Loss Prevention Standards – Asset Class(es)

Conveyors

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The use of conveyors in the workplace, presents benefits and challenges to users and business owners.

This Loss Prevention Standard outlines the main risk concerns in relation to conveyors, with practical guidance to help reduce the potential for loss or damage.

Conveyors

Introduction

Conveyors are a common item of mechanical handling equipment used across a variety of industries and sectors including manufacturing, retail and warehousing/logistics, and used to transport materials, stock, and products efficiently from one location to another, often over significant distances, and/or through purpose designed fire compartments.

They are available in a variety of types, sizes, and configurations depending on the application and operational environment. They can be specifically designed for the location, assembled using 'off the shelf' products, or as commonly found, a blend of standard and bespoke systems.

Whilst traditionally limited to single height systems across manufacturing industries, the expansion of automated storage and retrieval systems in recent years has resulted in many warehouse environments now featuring extensive multi- level conveyor systems.

Fires can originate within the conveyor system itself, as demonstrated in an incident involving a corkscrew conveyor in Erith in September 2024. Alternatively they can be seated within the materials being transported as occurred in a conveyor fire at a recycling plant in Bridgnorth in February 2022. The risk management guidance within this Loss Prevention Standard can help reduce the risks of such incidents.

Note: The focus in this Loss Prevention Standard is towards property loss prevention and related risk management guidance and is not intended to address liability exposures. The presumption is that all regulatory requirements, such as Fire Risk Assessments, have been met.

Understanding the Risks

Ignition hazards include:

- Overheating. Friction from misaligned belts, slipping or jamming; lubrication issues; accumulation of combustible material e.g., lint, dust, grease etc., around moving parts; uneven, overloading, or seizing bearings/gears and motors.
- Electrical. Electrical arcing, malfunction, or overload and static.
- Hot Materials. Materials can accumulate heat during manufacturing, heating, and sealing processes. Hot materials can also be discharged onto the conveyor from adjacent or overhead processes.
- Hot work. Sparks from cutting and welding operations can ignite materials or dust on conveyors/components.
- Battery fires. Lithium-ion battery powered stock picking equipment in automated storage retrieval systems can ignite as a result of damage, inherent faults, charging issues etc.
- Hydraulic fluids. A release of hot pressurized hydraulic fluids in the form of a vapour cloud can ignite upon contact with hot surfaces.

The potential for fire propagation can be aided by:

- Combustibility. Conveyors can feature combustible elements such as plastics, rubbers, hydraulic oils, lubrication oils/grease, lint build up, etc., notwithstanding combustible goods, materials, packaging etc., on the conveyor.
- Travelling fire. Fire can spread through premises as the conveyor continues moving.
- Location. Conveyors are often sited in raised locations/ceiling height with limited accessibility, this can make initial fire-fighting attempts challenging.
- Encasement. Conveyors can be encased/enclosed to help control emissions such as dust and lint, or for soundproofing purposes. This can hinder firefighting efforts and also increases the potential for explosion incidents.
- Fire Load. The volume of goods or materials moved by conveyor systems may increase the fire load within the premises.

Types of Conveyors

There are many different types of conveyors and conveyor systems, depending on the end use application. They can be electrically or pneumatic powered, manually operated or gravity driven. Common types include, but are not limited to:

- Belt Conveyors. These are the simplest type of conveyor system and utilise a continuous belt, typically made of rubber or fabric to move products, goods etc., between processes or to and from storage locations.
- Roller Conveyors. Roller conveyors work by using a number of free spinning rollers connected to a supported frame. Goods can move using gravity or via momentum.
- Chain Conveyors. These systems use chains and sprockets to power the conveyors and are typically used in heavy industry and manufacturing plants.
- Screw or Auger Conveyors. Mainly used for moving bulk materials like grains, pellets, powders etc., via a rotating screw/auger. These conveyors are commonly enclosed to avoid waste and reduce dust levels.
- Bucket Elevators. These conveyors use a number of buckets attached to a moving belt or chain and are commonly used to move aggregates or agricultural products.
- Spiral Elevators. Typically utilised in food manufacturing, these conveyors feature a continuous spiral-shaped belt, rollers, or chain to transport goods, largely in space limited environments.
- Apron Conveyors. These comprise overlapping metal plates and commonly used in heavy industry, aggregates etc.

