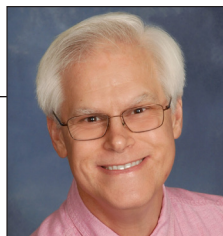




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Special coating issue contains highlighted works from TAPPICon 2023

Did you know that TAPPI's Coating and Graphic Arts Division has changed its name to Coating, Printing, and Surface Enhancement (CPSE) Division? This change occurred mid-year, as our members realized that the new name fits much better with the day-to-day workings of the Division, as well as the broader activities to functionalize and add value to paper and paperboard that continue to expand into new arenas. The industry's increasingly hot topic of developing sustainable packaging solutions further supported the need to consider all things in the surface enhancement category.

Each year, we, as members of the *TAPPI Journal* Editorial Board representing CPSE, choose some highlighted presentations from the CPSE program at TAPPICon to include in a special Coating issue. These works offer insight on the technology behind the direction of the coated paper industry, which is increasingly aimed toward sustainable packaging and high tech converting. This year's edition contains six articles in that realm, including the following:

- **Rättö et al. (RISE):** This study is an investigation of the effects of precalendering with soft nip or belt calenders, along with pre-coating, on the ability to achieve oil and grease barrier performance. The effects of calendering variables are often overlooked in barrier coating applications, because many times these papers are not calendered due to concerns with paper or board blocking during processing. This work provides some details on how calendering can be constructive in improving barrier performance, among other variables that were evaluated.
- **Mesic et al. (Karlstad University):** This research looks at the effects of barrier compound variables (pigments, wax dispersion, latex) on multiple-bump flexo-applied layers. It is well known that applying multiple coating layers over the top of each other im-

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proves barrier performance by eliminating pinholes in the substrate from layer to layer, as subsequent application fills in the voids. Layering also has the potential to build in certain attributes to generate a multifunctional barrier construction.

- **Devisetti et al. (Thiele Kaolin):** This paper assesses the effects of kaolin clay and latex on barrier, heat seal, and blocking performance in paperboard packaging grades. In this work, the focus was on evaluating high shape factor delaminated clays and, in particular, a coarse delaminated clay that showed improved barrier performance, albeit with a few observed tradeoffs. Latex composition was also evaluated, with results similar to those that have been previously reported indicating good consistency in results.
- **Lehtimäki et al. (MM Kotkamills Boards Oy):** This work examines the effects of various extensional viscosity modifiers in curtain-coating-applied barrier coatings for sustainable packaging. It contains an excellent explanation of how these novel materials work to improve the runnability of curtain coating formulations where extensional viscosity modification is necessary to promote stable and uniform coating layers
- **Ventresca et al. (Trinseo LLC):** This study is an investigation of how multilayer slide die curtain coating could be used to create sustainable packaging grades

with high barrier performance in a single coating pass. It illustrates the effect of simultaneously applying water-based barrier materials using curtain application as stacked layers to draw on the specific barrier performance of each. Coating concepts are illustrated that demonstrate the potential to produce multifunctional barrier coatings to meet multiple barrier criteria.

- **Preston et al. (Imerys Minerals LTD):** This mechanistic study evaluates the relative effects of surface roughness, porosity, and surface energy on offset printing. The focus of the paper was to first understand how to best measure paper surface energy and subsequently its impacts on printability, which has not been widely investigated. It found that while print quality is indeed modified by changing pigments, the surface energy of the primary pigments had little impact on the surface energy of the final coated paper, which included binders and other formulation ingredients. The surface energy of the coating was actually dominated by the nature of the latex binder and thickener.

ABOUT THIS PAPER

Cite this article as:

Ottone, S., Reed, G., and Welsch, G., *TAPPI J.* 22(11): 663(2023).

<https://doi.org/10.32964/TJ22.11.663>

DOI: <https://doi.org/10.32964/TJ22.11.663>

ISSN: 0734-1415

Publisher: TAPPI Press

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We're proud of the great work that's being done for our industry in the area of key growth potential — sustainable packaging — so please read and enjoy these works. Think about how you can use these findings in your space. They help to light our way to the paper industry of the future! **TJ**

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