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Post Doc(2024-2025)
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In-depth understanding of the interactions between film, primer, and ink for an industrial application: interfacial mechanisms between the different layers

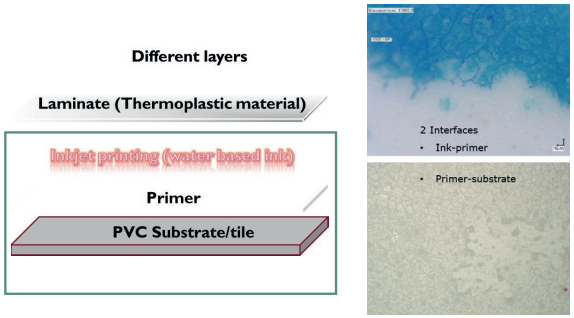
Compréhension approfondie des interactions entre film, primaire et encre dans le cadre d'une application industrielle : mécanismes interfaciaux entre les différentes couches.

BioChip
MatBio
FunPrint

Context / Objectives

The multilayer configuration of inkjet-printed tiles for floor application comprises several interfaces. Each layers and interfaces need to be thouroughly characterised to allow a better understanding of the physical and chemical phenomenon involved.

For the current project, the objective is to better understand the system of PVC substrate, primer and water-based ink



Funded by: Tarkett

Methods

Characterisation of the primer formulated and provided by TARKETT

Techniques proposed in view of literature:

- For composition and structure: FTIR, NMR, GC-MS
- For adhesion: Cross-hatch tape test
- For rheological properties: viscosity, shear rate (using a rheometer)
- Surface properties: (surface energy/ surface tension)
  contact angle measurement
- Optical 3D measurement system for surface characterization (Alicona)
- SEM, AFM

Results

- The viscosity of the primer is decreased by adding the binder
- The morphology of the coated primer changes over time
- The roughness of the coated PVC sample is more than the uncoated sample (see fig 1).
- Roughness also visible at high resolution with AFM imaging

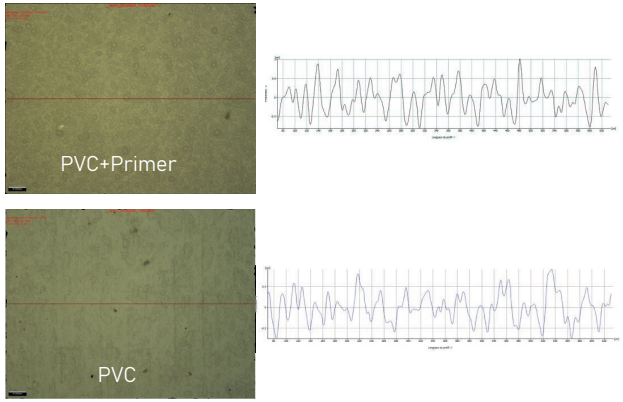


Fig 1: comparison of PVC and primer coated PVC using ALICONA at 20x magnification