



Facts About Knives

THE BLADE

Today's knives are descendants of tools used hundreds of thousands of years ago. While a primitive flintstone knife of the Stone Age may not seem to have much in common with a stainless steel knife of today, what is the same is a sharp edge on a hard substance.

By today's standards, even methods and materials were still very basic at the beginning of the 20th Century. However, this was to change very quickly with the widespread application of electricity to the industry, the invention and refinement of stainless steel, and more recently, computerization.

The requirements of the First World War, coupled with strong competition, brought about phenomenal advances. The discovery of stainless steel was one of these advances.

THE DISCOVERY OF STAINLESS STEEL

Henry Brearley, the inventor of stainless steel, was born in Sheffield, England in 1871.

Using the crucible process first, and then more successfully an electric furnace, Brearley made a number of different melts of 6% to 15% chromium with varying carbon contents. The first true stainless steel was melted on August 13, 1913. It contained 0.24% carbon and 12.8% chromium. To solve the problem he had been presented, Brearley was trying to find a more wear-resistant steel. To examine the grain structure of the steel he needed to etch (attack with acid) samples before examining them under the microscope. The etching re-agents he used were based on nitric acid, and he found that this new steel strongly resisted chemical attack. He then exposed samples to vinegar and other food acids such as lemon juice and found the same result.

Brearley immediately realized the practical uses of the new material he had discovered. At the time, cutting knives were made of carbon steel which had to be thoroughly washed and dried after use, and even then rust stains would have to be rubbed off using Carborundum stones. Initially, Brearley referred to his invention as "rustless steel." Later, Ernest Stuart, coined the phrase "stainless steel" after experiments with vinegar failed to stain the steel. Today stainless steel is a generic term for a family of corrosion resistant alloy steels containing 10.5% or more of chromium.

Krupp in Germany (ThyssenKrupp today) was also experimenting with stainless, acid-resistant steels at just about the same time as Brearley was conducting his experiments.

Stainless steel development all but stopped as World War 1 raged. After WW 1, in the early 1920s, a whole variety of chromium and nickel combinations were tried. Dr. W. H. Hatfield is credited with the invention of 18/8 stainless steel (18% chromium, 8% nickel, austenitic grade stainless steel) in 1924. In just over ten years, the Brearley and Krupp discoveries had led to the "400" series of martensitic stainless steel (commonly used for knife blades, surgical instruments, shafts, spindles and pins) and the "300" series of austenitic stainless steel. Today there are five basic categories of stainless steel. For the most part, these were invented between 1913 and 1935 in Britain, Germany, America and France.

THE UNIQUE ADVANTAGE OF STAINLESS STEEL

Stainless steel's unique advantage over carbon steel, is its high resistance to corrosion. This resistance to corrosion is due to the naturally occurring chromium-rich oxide film formed on the surface of the steel. This film forms at the molecular level and is extremely thin; it is invisible to the human eye. This film or layer is described as passive, tenacious and self repairing. Passive means that it does not react to or influence other materials. Tenacious means that it clings to the layer of steel so that it is not transferred elsewhere. Self repairing means that if damaged or forcibly removed more chromium from the steel will be exposed to the air and this will form more chromium oxide, repairing or replacing the lost oxide film. Over a period of years a stainless steel knife can literally be worn away by daily use and by being re-sharpened, but will still remain stainless. Silver plated cutlery will eventually wear through to the base alloy, but stainless steel cutlery cannot wear through.

Initially, the cutlery industry was not able to simply take stainless steel as it was invented and use it with total success. The first stainless steel did not produce blades that held an edge nor could edges be put onto blades easily. It took almost 30 years of expensive research by large cutlery manufacturers to develop the right combination of alloys to produce the grade of stainless steel that is still used today.

Today, with more than 75 years of cutlery steel technology behind it, the cutlery steel industry is highly sophisticated and constantly experimenting with new and improved methods. Today's cutlery steel manufacturers have fully integrated operations, computerized processes and control procedures that enable them to produce the highest quality medical and cutlery grade steels, at a lower cost

than ever before. For example, recent developments have reduced the volume of steel ground away in the grinding operation, resulting in a more economically finished blade.

Today, quality knives can be made almost 100% by machine or by using the skills of a master cutler. The two knife manufacturing processes are discussed below.

HAND FORGING BLADE MANUFACTURING PROCESS

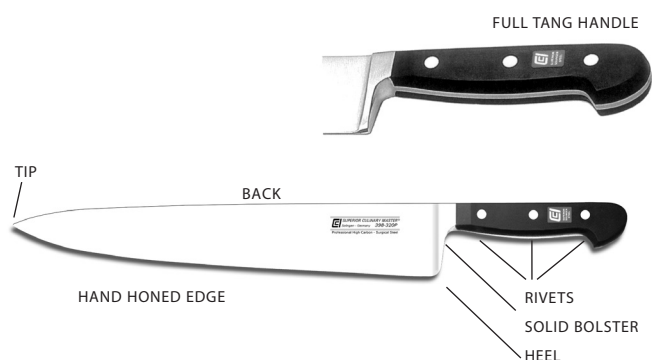
The hot drop hand forging process is the ultimate production method used to produce high quality cutlery. It combines the best of the old with the new. The old is the master cutler's skill and expertise and the new is the latest in advanced steel processing technology. Master cutlers must hammer raw cutlery steel into the desired blade shape. This is just the beginning – the knife will go through more than 60 different processes before it is finished. These operations involve almost 100% hand work and the dedication and skill of a true craftsman able to blend his skills with modern technology. Generally, hand forged knives are very expensive given the number of processes and hand work involved.

