

Pinholes reduction in water based barrier coatings

Per Emilsson, Tom Larsson

Abstract

New paper & board barrier products are demanded in the market to get a way to reduce the use of plastic packaging solutions.

The new water based barrier products that are utilized in the paper & board industry are expensive and sensitive when it comes to the coating process and the drying. The sensitivity is especially true for the renewable products. Thus, the natural target is to apply as least as possible and to make a gentle drying in order to be competitive.

When applying a barrier coating it is important to avoid pinholes which can be caused by several reasons.

This presentation focuses on the pinholes that are caused in the drying process.

In most production units in the paper & board industry there is one station for surface treatment on the reverse side.

It is obvious that the producers, due to this, try to coat the new barrier products with this unit solely.

This concept can be acceptable for a period, to get the products on the market. However, it is not a good long term solution, with optimum window of operation, energy efficiency, the best quality development and overall economy.

This paper presents the learnings done in the pilot plant comparing single layer coatings with double layer coatings.

It will also give estimates on the economic and practical impact when choosing one or two stations for the reverse side water based barrier coating.

This is based on "the rule of thumbs" that the efficiency of the barrier product is 30 % higher applied in two steps compared to a single layer situation and that the drying efficiency drops to 30-50 % of the nominal by high coat weights.

The presentation will also give alternative technical solutions for applying two layers in the same layout foot print.

A precondition to get a pinhole free surface is in fact that the barrier is applied in a way that gives good coverage.

The presentation gives a strong example that shows that Zero Dwell application gives a significant better coverage compared with long dwell application, for the same base, media, pickup/coat weight and metering element.