Risk Assessment

- Loss Assessment. An assessment of the anticipated/possible financial losses, for both the material damage and business interruption exposures, in the event of a significant or catastrophe loss event should be undertaken. This helps ensure any risk controls are proportionate and reflective of the potential loss estimates.
- Fire Risk Assessment. The premises Fire Risk Assessment should be reviewed to ensure fire safety arrangements remain adequate. Any actions generated should be addressed promptly. Guidance on maintenance, inspection, fire protections etc., are provided in this document, and within other Aviva Loss Prevention Standards.
- Explosion assessment. The use of powered conveyor systems in some business premises may create duties under explosive atmospheres regulations, depending on the location, enclosures and materials handled. In the United Kingdom this is currently addressed via The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR). Any obligations under these Regulations, or corresponding International Regulations / Directives where applicable, should be investigated and any actions generated addressed promptly.

Management of Change

- Where works involving conveyors are part of a change to business activities, this should be managed through a formal Management of Change to review how the introduction of the systems could alter the risks that threaten the viability of the business, e.g., changes to layout to accommodate gantries/supports, speed of discharge from connected conveyors and/or manufacturing plant etc. Refer to Aviva Loss Prevention Standard Managing Change for further guidance.
  - ✓ Any significant changes to business premises should also be discussed with your Property Insurer and Insurance Broker.

Design and Construction

Conveyor systems should be designed and built to restrict fire spread and smoke contamination. The design, construction, commodities conveyed, location, speed and incline of the conveyor may all influence fire and smoke propagation, the ability of fire detection/protection systems to respond, and the access available for firefighting.

- The conveyor system should be made of non-combustible materials where available and designed to withstand a fire without collapse.
  - ✓ Ensure the supporting frame and structure is non-combustible.
  - ✓ The use of intumescent finishes to conveyor supports should be considered if there is a significant risk of collapse during a fire event with resultant damage to critical infrastructure, equipment, fire protections, fire compartmentation etc.
  - ✓ Use non-combustible conveyor belts. If this is not possible, use fire-retardant belts if operating parameters allow them to be used.
  - ✓ If an enclosure around or over the conveyor is needed, ensure materials are non-combustible.
- Avoid bypassing fire compartment walls, floors, or fire barriers.
  - ✓ Conveyors passing through fire compartment walls/floors may compromise the integrity of the building and its ability to limit fire spread.
  - ✓ Where this is not possible, automatic fire shuttering should be installed to conveyor openings to achieve a fire resistance rating commensurate with the fire compartment wall, floor, or barrier.
  - ✓ In the United Kingdom fire shutter assemblies should meet the requirements of BS EN 16034:2014 Pedestrian Doorsets, Industrial, Commercial, Garage Doors and Openable Windows. Product Standard, Performance Characteristics. Fire Resisting and/or Smoke Control Characteristics and the testing and evaluation requirements for LPCB approval and listing of fire door sets as detailed in LPCB Loss Prevention Standard LPS LPCB 1056 Requirements for the LPCB approval and listing of fire doorsets, lift landing doors and shutters or equivalent.
  - ✓ Fire shutters should only be held open with special devices that release, prompting closure, automatically when the fire alarm and/or automatic fire sprinklers activate. Shutters that operate via a fusible link or other similar devices are not recommended due to their delay in operation.
  - ✓ Modifications may be required to the conveyor system to retract or drop down upon activation of fire detection and/or protection systems to allow full closure of the fire shutters and retain the integrity of the shutter protection. This should be factored into the design specification. Refer to Aviva Loss Prevention Standard Fire Compartmentation for further guidance.
  - ✓ Conveyor control and monitoring systems should be provided to prevent conveyed material blocking the operation of any shutters.
  - ✓ Conveyor tunnels linking buildings should be protected at either end in a similar manner.

