

THE SIGNIFICANCE OF RELEASE LINERS IN DIE-CUTTING



In the converting industry today, the selection of materials available to convert is vast. When you are die-cutting to a liner on pressure-sensitive materials, the release liner plays a primary role in the effectiveness of cutting those substrates. Most release liners fall into one of two categories for material type: Natural or Synthetic. Natural liners such as paper or tag have been around for many years and are usually defined by a weight system (i.e., 40 lb., 50 lb., etc.) Thicker Natural tag liners may be described in points (10 pt, 12 pt, etc.), and Synthetic liners are most often described by caliper in thousandths of an inch or as “mils”.

Liner Thickness

When die-cutting to a release liner, its thickness must be known so that the die may be set to only cut to it and not through it. Identifying the thickness of a Synthetic liner is usually easy, as is stated in the material description. Natural liners that are often indicated as the weight can be more challenging to identify an accurate thickness. Paper weights in the USA are based on the weight of 500 uncut sheets of the material (sheet size varies by material type.) In Europe and Latin America, the weight will be in grams per square meter (gsm) instead of pounds. This “weight” though, does not directly correlate to a “thickness,” so cutting die configurations will vary between liner types.

Right Liner Type

New liner types are introduced to the industry every year, with many still using a weight to describe them. Materials of the same weight though can differ in thickness. The type of material (such as SCK, CK, Glassine, kraft, PPK, and more) will have differences in the properties of thickness, consistency, density, etc. The best resource for the exact specifications of the material is the Technical Data Sheet published by the supplier. It will have a wealth of information, including the material type, surface coatings on the substrate, adhesive properties, and the liner thickness with a tolerance. As an example, a 40# SCK liner may be indicated as a caliper of .0024" +/- 10%, so within that tolerance, this liner can be as thin as .0022" and as thick as .0026". A 90# liner may be described as .0069" +/- 10%, so it can range from .0062 to .0076". The tool used to measure thickness is wider than the blades that cut the material so this range in thickness can have a greater impact on die-cutting.

Impression Depth

Another critical factor in the formula for manufacturing a cutting die is the depth of impression the blades will leave in the liner when they cut the substrate. The question to the converter is "How will the label be applied?" - as in manually or by a machine - and the answer determines how deep of a liner impression can be made during die-cutting. When automatically applied at high speed, a lighter liner impression is required. If applied by a dispenser or just by hand, a deeper liner impression is acceptable. The more variance in the liner thickness, though, the more difficult it becomes to get an even die strike at the depth needed for the application. The thicker the liner, the more variance there will be in the liner, and as a result, those thicker liners can be more difficult to cut to and still leave a light liner impression.

Start Die-Cutting the Right Way

While many factors influence the manufacture of the cutting die, getting the proper liner specifications upfront is paramount in attaining the correct cut and die strike. The release liner is often disposed of when the end-product is deployed, but for each moment up to that point, it is an important component in every aspect of the application. At Wilson Manufacturing Co., we keep many typical stocks on hand for testing as a convenience for our customers, but when a more exotic material is used or when the die strike is critical, it is necessary to send that material to produce the die.