

WHAT IS INDUCTION TIME?

With water based, two pack epoxy systems, the resin and hardener components exhibit varying degrees of compatibility with one another. Mixtures of the hardener and epoxy resin must be made compatible with one another before application of the coating system is undertaken to ensure that the cured coating system has the desired performance characteristics.

Induction time is therefore considered, as the time required to initiate the reaction between the epoxy resin and the hardener.

How fast this chemical reaction occurs is dependent on two factors. Firstly the ambient temperature of the surface to be coated and secondly, the quantity of the material being mixed.

Below about 7°C, no significant reaction occurs between the Ecopoxy Hardener and the Epoxy resin. For this reason we recommend that application only be undertaken above 10°C. This temperature specification refers to the surface temperature to which the coating system is to be applied not the ambient air temperature.

WHAT HAPPENS DURING INDUCTION TIME?

Once the hardener and epoxy components are intimately mixed, a chemical reaction begins to occur between these components, which results in the formation of a copolymer. This copolymer has solvency characteristics between the two initial components, and acts as a cosolvent for the combined system. This is particularly important when the solvent used in the system, water in the case of Ecopoxy, is lost from thin films due to either evaporation or absorption.

WHAT PROBLEMS CAN OCCUR THAT ARE RELATED TO INDUCTION TIME?

There are numerous problems that may occur, but the major problems may be summarised below;

- ✚ Poor performance characteristics of the cured coating.
- ✚ A greasy feel to the surface of the cured coating resulting from phase separation of the resin and hardener components.
- ✚ Lack of adhesion of the coating to the substrate, or to successive coatings.

WHAT ARE THE POSSIBLE CAUSES OF INDUCTION RELATED PROBLEMS?

There are four main causes of induction related problems;

- ✚ Improper mixing – Illawarra Coatings recommends that at least 2 minutes mixing with a high speed paddle mixer be completed before application is commenced. Care must be taken during this step to ensure that air bubbles are not trapped in the coating that may lead to pinholing of the final coating.
- ✚ Little or no induction time. The blend of hardeners used in the Ecopoxy systems will generally have short induction times, typically 15 – 30 minutes at temperatures of about 25°C. In practice, this time usually elapses between the mixing of the coating and the commencement of application. At lower temperatures, especially between 10 - 15°C, an induction time of about 20 – 40 minutes is recommended.
- ✚ High humidities can cause the applied coating to absorb moisture during curing.
- ✚ If the temperature is low enough, inhibition of the reaction between the hardener and the epoxy resin may occur.