



## Risktopics

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# Shrink Wrapping – Fire Safety Guidance

A wide range of commodities are secured for packing and transportation by heat shrink wrapping in plastic film. The combination of the use of heat, fuel, combustible packaging and possibly combustible or flammable stock presents a significant fire risk which needs to be carefully controlled.

These recommendations apply to the fire safety considerations concerning the use of all methods of shrink wrapping, including batch units, tunnels, pillar shrink systems and portable equipment.

In all situations where shrink wrapping is to be undertaken, it is recommended that a thorough risk assessment is conducted, covering the nature of the equipment and fuel used, the environment in which the process is to be carried out and the nature of the goods to be wrapped. Only by conducting such an assessment will the risk be fully identified, leading to the implementation of appropriate control measures.

### Shrink Wrap Equipment

#### Environment

The location of the operation should be given proper consideration, with the objective being that any fire breaking out will be contained and unable to spread to adjoining buildings or materials.

- Ideally the process should be carried out in a detached building of non-combustible construction, or a compartment separated from the manufacturing and warehousing areas by walls having a fire resistance of at least 30 minutes. All openings within the compartment walls (such as doorways) should be protected by doorsets or shutter assemblies with a fire resistance, at least equal to that of the fire resisting walls.

- Where it is not possible to segregate the shrink wrapping operation within the workplace or warehouse, the process should be undertaken in a clearly defined area. Only those goods being wrapped and the wrapping plastic for immediate use should be in the wrapping area and all other combustible materials should be kept at least 2 metres away from this defined zone. Wrapped goods should be moved out of the area as soon as possible and not be allowed to accumulate. Zurich considers that the use of non-combustible screens to segregate the shrink wrapping area is best practice.
- Shrink wrapping should never be attempted on goods while they are situated within racking or shelving.
- Shrink wrapping should not be carried out in areas where flammable gases, vapours, mists or dusts are present.
- Shrink wrapping equipment should be operated in areas that are well ventilated but free from draughts. In particular, equipment using gaseous or liquid fuels will require considerable quantities of air, for combustion purposes, and will produce quantities of carbon monoxide and carbon dioxide.
- Only equipment designed for use in the open or in draughty conditions, should be used in such environments.

### Fixed Equipment

- To ensure that all parts are in good condition and that all safety devices are in working order, all equipment should be properly maintained, preferably as part of a planned maintenance programme.
- Ignition of gas burners should be automatic, usually by piezo crystal igniters or electric igniters. Matches, cigarette lighters or any "home-made" devices should not be used.
- There should be remote and clearly identified emergency shut-off valves for LPG or mains gas systems. Flame failure devices should also be fitted.
- Fixed equipment should be thermostatically controlled, with an overriding thermal cut-out to prevent overheating.
- The heat source should be interlocked with the operation of conveyors, turntables and circulating fans, so that the heat source is isolated in the event of their failure.

### Portable or Mobile Equipment

These types of equipment present the highest fire risk, as they are not under automatic control and bad practice by operators is commonplace. Suitable training should be provided and formal procedures are needed, to ensure the safe use of this type of equipment.

- Hand-held guns should always incorporate a "dead man's handle" type trigger, or automatic-closing mechanism, to shut off the fuel as soon as the trigger is released.
- A purpose-made trolley should be used for LPG cylinders, which should incorporate a bracket or other device to hold the gun whilst not actually in use. Alternatively, a separate non-combustible stand could be used on which to place the gun whilst hot.

- Care should be taken that no tension or direct heat is applied to any LPG hose. The LPG hose should be kept as short as possible and be secured by properly crimped connectors, rather than worm drive "Jubilee" clips. Excess flow valves should also be fitted and the hose should be checked regularly for signs of damage.
- Electrically heated hot air torches can reach very high temperatures and care needs to be taken with the use of these devices. They should incorporate a thermal cut-out in the event of overheating. Electrical leads should be heavy duty and inspected regularly for damage.

### General Precautions

- Shrink wrapping should not be used for flammable goods, such as aerosols with flammable contents. Consideration should be given to stretch wrapping or any other method not using heat.
- Only persons who have undergone a formal training course should be permitted to use the equipment. All procedures should follow the manufacturer's recommendations.
- Suitable fire extinguishers should be provided. It is further recommended that there should be at least 2 extinguishers, each with a fire rating of at least 13A, or a hose reel, located in the shrink wrapping area.
- Good standards of housekeeping should be maintained in the shrink wrapping area. Floors should be kept clear of all loose packing materials and combustible waste. Other items should not be allowed to accumulate around the equipment.
- Wrapped goods should be allowed to cool off for a period of 20 minutes before being transferred to permanent storage and a check should be made at the end of each session for smouldering material, to ensure that the area is left safe.

### Summary

These recommendations are presented as a guide for the safe use of shrink wrapping equipment that use heat. If at all possible, it is advisable to use a non-heated form of wrapping (such as stretch wrapping) instead of heated shrink wrap equipment as this will limit the fire risk arising from the wrapping process. It should also be noted that heated shrink wrap processes are unsuitable for some environments and products and these considerations should be taken into account when undertaking a fire risk assessment.

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