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THE APPLICATION OF WATER BASED COATINGS DURING COLD WEATHER

The application of Water Based coatings during periods of cold weather can be a challenge for any applicator.

For water based paints to dry, water contained in the material must evaporate out of the applied film into the surrounding atmosphere. In cold temperatures, the moisture level (or humidity, usually expressed as a percentage) of the surrounding air is high and can be close to 100% when rain is imminent or actually falling.

Moisture can also build up in the working environment due to lack of ventilation associated with the cold temperature with windows not being opened to exclude the exterior cold conditions. As the paint film tries to dry, the evaporating water further increases the humidity in the surrounding air.

When this is the case, the water in the paint can not evaporate which in turn can lead to drying, recoating and curing problems. Water based paints normally have drying, recoating and curing times given on product information sheets and labels as when the temperature is at 25ºC and at 50% humidity with figures such as 30 mins for surface dry, 2 hour recoat and 7 day cure times common. These times are extended considerably under either lower temperatures or higher humidity conditions or both.

The slow drying characteristic can also lead to various application problems such as colourant flotation and the subsequent picture framing or colour variation between brush and roller, foaming of the paint due to overworking the roller, runs, and sags etc.

Condensation of the high moisture content in the air can form on any cold surface. This can be particularly evident on cold glass such as windows and cold walls, particularly if of solid brick and plaster construction. This moisture on the surface can interfere with the application and adhesion properties of the coating as well as the overall drying and curing. Gloss variation or mudcracking can also occur when the material does eventually dry.

The use of open gas flame heaters can contribute to the raising of the humidity as they produce water as part of the combustion process. If this form of heating is used without adequate ventilation such as in an enclosed room, the moisture produced will raise the humidity and retard the drying process. The preferred heating method is in the form of dry heat such as produced by electric or radiant heaters, with adequate ventilation.

The use of water based products on exterior surfaces during periods of cold temperatures can also suffer similar problems with the most common situations being the washing off of the coating by the condensing water, the removal of the surfactants (detergents) in the paint and colourants which forms as droplets on the film and in some cases blistering of the coating. Application on naturally cold surfaces such as metal gutters and fascias naturally exacerbates the situation and does not allow the paint to cure in the same manner as if it were applied to a substrate such as timber.

CHANGES SINCE LAST ISSUE: