

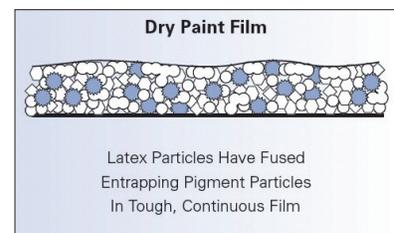
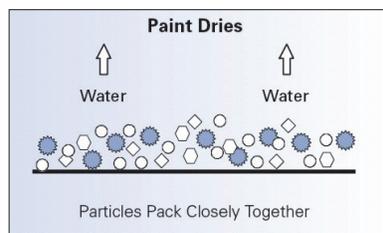
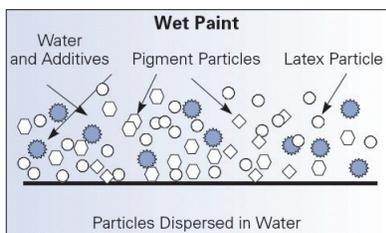
TECH SHEET: COLD WEATHER PAINTING



Over the past few years, a number of paint companies have developed latex paints that will cure at temperatures below 50° F, thereby allowing painters to extend their exterior painting season. The purpose of this tech sheet is to provide a better understanding of how application conditions can impact the overall appearance and performance of an exterior paint job.

Latex paint film formation

Latex paint consists of dispersed pigment and resin, along with some additives and liquid, which is mainly water. When the paint is still in its liquid state, the particles of pigment and resin are evenly distributed and spaced out. After application, the water begins to evaporate, and the particles of pigment and resin come closer together. As the remaining liquid evaporates, the resin particles gradually become more densely packed, causing them to fuse and bind the pigment into a continuous film. This process is, called coalescence, and is shown in the graphic below. (Source: DOW Paint Quality Institute)



The mechanism of latex paint film formation has some limitations. Because the resin particles are thermoplastic (tending to get softer at higher temperature, and vice-versa), lower temperatures harden the latex particles preventing proper coalescence. In severe cases, this may result in the film actually

cracking. In milder cases, the film may exhibit poor touch-up, holdout, color uniformity or uneven sheen.

The truth behind low temperature paints

The reality is that Dunn-Edwards® coatings will tolerate cold weather conditions as well as if not better than competitive products that claim low temperature application. All Dunn-Edwards latex paints are formulated to have good low temperature coalescence down to 40°F, with some paints that will even coalesce at temperatures as low as 35°F. However, this does not take into consideration other environmental factors, such as substrate temperature, humidity, dew point, or drastic temperature changes during the curing phase.

Just because a paint will cure at low temperatures doesn't mean that the job will be without any issues. Stable conditions and temperatures are needed early in the paint's drying

schedule with the first 48 hours being the most critical. Both the air temperature and the substrate temperature must remain above 35° F while the paint cures. Condensation can also pose a problem in the fall and spring when the temperature drops during the evening causing condensation to form on freshly

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painted surfaces. As the water builds up on the surface, it runs down the wet film taking with it part of the paint and leaving streaks. The whole point is that it is impossible to control atmospheric conditions when painting in cold weather, and problems may occur even though the paint performs exactly the way it is designed to do.

Precautionary measures

- **Check the weather forecast.** Determine the weather pattern for the days you are going to paint. Cold-weather paints may take up to two days to dry, and the minimum temperature must be maintained during this time period. If the temperature is going to dip below the minimum mark during the drying phase, painting must be suspended until stable temperatures can be guaranteed.
- **Pay special attention to the substrate.** Both air and substrate temperatures should be above the specified minimums.
- **Work midday.** Focus on prep work in the early morning and late afternoon, and apply paint between 10 am and 2 pm to allow surfaces to warm up and to allow time for curing before dew falls.
- **Follow the sun.** In the summer, the rule is, don't paint in the sun and follow the shade around the house. But in cold weather, it's the opposite. Follow the sun around the house as you work. Stop work around mid-afternoon, or when the temperature starts dropping.

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