



# Demonstrate knowledge of Chemicals in the flooring industry - part 2

Video acknowledgement - Armstrongs

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The chemical reaction will not work below specific temperatures or if two parts are not mixed exactly as specified

# Reactive adhesives

Reactive adhesives set by reaction with two parts mixed together, or a single part that react with moisture. Typically they have been polyurethane and epoxy in nature and are petroleum based, however new technologies are being developed to reduce the use of petroleum .

Reactive adhesives set fast and are either more resilient or harder than adhesives that are water dispersive

**One-part-Moisture Cure**  
in one drum that reacts with moisture when open

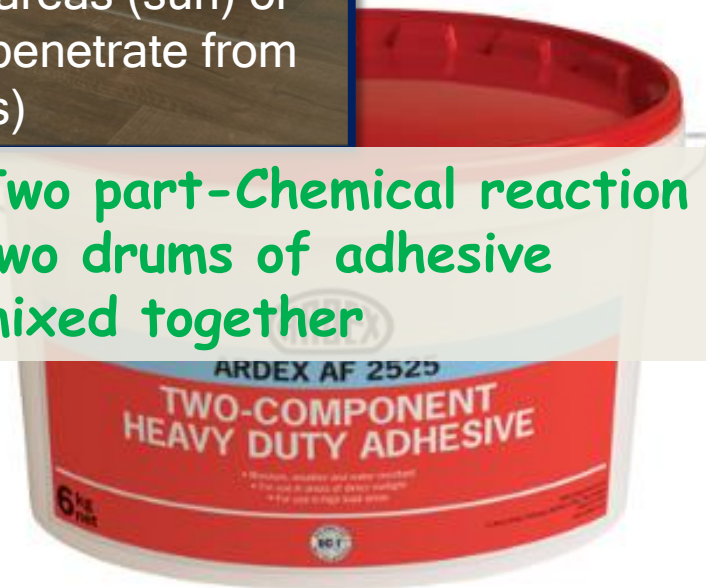


Used in high heat areas (sun) or where water may penetrate from the top (bathrooms)



Some Rubbers

**Two part-Chemical reaction**  
two drums of adhesive mixed together



There are no tackifiers so floor coverings must stay flat while the adhesive sets





Moisture Cure Polyurethanes  
A chemical liquid carrier

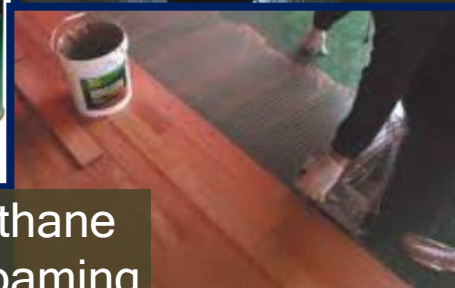
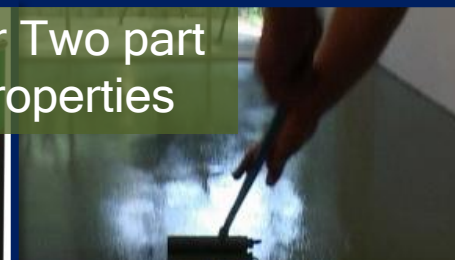


Moisture Cure Polyurethane adhesive -  
flexible for installing Timber flooring

Water borne Polyurethane  
A water liquid carrier



Epoxy Moisture Barrier Two part  
Part B has corrosive properties



Moisture Cure Polyurethane  
rigid foaming adhesive



Moisture Cure Polyurethane  
adhesive - semi rigid foaming



Timber flooring



Fast setting- used to fix  
carpet gripper





# Oil and wax coatings



Oils and wax coatings for timbers are a popular alternative to polyurethanes. They are generally plant or mineral based and vary in VOC emissions. Care must be taken as oils can self combust.

# Solvent adhesives

Solvent adhesives are similar to water in that they are dispersed in a liquid. The difference is the liquid is an organic solvent (from oil).

Contact adhesives work by applying to the floor covering and the substrate, allow to dry, then placing together for an instant bond

Synthetic Rubber Blend adhesive dispersed in a liquid solvent. It is a wet adhesive not a contact. Used for garage carpet



Vinyl suppliers do not warranty any of their floor coverings with solvent based adhesives



## Plasticiser Migration

With the solvents and latex mix they are not suitable for highly plasticised or heterogeneous vinyls. Bubbling, swelling, staining, greasiness will result with the chemical reaction referred to as..

