

## 1(ii) Selecting paint systems

### The selection of a successful paint system stems from

- **Understanding the nature of the substrates to be painted**

Each substrate has its own idiosyncrasies that may directly affect the performance of a paint applied to it. Fresh cementitious surfaces are highly alkaline and will attack paints that are alkali sensitive. Timbers are dimensionally unstable and require coatings with sufficient flexibility to move with the substrate. Other timbers, such as Matai, contain extractives that will prevent the drying of certain types of paints. Zinc is an alkaline metal that will cause loss of adhesion with saponifiable binders while mild steel is chemically unstable and readily oxidises. A description of the nature of the various substrata is described in the introductions of the relevant surface preparation sheets.

- **Understanding the demands of the environment**

Our clear bright atmosphere allows a very high proportion of damaging U.V. light to reach the surface of our country. Prevailing westerlies may carry salt from the coast up to 100 kilometres inland. Thermal areas create an acidic environment as bad as the harshest European industrial areas. These and many other factors influence the performance of paint coatings. Not only are macro effects, such as those outlined important, but also micro climates exist, such as poorly ventilated bathrooms that promote mould growth; unwashed areas, such as those below steel framed canopies, which promote severe corrosion; and high temperature areas, such as may be found in certain industrial processes or in domestic conservatories, that may affect the thermoplasticity of certain coatings. A floor that is subject to only light foot traffic requires a very different treatment to a floor that takes steel wheeled trolleys; and walls in laundries, family rooms and master bedrooms each encounter significantly different levels of physical stress.

- **Understanding the nature of the paints themselves**

Paint systems are formulated to accommodate the idiosyncrasies of the substrate they are designed to go over, while withstanding the environment in which they must work. This may and does lead to a proliferation of paint types that may be somewhat daunting to come to terms with. However the paint industry in general and Resene in particular attempts to provide paints with the broadest possible use in order to simplify choice.

The following are some highly simplified strengths and weaknesses of certain paint categories.

### Typical paint type characteristics

► **Waterborne primers and undercoats**

- Long term flexibility.
- Able to withstand prolonged weathering prior to overcoating.
- Do not penetrate well into porous surfaces.
- Allow the passage of waterborne stains.



▶ **Waterborne topcoats**

- Excellent flexibility and durability.
- Non-yellowing and low odour.
- Generally softer than their solventborne counterparts.
- Drying sensitive to atmospheric conditions (humidity and temperature).

▶ **Solventborne primers and undercoats**

- Penetrate porous surfaces.
- Provide barrier against waterborne stains.
- Embrittle with age.
- Generally poor alkali resistance.

▶ **Solventborne topcoats**

- Excellent flow and levelling.
- Good hardness and cleanability.
- Yellow when out of direct sunlight.
- Require special thinners and clean up materials.

▶ **Protective coatings**

- May be designed to give excellent chemical and solvent resistance.
- May be designed for superb durability.
- Highly specific in preparation and application.
- More demanding of applicator skill and knowledge.