- Conveyor system(s) running at high level or underground, through tunnels or below galleries can also hinder manual firefighting efforts.
  - ✓ Open conveyors are normally preferred as they provide visibility to detect fire and better access for firefighting.
  - ✓ Enclosed conveyors can act as a flue which may prevent heat being released or firefighting hoses to be deployed.
  - ✓ Where there is a risk of a fire leading to an explosion (deflagration to detonation transition), enclosures can also lead to significantly more damage.
  - ✓ When enclosed conveyors are used, localised fire suppression is often the most effective fire protection solution.
- The speed of the conveyor may directly influence the rate of fire spread and in turn how quickly fire detection and protection systems need to respond.
  - ✓ Where conveyors are inclined, fire growth may be exacerbated by the flue effect. Inclines of more than 30% allow for a faster spreading flame front.
  - ✓ Ensure this is considered within fire detection and protection system design (cause and effect).
- Hydraulic conveyor systems should utilise non-combustible hydraulic fluids where possible.
  - ✓ This reduces the overall fire load presented by the conveyor system and the potential for fire propagation.
  - ✓ The potential for flammable vapour cloud release attributed to pressurised leaks of hot hydraulic oils is also negated.
- Where possible do not position one conveyor above another (either parallel or crossing over). Doing so may create areas that are shielded from any ceiling sprinklers, and in the event of collapse potentially result in increased damage.
  - ✓ Where positioning one conveyor over another cannot be avoided, sprinkler protection, where present, should be extended to beneath any significant conveyor obstructions.
- Do not locate conveyor systems directly over critical infrastructure, machinery etc.
  - ✓ Consider what exposures exist to the conveyor by way of critical plant, other utilities in proximity, or the building structure etc., and what infrastructure, equipment, critical processes etc., would be exposed should the conveyor system go on fire, collapse etc.
- Do not use conveying systems to transport utilities such as grouped electric cables, flammable gases, and ignitable liquids.
- Condition monitoring via belt conveyor monitoring should be considered, particularly for fast moving systems with increased hazard exposure and/or criticality.
  - ✓ These systems monitor the conveyor systems for issues such as bearing temperature, speed and motion, alignment of belts and tracks, damage/tearing etc.
  - ✓ The monitoring equipment should provide an audible alarm and notify key personnel of any detected issues.
  - ✓ Where the process allows, such systems should be interlocked to isolate the system safely upon action of a detection/monitoring device.
  - ✓ Equipment should be suitably rated for hazardous environments where applicable e.g., combustible dusts.
- Avoid vehicle routes or parking around and under conveyor structures.
  - ✓ Protect vulnerable conveyor(s) and support structures against impact damage.
- Consider ventilation/smoke extraction.
  - ✓ Combustible conveyors can produce intensely hot fires which emit dense, black, toxic smoke when ignited. This smoke can severely hamper manual firefighting, particularly in underground or enclosed systems where entry and means of heat venting are limited.

Maintenance

- It is important to ensure an appropriate regime of Planned Preventative Maintenance (PPM) is in place for all conveyor components (e.g., belts and tensioners, motors, gears, and bearings, electrical components) based on Original Equipment Manufacturer (OEM) instructions and industry best practice.
  - ✓ The fire hazards associated with some conveyors can increase with the age. For example, an older belt conveyor can become coated or impregnated with oils or combustible residue over time, increasing its combustibility. Metal belts on travelling ovens expand with age and need more regular servicing. Older conveyors may also be more prone to mechanical breakdown and replacement parts may be harder to obtain, increasing the replacement lead time.
- Earthing continuity should be subject to at least monthly checks, or more frequently if static discharges could ignite combustible dusts or flammable vapours.
- Adequate spares should be held for any conveyor equipment with potential long replacement lead times, such as complex or specialised gear sets and tensioners, along with spare belting to repair or replace damaged portions of any conveyor system.
- Essential maintenance activities which include hot works on or in close proximity to combustible conveyors should be controlled in accordance with Aviva Loss Prevention Standard Hot Work Operations.
  - ✓ Conveyors should be stopped during any hot works on or near the conveyor system; combustible elements should be fully covered with non-combustible barriers, and where present any hydraulic oils drained.
  - ✓ Thermographic cameras should be incorporated into fire watch procedures to help identify hot spots, heat transfer etc. Refer to Aviva Loss Prevention Standard Thermographic Surveys for further guidance.
- Do not use blowtorches or similar heat generating equipment to remove frayed belt material.
  - ✓ Frayed belt fibres should instead be removed using cutting equipment and sealed.

