container storage remains clear of all other stored materials, waste and packaging? 		

	Management Programmes Contd.	Y/N	Comments
63.	<ul style="list-style-type: none"> Is there a formal Emergency Response Plan? Is there a formal Emergency Response Team with clearly designated and defined duties? 		
64.	Are aerosol container storage areas formally identified, documented and included in site emergency plans and drawings?		
65.	<ul style="list-style-type: none"> Have the local fire services been invited to site? Are they familiar with the aerosol container storage areas and the site emergency plans? 		
66.	In relation to fire water run-off and emergency response, are there any concerns or exposures with local water courses and surface water drains?		
67.	Does the site have formal Business Continuity or Contingency Plans?		

	Fire Detection and Protection	Y/N	Comments
68.	Is automatic fire detection provided throughout the building in all rooms/compartments including within the aerosol container storage areas?		
69.	Is there a manual means to raise the fire alarm in all areas including the aerosol container storage areas?		
70.	<ul style="list-style-type: none"> Are the manual and automatic fire alarms connected to a reliable constantly attended location or approved/listed remote monitoring station? Is the communication line between the alarm panel and constantly attended monitoring area/alarm receiving centre monitored for fault conditions? 		
71.	<ul style="list-style-type: none"> Is automatic fixed fire protection installed over the aerosol storage? Is this extended to the waste storage and degassing areas? 		
72.	Is this design known and fully documented?		
73.	Is this protection philosophy approved by insurers for property insurance purposes?		

	Fire Detection and Protection Cont'd	Y/N	Comments
74.	<p>For the installed protections are the storage heights and configurations maintained at the required levels?</p> <ul style="list-style-type: none"> • Aisle spaces? • Flue spaces? • Storage heights? • Clearance from storage to sprinkler head deflectors? • Clearance from storage to roof/ceiling deck height? 		
78.	<p>Are all fire detection and fire protection systems inspected, tested and maintained in line with a recognised standard?</p>		
79.	<ul style="list-style-type: none"> • Are manual firefighting water supplies in the area understood and documented? • Are these tested to assure of the quantity and reliability of the water supplies? 		
80.	<p>Additional comments:</p>		

Please Note

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