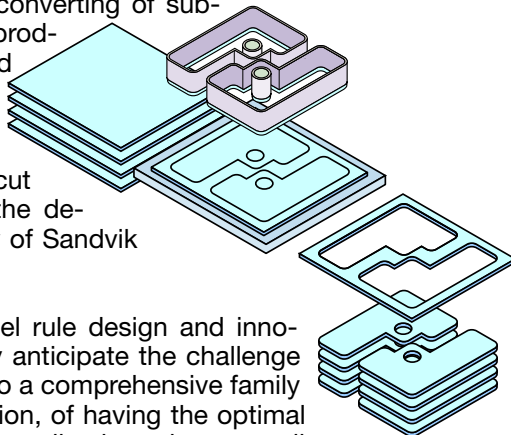


The Spider: A Steel Rule Knife Application Guide

It is easy to underestimate the complexity of choices that underlie a seemingly simple process. Diecutting is the converting of substrates in sheet or web form into products of higher value using a matched male and female tool. **See right.** However, the diversity of different diecutting technology and an exponential growth in materials and diecut product applications, has fueled the development of a sophisticated array of Sandvik steel rule knives.



Sandvik is the world leader in steel rule design and innovation. It was natural the company anticipate the challenge by continuing to develop and add to a comprehensive family of cutting tools. This obvious solution, of having the optimal knife for each family of diecutting applications, is extraordinary, however, it does pose an obvious question. **How do I choose the best knife for my specific application?**

The answer is, the **Sandvik Applications Spider**. See below.

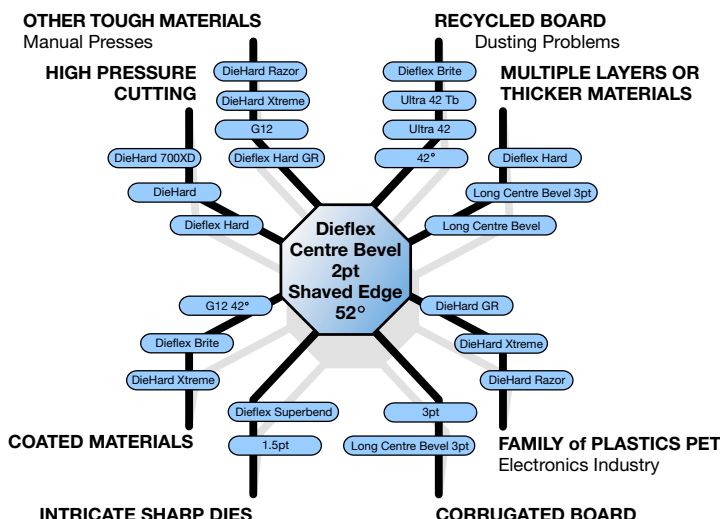
The Application Guide

You are correct in assuming this is not a course in entomology or a discourse on the world of arachnids, but the structure of a spider provides a perfect template to organize our steel rule knife search engine.

The body of the spider contains the most effective steel rule knife successfully used in multiple applications around the world. This is Dieflex 52 degree Centre Bevel, 2-point, Shaved Edge Cutting Rule. But this start point is simply that, a start point. Each leg of the spider represents a class or a category of material or substrate converted in diecutting.

As you move outward from the body of the spider toward the tip of each leg, you will see individual nodes astride each leg. Each node contains a steel rule recommendation, which experience and feedback has demonstrated to be an effective knife for cutting this type of material. However, as you move outward toward the end of each leg, each progressive node suggests an alternative knife, with similar attributes, which may prove to be more effective.

The first node you encounter, as you move from the body toward the tip of each leg is our first recommendation, the second node the second recommendation, and the third, the third recommendation, etc.



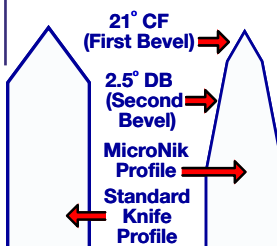
Continued on Page 2.

A Cutting Innovation: Sandvik MicroNik

The goal of the diemaker and the diecutter is to position and to protect the cutting edge of each knife in the steel rule die. This is certainly an oversimplification of a more complex process. However, it does serve to illustrate the importance of adding value to the blade by matching knife-edge design to the die-cutting application it is to be used in.

MicroCut and MicroNik are perfect examples of improving converting performance by engineering a cutting edge with multiple attributes and multiple benefits to the diecutter.

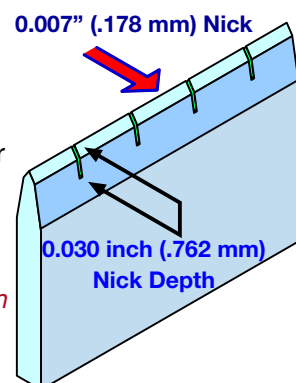
MicroNik Innovation



MicroNik is a pre-microscopically nicked, patented, super sleek, double beveled cutting knife, using Dieflex,

edge hardened cutting rule. **See left.** The standard nicking pattern is set at 4-nick per inch or 25.4 mm and at 8-nick per inch or 25.4 mm, **see below**, however, other sizes can be special ordered. Each nick is 0.007" or 0.18 mm in width, and is 0.030" or 0.762 mm deep. For special applications call your Sandvik representative.