Self-Inspection

- Conveyors should be included as part of the premises formal self-inspection programmes. This can help with early identification of damage, faults, wear, leaks etc., that may lead to more significant damage.
  - ✓ Adequate access should be provided to allow operatives to walk the entire conveyor system.
  - ✓ In addition, checks should be carried out at the beginning of each shift to check for:
    - Loose or stuck rollers.
    - Frayed belts.
    - Material accumulating on or under belts, around motors, bearings and supporting structures.
    - Unusual noise or vibration.
    - Hydraulic oil leaks (where present).
    - Excessive debris, dirt, dust, or lint accumulation.
  - ✓ Where deficiencies, blockages, material accumulations and/or spillages are noted, remedial action should be taken promptly.
  - ✓ Do not store combustible material under conveyors. If such storage cannot be avoided, provide automatic sprinkler protection.
  - ✓ Remove vegetation growth that exposes external conveyor(s) and support structures.
  - ✓ Unnecessary sources of fire ignition, such as smoking around combustible conveyors or conveyors transporting combustible or explosive materials should be eliminated.
  - ✓ The use of photographic evidence when undertaking with such inspections can prove invaluable.
  - ✓ Thermographic camera inspections can also prove invaluable for such inspections e.g., checking for hot spots or overheating.

Refer to Aviva Loss Prevention Standard Fire Safety Inspections for further guidance.

Emergency Response

The site emergency response team should be trained to deal with emergencies involving conveyor systems, including control systems and emergency isolations, particularly where extensive enclosed or underground conveyor runs are present. Refer to Aviva Loss Prevention Standard Emergency Response Teams for further guidance.

The emergency response rules should be formally documented, and appropriate training provided.

Note: The explosive potential of some conveyor enclosures may increase as a result of sudden high oxygen levels, such as when access panels or doors are opened. This contingency should be risk assessed, and where pertinent, access into such compartments during a fire event should be limited to appropriately trained persons only.

Fire Protections

Automatic Fire Detection

Automatic fire detection systems should be designed for the anticipated fire signature, and able to quickly detect a travelling conveyor fire e.g., linear heat detection or flame detectors.

Locating and spacing of automatic fire detection should be based upon the combustibility of the conveyor and the commodities conveyed, including the packaging, as well as the speed of the conveyor relative to the speed of detection needed to actuate any fixed fire protection systems and/or shut down the conveyor to minimise fire spread. Automatic fire detectors should be located so as to avoid impact damage from the conveyed material.

Automatic fire detection systems should be designed, installed, and maintained in accordance with recognised standards, such as BS 5839-1:2017 - Fire detection and fire alarm systems for buildings - Code of practice for design, installation, commissioning, and maintenance of systems in non-domestic premises. This is vital for life safety and early notification to the Fire and Rescue Service.

A means of manually raising the fire alarm should also be provided.

Any plans to change the existing fire detection system or install a new fire detection system should be discussed with your Property Insurer and Insurance Broker.

Automatic Sprinkler Protection

Sprinkler protection within premises featuring conveyor systems presents several challenges:

- If the clearance distance from the conveyor to the fire protection is too great, and the seat of the fire is moving away from the protection as it travels, activation/actuation of the sprinkler head(s) may be delayed.
- Alternatively, and depending on the conveyor speed and fire size/energy, too many heads could activate.

In either scenario the sprinkler system could be compromised, meaning the fire may not be promptly suppressed or adequately controlled.

In addition, the majority of automatic sprinkler systems are designed to control rather than extinguish a fire and require some form of manual firefighting intervention. Fire and Rescue Service attendance may be delayed due to changes in attendance policy or location and deployment and targeting of fire may be further complicated by the presence of enclosures, potentially preventing water reaching the seat of the fire.

