

General Information – Coating Coefficient of Friction

Scope	<ul style="list-style-type: none"> - Coefficient of friction (COF) as it relates to Waterbased and Energy-Cured coated surfaces, is the measurable frictional force resistance between two coated surfaces when in direct contact – typically face to face. - Measured results are achieved using specialized lab testing equipment along with industry accepted testing conditions/methods/procedures.
Testing Methods	<ul style="list-style-type: none"> - Relevant COF testing methods: <ul style="list-style-type: none"> • Tappi 402: Conditioning of test specimens • Tappi 549: Coefficient of static/kinetic friction – horizontal plane method • Tappi 815: Coefficient of static friction – incline plane method
Testing Equipment	<ul style="list-style-type: none"> - TMI 32-76: Coefficient of friction – horizontal/flat plane tester - Thwing Albert 225: Coefficient of friction – horizontal/flat plane tester - TMI 32-25: Coefficient of friction – incline plane tester
Relevance	<ul style="list-style-type: none"> - COF testing allows for the measurable qualitative and objective analysis of coating film surface characteristics as it relates to the expected formulated specifications of a particular coating product/application. - Variances in COF measurement results can impact the performance of a dried/cured coating-film as it relates to: <ul style="list-style-type: none"> • Material handling • Machine-ability/processing • Rub/abrasion resistance • Block Resistance
Static v Kinetic	<ul style="list-style-type: none"> - COF can be measured/represented in two different values: <ul style="list-style-type: none"> • Static – measurable force resistance between two non-moving surfaces in direct contact • Kinetic – measurable force resistance between moving surfaces in direct contact (one moving surface against one non-moving/static surface)
Interpretation of Results	<ul style="list-style-type: none"> - TMI 32-76 or Thwing Albert 225, Sled COF - Horizontal/Flat Plane Test <ul style="list-style-type: none"> • Static and kinetic COF results are represented as a percentage based on the relationship between the required/applied force and the normal force/weight: <ul style="list-style-type: none"> □ The lower the measured percentage result – the more slippery the coated surface is determined to be. □ The higher the measured percentage result – the less slippery the coated surface is determined to be. - TMI 32-25, Slide Angle Test <ul style="list-style-type: none"> • Static and kinetic COF results are represented as an inclined angle in degrees: <ul style="list-style-type: none"> □ The more slippery the coated surface – the lower the degree value result. □ The less slippery the coated surface – the higher the degree value result.
COF Influences	<ul style="list-style-type: none"> - COF results can be influenced by, but not limited to, the following variables: <ul style="list-style-type: none"> • Ambient conditions for testing – temperature/relative humidity • Age of test specimens related to drying/cure of coating/ink layers • Degree of coating-film cure – Energy-Cured coating • Coating wet-state homogeneity prior to application – pre-mixing • Applied dry coat-weight – coating film thickness/coverage/lay • Coating film surface contamination – debris, spray powder, wax, silicone, dust • Formulation of beneath ink layers for slip agents/additives – migration and surface contamination • Substrate and coating-film smoothness/uniformity • Substrate hold-out/absorbency