You can identify a hand forged knife by its "solid bolster."

STAMPED BLADE MANUFACTURING PROCESS

With this process, cutlery steel is prepared at the steel mill rather than being hammered out by hand. The steel mill produces and delivers the desired grade of stainless steel in coils to the knife manufacturer. The shape of the knife blade is cut from the coil of steel by a machine designed for this task. The remaining processes, such as grinding, tempering, polishing, sharpening and finishing are completed using a combination of highly skilled labor and machinery.

You can identify a stamped knife by the fact that it does not have a "solid bolster."

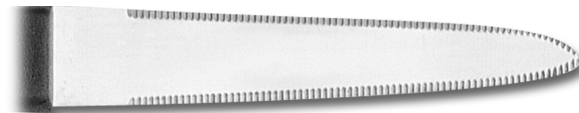


BLADE EDGES

Different cutting jobs require different blade edges. Several of the most common are described below.

SERRATED EDGE

A serrated edge allows the knife blade to easily saw through objects that are firm throughout. It is ideal for cutting solid European type breads.



SCALLOPED EDGE OR WAVY EDGE

A scalloped or wavy edge allows the knife blade to slice easily through surfaces that are firm on the outside but soft on the inside. It is ideal for cutting tomatoes, hard-boiled eggs, types of breads that are crusty on the outside and soft on the inside.

A scalloped or wavy edged knife stays sharper longer than a regular straight edged knife. This is because its very thin cutting edge is protected by the projecting points of the blade.



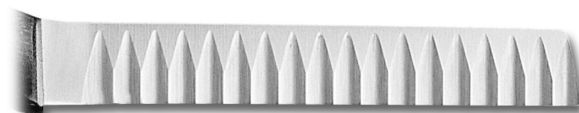
GRANTON EDGE (ALSO KNOWN AS UNDULATED EDGE)

Granton edged knives are extremely sharp. The undulation actually creates air pockets at the blade to prevent food from sticking to the knife. Granton blades are ideal for slicing ham or beef and whenever a perfect slice is desired. Note: This edge is delicate and can be chipped if it hits bones or other hard objects.



DECORATOR EDGE

Some blade edges are specially designed for creating artistic food presentations. The decorating edge is ideal for sculpturing fruits and vegetables.





THE KNIFE HANDLE

Knife handles come in a variety of different shapes and are made from many different types of materials. Polypropylene and POM (Polyoxymethelene) and various woods are examples of handle materials.

Polypropylene, commonly known as plastic, is widely used on good quality stamped knives. Its use helps to keep the overall cost of the knife lower than that of knives made of more expensive handle materials.

POM (Polyoxymethelene) is more durable than polypropylene and has all the positive properties of plastic – an extremely high melting point and the ability to meet stiff sanitation regulations.

Natural woods and wood composite products are also used for knife handles. PakkaWood® combines the beauty of hardwoods and the strength and performance benefits of plastic. PakkaWood® handles are ideally suited to meet stiff sanitation regulations while providing the beauty and feel of a wood handled knife.

To choose the right handle design, it is best to hold a knife and pick the combination of shape and material that “feels” best.

Handle finish is very important. Visible gaps and seams will cause deterioration and cracking, resulting in an unsightly, unhygienic kitchen tool. A good knife will not contain a “filler” where the blade meets the handle.

CLEANING

All knives should be washed by hand with regular dishwashing detergent and warm water. A wood handled knife should not be immersed in water, it should simply be wiped clean and dried. Although some knives say “Dishwasher Safe,” knives should never be put in the dishwasher, as personal injury or blade damage could occur if they are not placed and removed carefully.

Acidic foods (lemon juice, vinegar, mustard, etc.) should not remain on the knife blade after use as they can cause discoloration. To avoid this problem, a knife should be cleaned as soon as the cutting job is done. If a blade does tarnish or stain, a non-abrasive metal or stainless steel cleaner or polish will restore its lustre.

STORAGE

CHEF’S ATTACHÉ CASES


A Chef’s Attaché Case, like the Culinary Caddy™, provides the ultimate in knife and culinary tool storage. It is for those discerning few who want to protect their valuable knife investment in the most discriminating way.

KNIFE ROLLS

Knife Rolls are ideal for storing and transporting knives and culinary tools from one location to another. Knife rolls can be placed inside bigger tool kits to protect knives from hitting other culinary tools.

KNIFE BLOCKS

CCI’s Knife Blocks are constructed from the finest Canadian Maple and provide practical and safe storage. They are extremely attractive and add a designer touch to the household kitchen!

Store knives safely and in a way that protects the blade from damage! Knives should not be stored in a kitchen drawer – irreparable blade damage as well as personal injury can occur! 

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