Despite these challenges, an automatic sprinkler system remains the most effective fixed fire protection systems to protect conveyors, although the type of protection needed will likely be dependent on the design and construction of the conveyor, and the commodity being conveyed.

- A wet pipe sprinkler system is the most reliable sprinkler system and has the least amount of delay before water can suppress a fire at its seat. With this system design the sprinkler pipework is normally charged with water, and as soon as the fire activates a sprinkler head in the room, water is immediately available to suppress the fire at its seat.

Where an existing automatic sprinkler system is already installed, the design should be adequate for any changes in risk profile associated with conveyor systems. A suitably accredited sprinkler maintenance company, such as one approved to LPCB Loss Prevention Standard LPS 1048: Requirements for the approval of sprinkler system contractors in the UK and Ireland, should be asked to confirm the coverage, sprinkler density, water supply demand and water supply duration are likely to be adequate and provide recommendations for enhancing the protection where necessary.

Additional drainage or conveyor pitch may be necessary to help prevent collapse due to overloading from water weight from either sprinkler discharge or fire hose streams. Wherever conveyors operate underground, diversion curbing at grade level to intercept any water rundown from the aboveground segments should be provided. Adequate sump pump or dry well facilities to remove water should also be installed.

Aviva Loss Prevention Standard Preventing Pollution from Fire Fighting Run-off provides useful guidance on avoiding contamination events

Any plans to change or install automatic fire protection systems should be discussed with your Property Insurer and Insurance Broker.

Explosion Detection and Suppression

Where enclosed conveyor systems are used to transport commodities that produce finer particles and dust with explosive potential, consideration should be given to installing spark detection and suppression systems through the enclosure.

- Such systems provide rapid detection of sparks, typically generated from worn moving parts, bearings, trapped metals or aggregates, and emit a suppression agent or water based mist to suppress the spark and/or reduce the oxygen levels within the enclosure, often with little impact to production activity.
  - ✓ Any such systems should be tested and certificated to an approval standard such as:
    - FM3265 Examination Standard for Spark Detection and Extinguishing Systems.
    - NFPA 69 Standard on Explosion Prevention Systems.
  - ✓ Such systems should be designed, installed, commissioned, and maintained by a competent and reputable installer with experience in installing spark detection and suppression systems within enclosed conveyor systems.

  Note: Explosion Detection and Suppression Systems that do not conform to a published performance standard will require a bespoke design specification modelled on the equipment to be protected. The installation of such a system should be discussed with your Property Insurer and Broker for review and approval prior to any works commencing.

Shutdown / Interlocks

Automatic interlocks should be provided to shut down conveyor systems and raise an alarm to a constantly attended location:

- Upon actuation of any automatic fixed fire protection or detection systems.
- If a fault is detected through predictive or condition-based monitoring systems.

Contributing conveyors should also be interlocked so other operating conveyor cannot discharge material to a stopped downstream conveyor. Where heated materials are discharged onto the conveyor, interlocks should be installed to shut down the feed system if the material exceeds a safe temperature.

Additional interlocks should be installed to prevent the conveyor working where associated critical safety systems are not operating in higher risks activities (e.g., extract ventilation interlocks for travelling ovens / paint spraying booths etc.), or if fixed fire protection is isolated.

In addition to automatic interlocks, manual shutdown capability for the conveyor system (emergency stops along the conveyor and at either end) should be provided. Where it is risk assessed as being safer for conveyors to continue to operate in the event of a fire (e.g., travelling oven), conveyors should be configured to be able to divert burning materials to a safe, preferably external area, accessible for firefighting.

Alarms

Alarms associated from the automatic fire detection and fire protection systems should raise a site fire alarm to ensure there is an appropriate emergency response and escalation if needed. If not already in place you may wish to consider connecting the alarm to a constantly attended location or an approved Alarm Receiving Centre. An accredited fire alarm/fire protections installer can provide further guidance and assistance.

