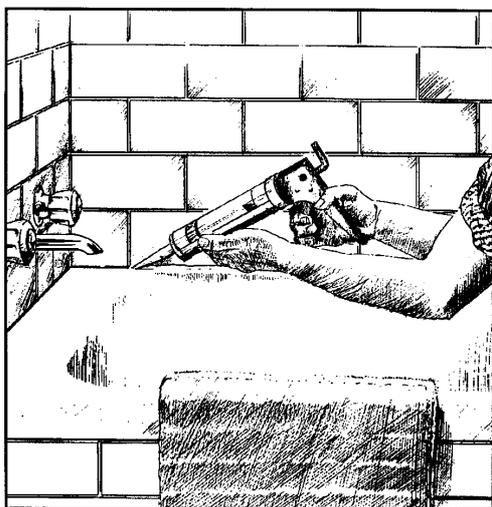


## GS 40 ADHESIVES AND SEALANTS



### INTRODUCTION

This sheet has been prepared as a general guide to safe handling and storage procedures for all users of adhesives and sealants. Specific hazards and precautionary measures are stated, where required, for the various types of adhesives and sealants. However, Material Safety Data (MSDS) Sheets should be provided.

### HYGIENE

The possible ingestion of adhesives and sealants should be avoided and the consumption or storage of food or drink should be prohibited in areas where adhesives are handled or used.

Certain adhesives which emit dust or toxic vapours present a hazard from inhalation. Suitable dust masks, respirators and/or adequate ventilation should be provided in these instances.

Skin contact should be minimised and manufacturers will advise on barrier and cleansing creams appropriate for their products, as well as suitable protective clothing and eye protection where considered necessary.

### ALLERGIES

There is always the possibility that an individual may be allergic to a substance used in a particular adhesive or sealant. There is generally no easy solution to this problem if physical protection is not adequate. Complete avoidance of exposure to that particular adhesive or sealant may be the only remedy.

### SPILLAGE & WASTE DISPOSAL

Spillages of any type should be attended to immediately. Water-based products can be washed away with water before they dry, provided it is permissible to discharge this type of effluent into the drains. An alternative method is to soak up the Spillage with an inert material, which can be placed in a suitably closed container for disposal. This technique is particularly appropriate for solvent based adhesives, using either sand, clay or powdered limestone as the absorbent material.

Care should be taken in the disposal of full or empty containers for solvent-based adhesives in order to avoid a latent explosion and/or fire hazard. The empty containers should be either carefully punctured or left open to ensure that no solvent vapour is trapped under pressure, taking the usual precautions concerning flammable materials.

**Note:** *Aerosol packages are pressurised and must not be punctured unless all internal pressure has been relieved.*

### STORAGE

The storage of adhesives and sealants should be restricted to 'NO SMOKING' areas since even for non-flammable adhesives there is a risk that vapours can be given off which will be converted by pyrolysis to toxic products by a burning cigarette.

All flammable adhesives should be stored in suitable flameproof areas according to the requirements of the appropriate authorities.

All adhesives and sealants should be stored in dry conditions and reasonable temperatures, eg. preferably between 5°C-30°C.

Warm drums of solvent-based adhesives should be opened slowly and carefully to allow gradual release of internal pressure.

To ensure that the useful shelf life of adhesive products is not exceeded, strict rotation of stock should be observed and possible safety hazards from aging avoided.

In all cases, the manufacturer's instructions and directions printed on the label should be observed.

## 1. Solvent-based adhesives (including solvent-containing types)

Adhesives of this class represent the most obvious hazard to users.

- Storage  
Store in a cool dry moderate condition at temperatures from 5' to 30' unless otherwise specified by the manufacturer.

- Usage  
Avoid inhaling the vapours - use in well-ventilated areas - avoid contact with the skin.

The use of suitable barrier creams for protection of the skin and/or gloves is recommended. Removal of adhesives from the skin should be done with suitable antiseptic cleaning agents rather than straight solvents. When handling low- viscosity adhesives, suitably approved goggles or face shields should be worn to protect the eyes from splashes.

Wherever possible, build up of solvent vapours in the work atmosphere should be controlled by adequate ventilation using flameproof exhaust fans where necessary.

If this is not practicable, then suitable breathing apparatus, such as respirators, should be worn.

- Spillage  
Clean up immediately using sand or powdered limestone to absorb the adhesive before scraping up the residues and disposing of them according to the local regulations.

- Fire Risk  
If the adhesive contains flammable solvents DO NOT store or use near naked flames and avoid sparks and non-flameproof equipment. The manufacturer should be consulted concerning the best methods of extinguishing any fire involving his products.

- Toxicity  
Although toxicity of solvent vapours from adhesives vary considerably the breathing of appreciable quantities of solvent-laden air should be avoided.

The Threshold limit Values (TLV) of a wide variety of chemicals (including solvents) is listed in an Occupation Health Guide published and periodically reviewed by the National Health and Medical Research Council of Australia.

The lower the quoted TLV value the higher the toxicity of the material and consequently, more effective ventilation is required to

maintain the solvent vapour concentration in the working area below the permissible limit.

Where necessary, this concentration should be regularly monitored to ensure safe working conditions.

## 2. Water-based adhesives (including emulsions, latices and solutions)

Being water based this class of product is not normally flammable. The dry adhesive film formed when water is removed may be capable of burning but does not usually sustain combustion. Some synthetic polymers depolymerise under heat, liberating volatile, toxic and/or flammable vapours.

