ALL STEELS ARE NOT CREATED EQUAL

Steel options evolve as new technology and processes become available. At Wilson Manufacturing, we continuously evaluate and research new opportunities for steels and treatments that maximize die life while remaining cost-effective for our customers. We consider many factors when selecting steels and treatments to ensure we have the best combination of elements for the converting industry. Read on for more info about the materials and processes we offer – but you don't have to be a steel expert to find the perfect tool. Your Wilson rep is always happy to assist in advising the best solution for your specific job!

Steel Basics

Steel is an alloy of iron with other elements that are designed to increase specific properties of the steel. Wilson Manufacturing has developed an inventory of steel options ideal for the converting industry and the specific challenges of die cutting. Target elements for our steel alloys include combinations of carbon, chromium, and vanadium.

Carbon

Adding carbon to iron can make the steel stronger and tougher, allowing for more wear resistance. Too much carbon can make the steel too hard, though, and it becomes difficult to engrave the clean and smooth blade angle needed on a cutting die.

Chromium

The addition of a chromium element can provide an increase in wear resistance and a reduction in oxidation. Chromium is a very hard substance on its own and increases that property in a die made with a chromium steel. Chromium does not oxidize (rust) easily though, so it adds a substantial resistance to rust for a cutting die.

Vanadium

The addition of small amounts of vanadium in steel allows for a more stable heat treatment process with the benefit of added hardening effects. Vanadium can increase the depth of hardness in heat-treated tools, adding more resistance to crushing. This can be especially effective for cutting dies working in extreme friction or high-use applications.

Wilson Steel Options

Steel is an important factor when ordering tooling for converting, but knowing the specific percentages of each element in the alloy is not required to get the perfect tool. At Wilson Manufacturing, we have researched and developed the best combinations of steels and treatments for our customers, ensuring the longest die life with exceptional manufacturing properties for the most cost-effective solutions available. Our steel cutting dies are all CNC-engraved and machine-sharpened, with opportunities for resharpening as they begin to wear. We also offer nonstick coatings for engraved tools: Die Slide, Die Slide Food Safe, DCT, or plasma coating. Manufacturing times will vary.

HT-45, Elite, and T-1000 are designed for pressure-sensitive (to liner or to face) cutting only. (Not recommended for metal-to-metal cutting.)

HT-45

Our standard entry-level steel is designed for short to medium runs on paper face stocks, with or without lamination. HT-45 steel can be retooled multiple times and has the advantage of very fast turn times.

Elite

This steel was designed for medium to long runs on natural materials such as paper. In abrasive situations, such as cutting through thermal transfer coatings or abrasive inks, Elite performs significantly longer and has fast turn times for manufacturing.

T-1000

When the longest possible life is needed or in extremely abrasive situations, T-1000 is the perfect choice for a workhorse that lasts. It was developed for long life when cutting abrasives but will also extend life in nonabrasive situations. T-1000 is recommended for die cutting paper materials only (no films, including lamination) and has quick turn times.

For metal-to-metal (through cutting), pressure-sensitive applications cutting films, or for longer die life, choose M-80, A-100, or S-100.

M-80

The M-80 steel is ideal for medium runs on most substrates, including most films and laminations.
For pressure-sensitive cutting on non-abrasives, M-80 can be the next step up from HT-45 for longer tool life.
M-80 can be used for short runs cutting metal-to-metal. M-80 has quick turn times.

M-80 Cryo

This M-80 steel with cryo treatment works similarly to M-80 steel but with an added boost in durability for long-run applications in pressure-sensitive cutting. Additional production time is needed for M-80 Cryo and adds one to two days to standard turn times.

A-100

A-100 is recommended for pressure-sensitive cutting, although for some rare applications, it may be recommended for metal-to-metal cutting. This fully hardened tool steel is very durable and wear-resistant. It is ideal for long runs on films when cutting to a liner or face and is especially effective for high elastic ("stretchy") films that require keener blade angles. The higher chromium content of A-100 makes it less susceptible to rust, and it performs well for specific abrasive applications cutting to a liner, such as a sandpaper substrate. Manufacturing time is slightly longer and will typically be about six days or more.

A-100 Cryo

The addition of cryogenic treatment to A-100 offers a significant boost in durability when cutting to a liner. It adds a minimal effect on manufacturing time – usually adding one day or less.

A-100 Extreme

With the highest level of heat treatment available for maximum benefit in durability, A-100 Extreme is ideal for the longest runs cutting to a liner. Turn times can be slightly longer and are typically about ten business days.

S-100

This steel is the best choice for long runs cutting metal to metal for standard materials such as papers and easy-to-cut films. It may occasionally be recommended for a few pressure-sensitive applications. S-100 is a fully hardened tool steel designed for exceptional durability and wear resistance. Lead time is typically six days or more.

S-100 Cryo

Cryogenic treatment will boost durability for S-100 when cutting metal to metal and will have little impact on turn time, maybe one day or less.

S-100 Extreme

With the highest level of heat treatment available for maximum benefit in durability for metal-to-metal applications on almost all materials. Turn times can be slightly longer, though, typically about ten business days.

We Go Beyond Precision

No matter what material your rotary tooling needs to cut, Wilson has an optimized steel solution for your application. Our experts are here to help you make the perfect selection of steel and treatment to maximize tooling life and still be cost-effective. Explore our inventory of precision rotary tooling, and to craft the best solution for your business, connect with your Wilson representative.

WILSON MANUFACTURING COMPANY

ENGRAVED DIE PRODUCT GUIDE

Selecting the right product for the job helps to ensure a successful run.
Find the suggested minimum Wilson Manufacturing engraved die product using the cut type and expected run length.

TYPE OF CUTTING:	EXPECTED RUN LENGTH:					
Pressure Sensitive (cutting to a liner or other material layer)	**Short**	**Medium**	**Long**	**Longer**	**Longest**	**Extreme**
Paper	HT-45	Elite	Elite	T-1000	T-1000	T-1000
Paper w/abrasives	HT-45	Elite	Elite	T-1000	T-1000	T-1000
Paper w/lam	HT-45	M-80	M-80 Cryo	A-100	A-100 Cryo	A-100 Extreme
Film, standard	M-80	M-80	M-80 Cryo	A-100	A-100 Cryo	A-100 Extreme
Film, stretchy/difficult	M-80	M-80	M-80 Cryo	A-100	A-100 Cryo	A-100 Extreme

TYPE OF CUTTING:	EXPECTED RUN LENGTH:					
Metal to Metal (cutting through all layers, to the anvil)	**Short**	**Medium**	**Long**	**Longer**	**Longest**	**Extreme**
Paper	M-80	M-80	S-100	S-100	S-100 Cryo	S-100 Extreme
Paper w/abrasives	M-80	S-100	S-100	S-100 Cryo	S-100 Extreme	S-100 Extreme
Paper w/lam	M-80	S-100	S-100	S-100 Cryo	S-100 Cryo	S-100 Extreme
Film, supported	M-80	S-100	S-100	S-100 Cryo	S-100 Cryo	S-100 Extreme
Film, supported, w/abrasives	M-80	S-100	S-100	S-100 Cryo	S-100 Extreme	S-100 Extreme
Film, unsupported	S-100	S-100	S-100	S-100 Cryo	S-100 Extreme	S-100 Extreme

This Wilson Manufacturing Product Guide is based on general material and run specifications as shown and may not represent all of the factors that affect cutting performance and die life. Contact your Wilson rep for additional information or other advice on finding the perfect solution for your specific die cutting application.

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