



TYPES OF STEEL

All of the tools we sell are made from one of seven different types of steel. Each has its own unique characteristics and use. Generally speaking, you get what you pay for but each has a specific purpose. The types are, from cheapest to most expensive, Carbon Steel, Stainless Steel, High Speed Steel, Cobalt Steel, Ferro-Tic Carbide, Carbide Tipped and Solid Carbide. Some types of tools are offered in more than one type of steel. Please refer to this page to determine which type of steel is best for your purpose. We have the equipment and the expertise to re-sharpen most all of the tools we sell.

Carbon Steels, which can include High Carbon Steel and High Alloy Steel, are the softest and usually the cheapest of the seven types we offer. Many woodworking tools are made from this material. Many craftsmen like Carbon Steel because the tools are soft enough to sharpen with a file. Virtually any woodworking tool can be found in a carbon steel version. Some woodworking tools are only available in Carbon Steel or Carbide Tipped because it is too difficult to make them from anything else or they would be too expensive. If you are cutting softwood or just a few holes in hardwoods or plastics, Carbon Steel is your answer. If you have a lot of holes to cut in a hard material, you may want to choose a better grade of steel. The tools we manufacture from Carbon Steel are heat treated to 62c hardness and cannot be sharpened with a file. A stone type of grinding wheel is required to re-sharpen them.

Stainless Steel is not normally used to manufacture tools. However, we have found that heat-treating Stainless Steel produces tools that not only have longer lasting cutting edges than Carbon Steel but also have a spring steel quality that keeps the tools from breaking in tough applications. Stainless Steel generally costs only a little more than Carbon Steel. Our Stainless Steel is heat treated to 45c hardness and can be sharpened with a file or a stone type of grinding wheel.

High Speed Steel, sometimes abbreviated to HSS, comes in various different grades generally used in the metalworking industry to make drills, end mills, turning tools, and other tools designed specifically to cut metal. In woods and plastics, all grades of HSS far outlast the cheaper Carbon Steel or Stainless Steel. The various grades of HSS we use are identified by M1, M2, M7 and M50, M1 being the most expensive grade. Very few woodworking tools are made from HSS. It is too expensive to use for large tools, very tough to machine and can be subject to breakage with rough treatment in hand held equipment. M1 is the hardest and also the most brittle of the bunch. You can't have your cake and eat it too! We use M1, M2 and M7 for applications when better tool life is required and breakage is not a problem. M50 is used when breakage could be an issue. Tools made of High Speed Steel will always have HS or HSS stamped or etched on them. Don't be fooled by imitations. We recommend HSS for most applications because the tools are reasonably priced, last a long time in woods and plastics and have more sizes and lengths available than any other type of material. However, if you are cutting thousands of holes in hard materials, you need some type of Carbide Tooling. Sharpening HSS tools requires a grinding wheel made of stone or one that is Borazon plated.

Cobalt Steel is very similar to High Speed Steel. Its identifier is M40CO or M42. Most drills made of Cobalt have a brownish gold tint and are marked with their identifier. Cobalt is a step up from HSS and offers better tool life than HSS. Since Cobalt is harder and therefore more brittle than HSS, Cobalt drills usually have a more rugged

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construction with less room for chips to escape in the flute area. Although they work great cutting materials like stainless steel and cast iron, they do not work well in wood or plastics because they do not clear chips well. In an application in which a good grade of HSS Drill cut 2000 holes before becoming dull, a Cobalt Drill might cut 2200 holes before dulling. Sharpening Cobalt Steel tools requires a grinding wheel made of stone or one that is Borazon plated.

Ferro-Tic Carbide is a material developed and produced by Alloy Technologies®, which we use exclusively to produce Countersinks and Counterbores to cut abrasive materials like fiberglass, plywood, Masonite and particleboard. In its soft state, Ferro-Tic Carbide is somewhat machinable and in its hardened state it is a hard wear resistant tool. Ferro-Tic Carbide is a matrix of HSS and Carbide particles. In use, the HSS wears away and leaves the Carbide Particles exposed which greatly extends the tool life. These are not designed to cut metal or be used in hand held equipment. Sharpening Ferro-Tic Carbide tools requires a special stone grinding wheel or special Diamond plated grinding wheel.

Carbide Tipped is the material of choice for tools used in high production applications. The Carbide is super hard, re-sharpenable and replaceable. Carbide can cut faster at higher spindle speeds because it is impervious to the heat produced by those speeds. Since Carbide is extremely hard, it is also extremely brittle. This is especially true in the case of woodworking tools. The slightest contact with another metal object could cause the Carbide to chip. Although some grades of Carbide are designed to work well in metals and cement, the type found on woodworking tools is not. The Carbide Tips are usually brazed to the cutting edges of tools made of softer materials like Carbon Steel. Sharpening Carbide Tipped tools requires Diamond plated grinding wheels.

Solid Carbide tools are very expensive and are usually manufactured and used for special applications. Tools that are made from Solid Carbide usually have some type of spiral design or they are very small like Solid Carbide Spiral Router Bits and Solid Carbide Drill Bits. These types of tools are best sharpened by the original manufacturer.