The 4-nick pattern yields 0.028" or 0.71 mm of retained or uncut paperboard and hold per lineal inch, or 25.4 mm of diecut material, and the 8-nick pattern yields 0.056" or 1.422 mm of retained or uncut paperboard and hold per lineal inch, or 25.4 mm of diecut material.



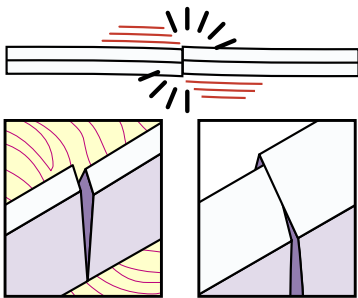
Continued on Page 2.

The Snap Joint Test

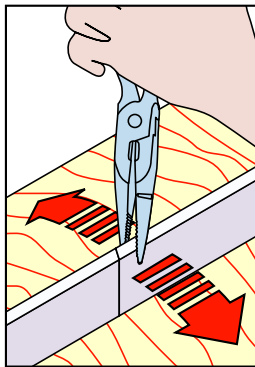
One of the most common joints in diemaking is the in-line butt joint. **See left.** While execution is straightforward, the most frequent problem is the joint may flex apart under cutting pressure. **See below.**

A Simple Test

Obviously the knives are too long, however, there is a simple test to verify the length of the steel rule



knife. Once the knives are inserted and properly leveled a pair of pointed nosed pliers are used to grip one of the knives on one side of the joint. **See right.** The knife is flexed sideways, if both knives move together or there is a snapping sound as one rule snags the other, then one of the knives must be shortened.



Application Guide: Summary

continued from previous page...

One of the most difficult things in diecutting-converting is to develop a consensus about specific methods and practices. The Spider template provides suggestions, however, this should not preclude you from experimenting with each family of blades, or using alternative knives, to develop your own experience with each knife, each application and each material.

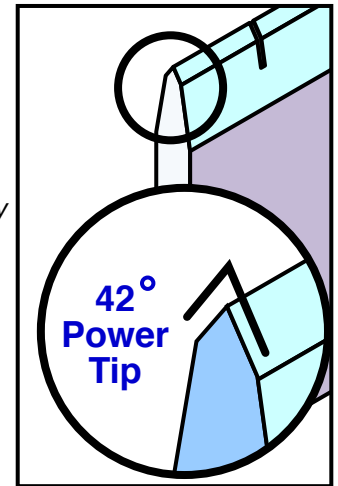
A Cutting Innovation: Sandvik MicroNik

continued from previous page...

MicroNik is available in strips and in coils.

What are the proven benefits of this unique material?

- * Greater nick/tag hold and diecut sheet stability
- * Precise pattern lowers nick/tag visibility
- * Minimal sheet break-up and reduced waste
- * Improved press speed and increased yield
- * Minimal flaking and edge chipping
- * Lower pressure with reduced dust and fiber
- * Eliminate on-press adjustment & down time
- * Simplify nicking and toolmaking preparation
- * Consistent performance from job-to-job
- * Integrate nicking into rule processing



Sandvik MicroNik Summary

MicroCut and MicroNik are two examples of extensive portfolio of value added knife edge designs, treatments, and profiles. In successive articles about these innovative Sandvik tools we will describe methods and practices to optimize diecutting performance and to solve key diecutting problems.

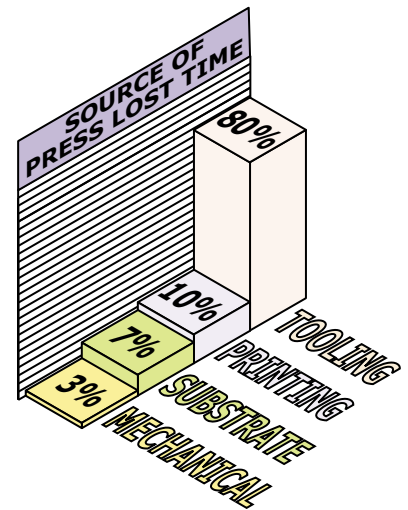
The Sandvik Archive identification number for the full text of this article is **P003**. For more information visit the Sandvik Web Site listed below.

What is Diecutting Converting?

To describe the diecutting process is to state: *“Diecutting is the conversion of a lower value substrate in the form of sheets or a web of material, into finished products and/or diecut components of a higher value.”*

So what is converting?

Although the converting process takes place in a diecutting mechanism, the press is simply a tool holder. Diecutting is primarily about toolmaking. If any statistical study is completed of press down time or non-productive time, it shows that more than 80% of the non-productive time is expended in tool adjustment and tool modification. **See above right.**



The foundation tool of diecutting is the steel rule die, and this is where we can see the key tools of converting. Therefore, to answer the question, what is converting? Converting consists of six (6) disciplines or elements of the steel rule die, which interact with and transform the base substrate.

The six disciplines are:

- * **Cutting** * **Creasing** * **Perforating**
- * **Scoring** * **Embossing** * **Debossing**

The Sandvik Archive identification number for the full text of this article is **H001**. For more information visit the Sandvik Web Site listed below.