

## Fire Research & Investigation Unit

# Heads Up



### BACKGROUND

There have been a number of fires in buildings where flooring surfaces were being prepared for vinyl or other coverings. These fires typically start with a flammable vapour explosion which have resulted in significant damage to the buildings. In some cases the contractors, who were installing the flooring and were caught in the explosions sustained serious, painful and enduring burn injuries as a result.

As these fires typically occurred near the end of works in new buildings or during renovations the subsequent damage and the cost of repairs to the buildings are significant.



*House damaged by flammable vapour explosion*

### FURTHER INFORMATION

Some products used to prepare flooring surfaces or install floor coverings contain solvents that are highly flammable including Toluene and Hexane.

When solvent based adhesives are applied to flooring surfaces they naturally release vapours that spread across the room. If the vapours encounter an ignition source such as a gas pilot flame or powered electrical appliance a rapid ignition occurs creating a fireball within the room enveloping any person working there. Hence injuries are often full body and severe.

Potential sources of ignition include gas water heaters, gas stoves, LPG torches and electrical appliances.



*Room where flammable vapours ignited*

To avoid accidental explosions gas and/or electricity supplies to any appliance in enclosed areas where solvents are being used should be turned off while the solvent based adhesives are being applied. Adequate ventilation, such as by opening windows and doors for long periods is necessary before turning the gas and electricity back on.



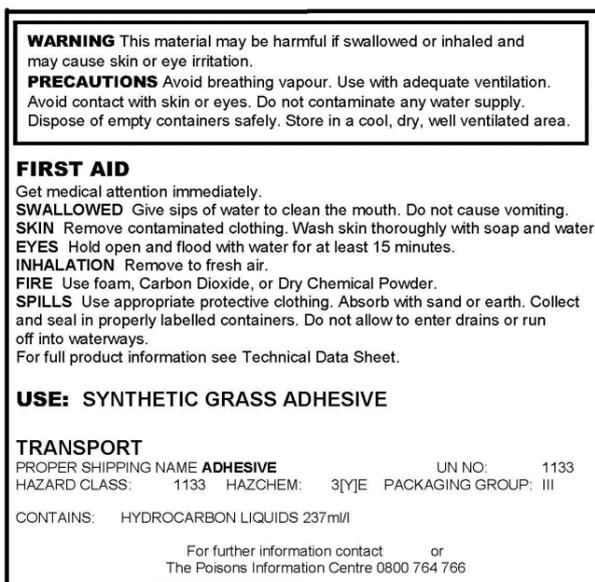
*Right: Red diamond labels indicate a substance is easily ignitable and must be treated with extreme caution. Nearby ignition sources should be removed, extinguished or otherwise eliminated.*

## PRODUCT WARNINGS

All warnings on appliances and the adhesive containers need to be read and understood prior to opening the adhesive.



Warning label on gas heated hot water cylinder.



Typical warning label on drum of adhesive.



Use extreme caution when using naked flames.

## LESSONS LEARNED/RECOMMENDATIONS

- prior to opening any container of adhesive with a red 'diamond label' users should ensure that there are no flames or other likely ignition sources in the vicinity
- ask the client if there are any gas fuelled appliances in cupboards or near the room. Remember, some gas appliances have pilot flames while other use electrical ignition. Both systems may ignite flammable vapours. Walk around the building to see if there is a gas meter
- do not operate electrical appliances or flame producing equipment or restore power to the room until the area is adequately ventilated.

## Employer and contractor responsibilities.

The Health and Safety in Employment Act 1992 requires employers to have taken all practicable steps to:

- ensure employees are not exposed to hazards arising out of their place of work;
- take all practicable steps to identify, eliminate, minimise or isolate hazards;
- ensure that an employee who uses plant of any kind, or deals with substance of any kind, in a place of work is adequately trained, or is supervised by a person who has appropriate knowledge and experience, to ensure that the employee is not likely to cause harm to themselves or other people; and is able to safety use equipment and substances they are likely to use or handle.

The hazards arising from surface preparation for flooring coverings are well documented and employers may be held liable for any resulting damage or injury if they have not met their obligations under the Health and Safety in Employment Act.

## INFORMATION SOURCE

NZ Fire Service Fire Research and Investigation Unit



For more information, or to contribute to 'Heads Up'  
e-mail [fireinvestigation@fire.org.nz](mailto:fireinvestigation@fire.org.nz)