

### Characterization of interfacial force during the ink transfer process of gravure coating

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Gravure printing process is widely used for production of tiny patterns on substrate. It has advantages in rapid processes, mass production ability, low cost both in equipment and production. As the demand for the patterns with high resolution increases, insufficient ink transfer from the roll to the substrate becomes one of the most critical issues of the system because it could induce poor print quality as well as non-uniform coating thickness. To improve the amount of ink transfer, we need to understand the mechanism of the process. Even though there have been previous studies about the transfer mechanism affected by operating conditions or by cell shape and dimensions, mechanism of the ink transfer process is not fully understood yet. In this study, we aim to understand the ink transfer process mechanism by analyzing forces involved in the ink transfer process. Here, different forces were evaluated. Total adhesion force was measured by UTM and the modulus of ink was determined using a rotational rheometer. The interfacial force was characterized by analyzing the cohesive force and total adhesion force. The ink transfer ratio was improved when the interfacial force was higher.