Solvents are incorporated in many emulsion adhesives for special applications and this may affect toxicity and flammability (see section 1). Synthetic latices or emulsions contain free monomer which, although normally present at low levels, can be a potential hazard to health. Other volatile ingredients such as ammonia, formaldehyde etc can also be troublesome. All such products should therefore be used with adequate ventilation.

Contact with the skin should be avoided but if this does occur aqueous adhesives should be washed off with cold water before they can dry. This is to avoid discomfort rather than injury from adherent polymer. However, repeated contact may cause dermatitis in sensitive individuals and the use of barrier cream and/or protective gloves is advisable.

- Water-based Adhesives  
If adhesives dry on unprotected skin some will be found to pull off without inconvenience. Others, particularly pressure sensitive films, are less easy to remove and may require a special skin cleanser. Do not use solvents. Splashes into eyes, mouth or nose should be washed without delay with copious quantities of water and medical advice should be obtained immediately if considered necessary.

## 3. Hot melt adhesives

The greatest hazards associated with the use of hot melt adhesives occur when they are molten. Severe burns can result if skin contact occurs and adequate protective clothing should therefore be worn. Suitably approved eye and face protection should also be used if molten adhesive is being used or transferred or if there is a danger of splashing.

If burns do occur the recommended procedure is as follows:

- (a) Immerse the affected area in cold clean water immediately for several minutes.
- (b) Do not attempt to remove the cold adhesive from the skin.

- (c) Cover the affected area with a wet compress and obtain medical advice immediately.

Hot melts may fume during operation. The vapours given off are not normally considered to be toxic but they should not be inhaled and suitable, preferably forced draught, ventilation should be provided.

Hot melt adhesives should be used at their recommended operating temperatures. If overheating occurs there could be a fire risk as the vapours evolved might be ignitable by a spark. If a fire does start a dry powder extinguisher should be used and under no circumstances should water be allowed to come into contact with the molten adhesive.

#### 4. Powder adhesives

This covers a very wide range of products from powdered starch and animal glues, which are relatively innocuous, to the more hazardous synthetic resin powders.

Under certain circumstances dust can present an explosion hazard. This risk can be avoided by paying careful attention to good housekeeping and maintaining low dust levels.

Inhalation of dust is another potential hazard and exposure should be minimised with suitable respirators being worn where necessary.

Some powdered glues are acknowledged to be dermatitic and in such cases manufacturer's recommendations must be strictly followed. As a general precaution in all cases strict attention should be paid to personal hygiene and direct handling should be avoided. The use of barrier creams and/or protective gloves is recommended.

As some powder adhesives can contain caustic or acidic material, approved eye protective goggles should be worn when handling these products.

#### 5. Other Adhesives

This group contains such products as epoxies, polyurethanes, reactive acrylics, cyano-acrylates, anaerobics and other 100% solid liquid resin adhesives. Most of these require to be mixed with a reactive hardener to promote curing of the adhesive and these hardeners can be more toxic than the base resin so care must be exercised in handling them as well as the resin.

Some of these liquid resin adhesives contain flammable solvents so the normal precautions as stated for solvent-based adhesives should also be observed.

The handling technique should ensure that uncured resin or hardener does not come in contact with the skin. Operators should be provided with suitable gloves, the insides of which

must be kept scrupulously clean, and care should be taken to prevent cuffs becoming contaminated. Damaged gloves must be replaced. Barrier creams applied to the skin before work begins offers additional protection. If, despite all precautions, the skin does become contaminated, the affected area should be washed with a suitable antiseptic hand cleanser and disposable towels used for drying. Do not use solvents.

Extra care should be taken with cyano-acrylates to prevent splashing into eyes or bonding of skin. If contaminated, the eyes should be irrigated immediately with copious amounts of water and bonded skin should be soaked in warm water or acetone if water is not effective.

The mixing of adhesive formulations should only be carried out in suitably ventilated areas. As a precaution the wearing of approved dust or vapour respirators is advised when handling powder or liquid fillers and/or hardeners in order to **avoid** inhalation. Cleanliness and tidiness in the working area are of the utmost importance. Benches should be covered with replaceable paper which should be removed and destroyed when contaminated. Containers should be kept as far as practicable in a clearly marked-off area of the workspace. Spillages and contamination of tools and equipment or of the outside of containers are naturally to be avoided. If these occur, the affected area must be cleaned up immediately.

Medical attention should be obtained for severe cases of over exposure.

#### 6. Sealants

The main type of sealants in current use are:

- silicones
- polysulphides
- polymercaptans
- urethanes
- acrylics
- butyl mastics
- polychloroprenes
- oil-based caulks.

None of the above materials is considered to be toxic or present any special hazards in their storage or handling. However, some may be acidic or alkaline in nature or allergenic, thus continuous exposure could cause skin or eye irritation. It is advisable to avoid eye contamination by using protective goggles where necessary, and to prevent repeated or prolonged contact with the skin by using gloves etc.

#### **For further information contact:**

Dept for Administrative & Information Services

#### **Workplace Services**

GPO Box 465 ADELAIDE SA 5001

Ph: 1300 365 255 (If calling from a mobile phone or from interstate ph: (08) 8303 0400)

Website: [www.eric.sa.gov.au](http://www.eric.sa.gov.au)

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Safeguard **GS40 - Adhesives and Sealants** continued ...

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