Manual Fire Extinguishers

- Ensure appropriate numbers and types of fire extinguishers are present.
  - ✓ The Aviva Loss Prevention Standard Fire Extinguishers provides guidance on the number, type, location of appliances along with guidance on selecting a competent installer.

Impairments

Ensure any impairments relating to fire detection and protection systems are reported to your Property Insurer and Insurance Broker. Temporary changes may be necessary to some arrangements whilst impairments are ongoing.

Refer to Aviva Loss Prevention Standard Impairment Management or further guidance.

Business Continuity

It is important to consider the potential impact / interruption in the event of loss or damage of the conveyor system(s) as part of your organisations Business Continuity Plan (BCP). You should consider:

- How critical the conveyors are to the business?
- What impact loss or damage would have?
- Anticipate probable maximum damage or downtime (including any clean-up).
- What action is needed to restore normal operations?
- What action is needed to maintain operations in the interim?

Where conveyors systems are critical to the operation, Disaster Recovery Plans should be developed to take into account various business interruption scenarios and the contingency plans needed to restore normal operations as quickly as possible. Plans should include risks from fire, explosion, mechanical breakdown, as well as natural catastrophe risks (e.g., flooding to underground conveyors, snow loading of external conveyors etc.). They should also outline how operations would be maintained for the interim period until normal operations are resumed.

Where substantial business interruption potential exists, increased emphasis should be placed upon fixed fire protection, predictive maintenance regimes and condition-based monitoring.

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

Key Action Steps

- Ensure relevant Risk Assessments have been reviewed/are in place including explosion assessments where combustible dusts could accumulate within enclosed areas, and loss assessments to ensure risk controls and protections are commensurate to the potential loss values as a result of fire or explosion.
- Adopt thorough maintenance schedules in respect of key conveyor systems and components in line with OEM guidance and/or accepted industry best practice.
- Implement monitoring systems within conveyor systems and across key components.
- Complete formal monthly self-inspection programmes, and pre shift checks..
- Ensure fire detection and other fire protection systems are appropriate and align with loss assessment expectancy.
- Conveyors should be interlocked to fire detection and fire protection systems to isolate safely upon activation.
- Review Disaster Recovery and Business Continuity plans.

Checklist

A generic Conveyors Checklist is included in Appendix A available, which can be tailored to organisation's needs.

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, including:

- Fire risk assessment: Cardinus Risk Management
- Explosion/DSEAR Risk Assessments: Bureau Veritas
- Thermographic imaging and PAT testing: PASS
- Automatic fire detection and portable extinguishers: SECOM
- Business continuity: Horizonscan

For more information please visit: Aviva Risk Management Solutions – Specialist Partners

Sources and Useful Links

- FM Global Property Loss Prevention Data Sheets - 7-11: Conveyors
- Health and Safety Executive guide to The Dangerous Substances and Explosive Atmospheres Regulations 2002
- NFPA 61 - Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities
- NFPA 654 Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids
- NFPA 69 Standard on Explosion Prevention Systems
- FM Approval Standards
- RISCAuthority's Risk Control document RC28 - Recommendations for Spark detection and suppressions on pneumatic conveying
- RISCAuthority's Risk Control document RC54 - Fire Safety at Recycling Centres

Additional Information

Relevant Loss Prevention Standards include:

- Fire Compartmentation
- Fire Safety Inspections
- Maintenance Regimes
- Housekeeping
- Hot Work Operations
- Emergency Response Teams
- Impairment Management
- Managing Change
- Business Continuity
- Fire Extinguishers - Selection, Location and Servicing
- Thermographic Surveys
- Preventing Pollution from Fire Fighting Run-off

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 – Conveyors Checklist

Location	
Date	
Completed by (name and signature)	

