

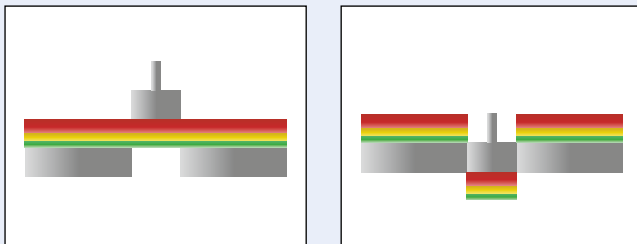
# Die-cutting technology

Producing labels by die-cutting sounds simple, but the devil is in the details. In addition to the printing process, the die-cutting process is of immense importance in manufacture. Die-cutting is performed as a severing operation according to DIN 8588, referring to many different „cutting“ uses. Here die-cutting conceptually means the separation or reduction of a workpiece using a tool.

Unlike slitting, where only straight lines can be severed, die-cutting allows removing virtually any desired shape (circle, oval, square or special shapes) from the material.

The die-cutting principle offers 2 different types:

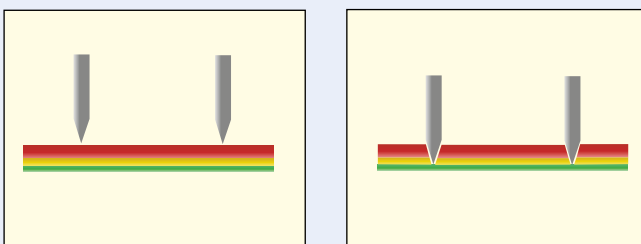
## 1. Scissor cutting



The cutting tools always consist of a tamp and a counter-cutting plate. A typical example is the die-cutting of holes into paper for pin-feed or filing applications.

## 2. Knife cutting

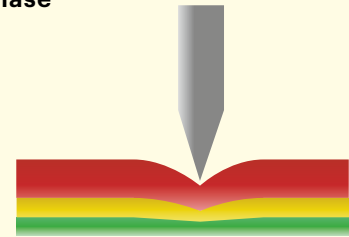
The knife cutting approach plays a more important role in label production. Here only die-cutting tools and a cutting surface are required. Handling demands utmost care, because the cutting blades and the surface must be perfectly matched to allow the cutting blade to enter exactly up to the cutting surface (liner material).



The severing / die-cutting of the material is done in two steps. In the compression phase, the composite material is compressed. Then the cutting blade reaches the solid surface; the material is now severed. The separation process is dependent on the material to be cut and on the cutting angle used. The soft material components are compressed.

### a.) Compression phase

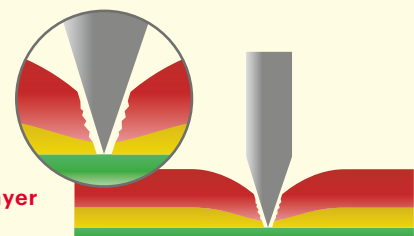
Information layer  
Adhesive  
Liner material



In the separation phase only the actual adhesive material (film and adhesive) tears or splits. The goal is always a clean cut, where the

### b.) Separation process

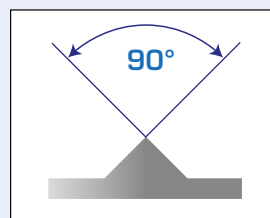
Information layer  
Adhesive  
Liner material



cutting surface (liner material) should remain intact.

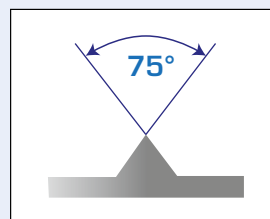
## Differing cutting angles

### 90° angle



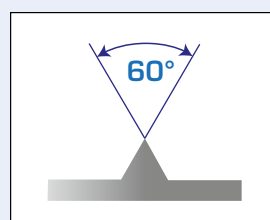
- Uncoated paper
- Coated paper
- Recycling paper

### 75° angle



- Polyethylene
- PVC
- Other common plastic films
- Heavy or laminated paper

### 60° angle



- Multi layer plastics
- Polypropylene
- Polyester
- Difficult die-cutting materials