Common are latex dispersed in a liquid solvent (organic)  
**Neoprene or Chloroprene**



# Chemicals (Solvent /Reactive chemicals)

The off gassing when using flooring products are **Volatile Organic Compounds (VOC)**

These affect the environment



and the health of people when they are being used

With environmental pressures, technological advances and known health concerns VOC's are being reduced

Toxic or Toxicity means poisonous or harmful

1. **Acute** - short term effects (when inhaling instantly)
2. **Long term** effects (damage caused over time with

## 1. Acute effects

- Light headedness
- Slow reaction time
- Poor balance, power of reasoning.
- Loss of consciousness

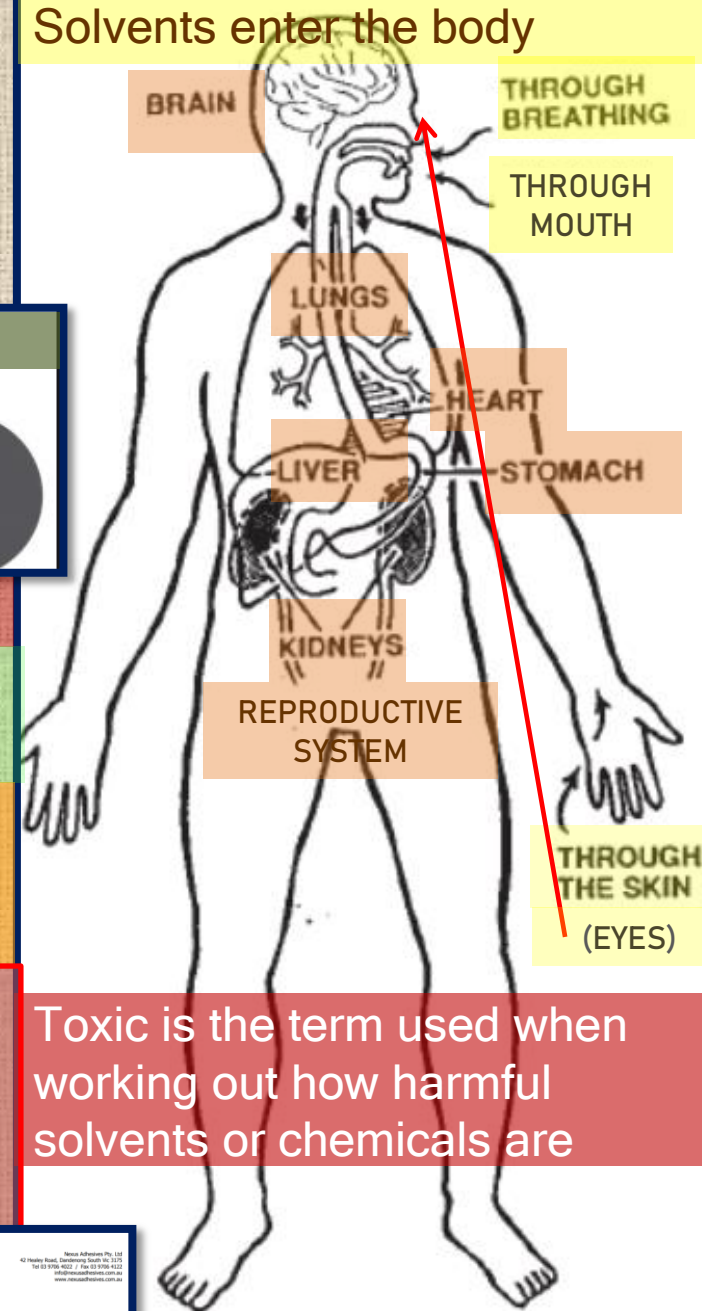
## 2. Long term effects (Years)

- Brain-mood changes, tiredness, weakness
- Organ damage -cancer
- Instant skin rashes whenever exposed to solvents

Manufactures provide VOC certificates for their products

## Solvents Effect

Solvents enter the body



Toxic is the term used when working out how harmful solvents or chemicals are



VOC Content  
Calculation Certificate

Solvents can be highly volatile and ignite at very low temperatures

2.10

**'Flash point' the lowest temperature the solvent can ignite in (highly flammable)**

The vapour is heavier than air so it stays low to the ground.

When working with solvents we must take safety seriously

Do a site assessment to see if the job can be done safely

Try an alternative (eliminate, substitute)

Ventilation and airflow, fans and windows open (engineering controls)

Use appropriate PPE gear that fits and is suited for the chemicals that are being used

If you are unsure **Stop!** ask for advice

Read the Material Safety Data sheet.

**We will look at these in part 2**

# Adhesive and Conditions



Adhesives work when they are used in the conditions and with products they are designed for

Just some of the reasons for Bond failure

## The substrate

Too porous or not porous

Too cold

Too damp

Not sound e.g. loose, dusty surface

Not clean e.g. oil or other contaminates

Complete task 1, 2 & 3

## The environment

Too hot or Too cold,

## The adhesive

Out of date, not mixed correctly, not applied correctly, not compatible with the floor covering, not rolled correctly

