

Porous substrates

Use of mist coat or flash coat to minimize popping

Introduction

Porous substrates, such as metallization and zinc silicate coatings applied on steel may give rise to popping / pinholes in the subsequent coating. These film defects are the result of solvents evaporating into the porosities and along with the enclosed air creating overpressure. This pressure may release through the partially dried paint film thus creating a crate. This phenomenon is commonly referred to as "popping".

By proper formulation of the paint the tendency of popping / pinhole formation can be reduced, but for the best result the porosity should be sealed before application of coating. This can be done by application of a so called mist-coat or flash-coat (sometimes also misleadingly referred to as tie-coat).

Safety

Use adequate personal safety equipment and apply only in well-ventilated areas. Observe safety labels on packaging and paint containers and consult Hempel's Safety Data Sheets for the products to be applied.

Scope

This Guideline is relevant to most of Hempel's epoxy barrier coatings. However please note that solvent free epoxy coatings are not suitable as mist-coats. Also certain highly pigmented formulations may not perform well even with heavy dilution. These products are normally not specified for porous substrates. In case they are to be used the issue can be solved by using a dedicated sealer such as Hempel's Sealer 05990 to seal the porosity prior to applying the coating.

Minimising popping

Recommendations regarding procedures are often based on personal experience and there are various perceptions of how this is most appropriately conducted. Also note that a procedure that is successful under a set of given conditions is not necessarily as successful in other conditions. Below are listed the main points of a general procedure, which in most cases is successful.

The porous substrate (metallization or cured zinc silicate paint layer) should be as smooth as possible and without dust. A rough surface should be sanded and dust must carefully be removed.

Apply a flash coat of the recommended epoxy paint, undiluted or diluted with Hempel thinner 08450. Epoxy coatings with modest volume solids may perform well without dilution while higher solids products may need up to 25% thinner. Hempel's Sealer 05990 does not need thinning.

The film thickness should not exceed 30-35 micron in any area, even in overlapping zones.

This condition is characterized by a layer that nowhere covers the metallization / zinc silicate primer, but only appears as a smooth, almost spotty layer on the surface.

Wait about 10-15 minutes until the solvent has evaporated. Now the surface is ready for regular application of the specified barrier epoxy layer. Apply the epoxy like you would on another substrate until the specified film thickness is reached. Usually no thinning is necessary or thinning as per PDS.