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GOING GREEN ISN'T ALWAYS EASY

By Bob Cusumano

Volatile organic compounds, or VOCs, are solvents that get released into the air as paint dries. As a result of the Clean Air Act of 1996, paint manufacturers have been lowering the volatile organic compounds in paints. Since that time, the regulations have become stricter and manufacturers continue to formulate more environmentally friendly products. They've done this while trying to maintain the reliability and durability of previous coating products. Unfortunately, this has been a difficult goal to attain and there have been application problems with some products that painting contractors need to recognize because if you haven't used eco-friendly paints yet, you will.

Paints are composed of four ingredients; pigment, resin, solvent, and minor additives for durability and workability. The pigment is the portion that gives paint its color and hide. The resin is the film forming component of paint. The portion of the paint that is composed of pigment and resin is called the solids which may be expressed as a percentage of weight or volume. The solvent is the portion that has allowed the satisfactory transfer of the paint from the bucket to the surface being painted and was responsible for many desirable application properties.

In traditional paints, the volume of solids is generally 30% to 40%, with the solvent being the bulk of the remainder. In order to achieve low and no VOC paints, the amount of solvent is greatly reduced or eliminated so that the volume of solids is usually between 80% to 100%. This reduction of solvent has sometimes resulted in the occurrence of the following application issues.

Runs, sags and curtains often occur with high solids paints when the painting contractor is attempting to achieve the specified dry film thickness. The tendency for these problems is enhanced when applying the coating during poor dying conditions, applying paint to a

glossy surface, and applying the coating to a hot surface. Runs, sags, and curtains are terms that describe paint defects that occur due to the downward movement of paint before it has set due to gravitational forces. A run is generally a single or narrow band of paint as shown below in photo 1.
Sags are a collection of runs in the same general location as shown in photo 2.

Photo 1

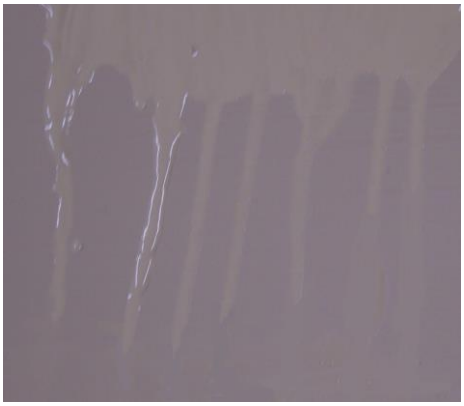

Photo 2

Curtains describe a wider band of paint that has sagged so its appearance resembles a draped curtain as seen in photo 3.

Because of the reduced solvent in low VOC paints, some of these products have poor flow and leveling properties. Brush marks are parallel marks in a cured paint film that correspond to peaks and valleys created by brush application as seen in photo 4.

Photo 3

Photo 4

Roller stipple is a texture created in a paint film that was applied using a roller. The length of the roller nap is a factor in the degree of the texture created. Other factors include using a paint that has limited leveling characteristics, applying the paint under environmental conditions where it dries rapidly, and failing to properly thin the paint.

Photo 5

Roller stipple can be desirable when it occurs on wall and ceiling surfaces as it tends to hide minor defects in the substrate. However, roller stipple is usually offensive when it occurs on surfaces that are traditionally smooth like doors and trim.

The effects of poor leveling and flow can be minimized by using quality brushes and roller covers and by applying coatings under environmental conditions where the paint does not dry too quickly.

When spraying high solids paints, higher pressures are often needed to obtain proper atomization of the paint. This will result in increased wear and tear on spray equipment and thus a higher cost to the contractor.

When using multi-component coatings that have low VOCs, there is often a reduced pot life. This results in extra labor to mix more batches or will result in higher material costs due to wasted material that hardens before it can be applied. Plural component spray equipment is often required to successfully apply these materials.

Burnishing is an issue with some low VOC paints, particularly darker colors. Burnishing refers to the shiny areas on flat and low sheen paints. When the paint is rubbed, the surface becomes polished and has a higher gloss than the adjacent paint as seen in photo 6. The burnish resistance of paint varies depending upon the type of pigment used, the pigment to resin ratio, and the quality of the resin used. Paints with higher gloss levels generally have better burnish resistance than flat paints or those with a low sheen.

Photo 6

Because of the high solids in low and no VOC paints, they tend to lay on the surface, rather than penetrate. Therefore, thorough surface preparation is of critical concern. For this reason, low and no VOC paints are more widely used for interior applications as opposed to exterior applications and industrial situations.

While painting contractors need to be aware of the limitations of many low and no VOC materials, they should be encouraged by the fact that these paint products have come a long way since their introduction. By understanding potential problems, they can be recognized and minimized. Paint manufacturers are continually developing new resins and formulations so that coatings can be environmentally friendly as well as easy to apply.