	Risk Assessment	Y/N	Comments
1.	Have the conveyor systems in your workplace been properly risk assessed due to the unique travelling fire risk they present? The risk assessment should consider: • If a fire was to start, how quickly would it develop and spread. • Overall type(s) and design of conveyor systems used and the associated fire risks (e.g., speed, incline, height, etc.) • Combustibility of the conveyor belts and products (including packaging) being conveyed. • Adequacy of existing fire protection / detection systems. • Adequacy of existing conveyor safety devices (e.g., interlocks/isolations, dust control, explosion venting, earthing, smoke venting etc.) and any condition-based monitoring. • Age, condition, and maintenance regimes in place. • Fire compartmentation (protection of conveyor openings through compartment walls/floors etc.). • Exposure to and from associated infrastructure. • Accessibility for firefighting (high level or underground, open, or enclosed). • Business impact / interruption following the loss of the conveyors.		
2.	• Are conveyors used to transport commodities that produce finer particles and dust with an explosion potential? • If so, has a specific explosion risk assessment been undertaken in accordance with national regulations, standards etc?		

	Design and Construction	Y/N	Comments
3.	Are conveyor systems designed to restrict fire spread and smoke contamination?		
4.	Is the commodity (including any packaging) being conveyed combustible?		
6.	Are any conveyor systems, including the belts, covers etc. combustible? Note: The use of fire-retardant conveyor belts is recommended, however all conveyors made of natural or synthetic rubber or plastics should be considered combustible.		
7.	Are there any conveyor systems running at high level or underground, through tunnels or below galleries which will hinder manual firefighting?		
8.	Are conveyor systems enclosed, operating at high speed or steeply inclined and therefore expected to result in rapid fire spread?		
9.	Has the conveyor systems been designed to enable adequate smoke venting and access for manual firefighting?		
10.	Are any conveyor systems passing through fire compartment walls or floors adequately protected to restrict fire spread from one compartment to another?		
11.	Are conveyor systems arranged one above another or cross over? Note: Where possible do not position one conveyor above another (either parallel or crossing over).		
12.	Are conveyors and support structures suitably protected against fire and impact damage from surrounding structures, plant and machinery, storage, or utilities?		
13.	Does the conveyor systems expose surrounding structures, critical plant, and machinery to damage in the event of fire or collapse?		

14.	Have conveying systems been used to transport other utilities such as grouped electric cables, flammable gases, and ignitable liquids?		
15.	Has drainage or suitable conveyor pitch been considered/provided to prevent collapse of the conveyor systems from the weight of water from sprinkler discharge or fire hose streams?		
16.	Have vehicle routes or parking in proximity to conveyor structures been avoided?		
17.	Are vulnerable conveyors and support structures protected against fire and impact damage?		

	Management and Maintenance	Y/N	Comments
18.	Are the conveyor systems (including the belts, rollers, motors, gears, and bearings etc.) subject to planned preventative maintenance in accordance with the manufacturer's instructions?		
19.	• Are the conveyor systems subject to regular checks as part of the premises fire safety self-inspection programme? • If so, Is there a formal system for completing remedial actions where deficiencies, blockages, material accumulations and/or spillages are noted as part of the fire safety inspections?		
20.	Has any combustible storage and/or vegetation growth that expose conveyors and support structure been removed?		
21.	Are all fire detection, protection, and safety devices (e.g., alarms, monitoring systems, interlocks etc.) associated with the conveyor systems also subject to regular inspection, testing and maintenance?		
22.	Are critical spares for conveyor systems held based upon the manufactures recommendations?		
23.	Has smoking been prohibited around all combustible conveyors or conveyors that transport combustible material?		

24.	Is hot work on or close to combustible conveyors or conveyors that transport combustible or explosive material prohibited or controlled by a formal procedure and permit to work system that meets Aviva standards?		
25.	Has the emergency response team been trained to handle emergencies involving conveyor systems, particularly where facilities have extensive enclosed or underground conveyor runs?		
26.	Are any changes to your conveyor systems or the products being conveyed (e.g., combustibility, weight etc.) regularly reviewed as part of a formal Management of Change process?		
27.	Is there a formal procedure in place for managing fire protection impairments protecting conveyor systems?		

