

Solvents

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Correct and Safe Use of Solvents

What Is A Solvent?

Generally speaking, solvents are liquids that are used to dissolve other components.

In the paint industry, solvents are liquids or mixtures of liquids that dissolve resin, pigments and other paint components.

There are three major uses of solvent in the paint industry:

- *As a cleaning agent, to remove oily deposits from a substrate in preparation for painting, and to clean up equipment, paint splatter and spillages after paint application. Dulux does not recommend that solvents are used for any more than removing waxy marking crayons or dye penetrant residues from the substrate, as the use of solvents to remove hydrocarbon (oil & grease) deposits can result in the solvent dissolving the grease and oil and then spreading it in an invisible film over the surface to be painted.*
- *As an integral part of a paint formulation*
- *As a paint thinner, to be post-added to paint to adjust application properties*

Common solvents used in paint include, but are not limited to: water, methyl ethyl ketone (MEK), turpentine (white spirit), methylated spirits (mixture of methanol and ethanol), xylene, toluene and acetone. With the exception of water, solvents are generally organic (carbon-based, that is, they are derived from petrochemicals or plants)

Whilst water is a common solvent, the word "solvent" in this Tech Note will refer to organic solvent.

Why Add Solvent?

As an integral part of a paint formulation, the purpose of solvent is to carry the paint from the container to the substrate in a form that allows the paint to be sprayed, brushed, rolled or trowelled uniformly, and to assist in achieving the gloss level and dry film thickness required to offer the performance properties as stated on the product data sheet.

Solvents can be chosen to improve the balance between application properties of paint, such as

- *Viscosity*
- *Flow out*
- *Dry time*
- *Spreading rate*
- *Wet edge*

For example, fast dry time is desirable when spraying to reduce turn-around time, but can be a hindrance when brushing or rolling due to reduced wet edge and the appearance of excessive brush-marks and "picture-framing" (the appearance of a visible ridge around the perimeter of a wall where the brushed-in sections overlap the roller-applied sections).



What Are The Hazards Associated With Solvents?

Safety

Virtually all solvents are **flammable**, and even their vapours can ignite. Therefore, solvents should never be used anywhere near open flames, even small ones such as gas pilot lights or lit cigarettes.



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Health

Breathing in solvent vapours can present **short-term** health problems, such as:

- *Nausea*
- *Sore Eyes*
- *Headaches*
- *Dizziness*

These hazards disappear when the solvent vapour source is removed or the applicator dons breathing apparatus.

Long-term health hazards are accumulative effects on body organs such as kidneys, brain, liver and heart.

There are clear exposure limits for each solvent. This exposure limit is clearly indicated on the MSDS.

Are Paint Solvent Vapours Particularly Hazardous?

No more hazardous than the solvents present in **many other household products**, such as nail polishes, nail polish removers, cleaning agents (including "natural" products such as citrus oil-based cleaners), some furniture polishes and glues.



How Do I Use Solvent Based Products Safely?

Do not rely on your sense of smell to warn you of solvent vapour hazards! Not all solvents have a strong odour, and the applicator can quickly become accustomed to many solvent odours.



If application is by brush and roller, protective clothing (including but not limited to: overalls, long sleeves, solvent-resistant gloves and regulation safety shoes) and a vapour mask are adequate.

In brush and roller application, the hazards are largely limited to splash and spillage of paint directly onto unprotected areas of the body, and inhalation of solvent vapours. Health risks associated with inhalation of **solvent vapour** can be avoided by the use of **appropriate facemasks**, either solvent masks or positive-pressure air-fed facemasks or hoods.



If application is by spray gun, however, inhalation of **atomised paint** is a greater health risk than that of inhaling solvent vapours, as the airborne paint particles carry a mix of solids and liquids, such as: resins, pigments, hardener and solvent. Health risks associated with inhalation of **atomised paint** can be avoided by the use of well-fitting positive-pressure air-fed facemasks or hoods. Other items include overalls, safety shoes and solvent-resistant gloves.

Whenever spraying paint, **avoid inhalation of spray mist** by the use of a well-fitting, positive-pressure, air-fed full-face respirator, and comply with all relevant provisions of your respective State Spray Painting Regulations (**Qld, NSW, ACT, Vic, Tas, SA, WA & NT**).

For more information, please contact the Dulux Protective Coatings Technical Consultant in your state.