	Protection	Y/N	Comments
28.	• Is automatic sprinkler protection installed to protect the conveyor systems? • If so, is this based upon a risk assessment / insurer's requirements?		
29.	Where automatic sprinkler protection is provided at ceiling level only, has it been extended beneath any conveyor obstructions, exceeding 1 metre in width?		
30.	Where automatic sprinkler protection is provided, has it been designed to minimise the risk of impact damage from conveyed material?		
31.	Does the automatic sprinkler protection generate an alarm signal to a constantly attended location?		
32.	Are automatic sprinkler systems designed, installed, and maintained in accordance with recognised international standards, such as the LPC Rules for automatic sprinkler Installations, incorporating BS EN 12845?		
33.	Are conveyors used to transport commodities with an explosion potential protected in accordance NFPA 69 or FM 3265?		

34.	Have automatic fire detection systems been designed for the anticipated fire signature and able to quickly detect a travelling conveyor fire?		
35.	Has the locating and spacing of automatic fire detection been based upon the anticipated flame front, taking into consideration the combustibility of the conveyors and the commodity (including the packaging) as well as the speed of the conveyors relative to the speed of detection needed to actuate any fixed fire protection systems and/or shut down the conveyors to minimise fire spread?		
36.	Have automatic fire detectors been located to prevent impact damage from the conveyed material?		
37.	Does the automatic fire detection generate an alarm signal to a constantly attended location?		
38.	Is the automatic fire detection designed, installed, and maintained in accordance with recognised standards (e.g., BS 5839 Part 1)?		
39.	Have portable fire extinguishers been provided which are appropriate for the occupancy and the materials being conveyed?		
40.	Is belt alignment and belt speed monitoring installed, designed to interrupt driving power, and shut down conveyors upon sensing a serious misalignment or a 20% reduction in belt speed?		
41.	Are regular thermographic inspections carried out on known or frequent ignition zones, such as drive motors and bearings to identify potential problems?		
42.	Where bearings are inaccessible are fixed thermocouples installed to automatically monitor bearing temperature and interlocked to shut down conveyor systems?		
43.	Is vibration analysis undertaken for gears, belt drives, turning pulleys, tensioning pulleys to identify potential problems?		
44.	Are devices fitted which detect damaged belts (anti-rip detection)?		

45.	Are automatic interlocks provided to shut down conveyor systems and raise an alarm to constantly attended location upon actuation of the automatic fixed fire protection or detection systems and/or if a fault is detected?		
46.	Are automatic interlocks provided that prevent operating conveyors discharging material to a stopped downstream conveyor?		
47.	Are automatic interlocks provided where heated materials are discharged onto any conveyors to shut down the feed system if the material exceeds a safe temperature?		
48.	Are automatic interlocks provided to prevent conveyors working where associated critical safety systems are not operating (e.g., extract ventilation interlocks for travelling ovens / paint spraying booths etc.) and/or if the fixed fire protection is isolated?		
49.	Are manual interlocks / shutdown (e-stops) provided along conveyors and at either end?		
50.	Where it is has been risk assessed as being safer for conveyors to continue to operate in the event of a fire (e.g., travelling oven), have conveyors been designed to be run manually after they are shut down to divert burning materials to a safe, external area, accessible for firefighting?		

	Business Continuity	Y/N	Comments
51.	Has the potential impact / interruption in the event of loss or damage of the conveyor systems been properly assessed as part of your organisations Business Continuity Plan (BCP)? You should consider: • How critical the conveyors are to the business. • What impact loss or damage would have. • Anticipate probable maximum damage or downtime. • What action is needed to restore normal operations. • What action is needed to maintain operations in the interim.		
52.	Where conveyor systems are critical to the business, have disaster recovery plans been developed to take into account various business interruption scenarios and the contingency plans needed to restore normal operations as quickly as possible?		
53.	Do disaster recovery plans include risks from fire, explosion, mechanical breakdown as well as other natural catastrophe risks that potentially expose the conveyor systems (e.g., flood)?		
54.	Does the contingency plan outline how operations would be maintained for the interim period until normal operations are resumed?		
55.	Have any actions identified that would limit any potential business interruption or downtime, such as enhanced fire protection/detection, introduction of predictive maintenance or condition-based monitoring and critical sparing etc., been implemented?		

56.	Additional comments:

Please Note

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