Your cutting tool is produced from the highest quality materials by expert craftsmen and with reasonable care it will serve you faithfully for a lifetime. Below is general information concerning the use and care for your item.

FIXED & FOLDING BLADE KNIVES:

The primary defenses against wear, corrosion and potential injury are to keep your knife sharp, oiled, clean and dry. Proper care of your knife will help to extend the life of the product as well as increase its reliability and durability. Always keep your knife clean. Be sure to clean the handle and blade of the knife after each use. A mild solution of water and soap should remove any debris and dirt that would have accumulated during use (always avoid harsh detergents such as dish soap, and chlorine products).

After cleaning your knife always make sure it is then dried (always keep your knife dry when possible). Please always take special care with sensitive handle materials such as leather. We recommend using a soft dry cloth and a small amount of water-displacing oil (we recommend WD-40 or 3-in-1), to apply to the blade, this will help prevent water spots as well as retard rusting and oxidation.

We recommend always keeping your knife oiled. Weather and fingerprints are the main causes of corrosion and rusting on a knife blade. You should always give your blade a light coat of oil after each cleaning and prior to long term storage. If you choose to store you knife for extended periods of time it is recommended to use a desiccant to remove moisture from the air. Stainless steel does not stain, corrode, or rust as easily as ordinary steel, but it is not stain-proof and will rust without proper maintenance.

Always keep your knife as sharp as possible because a sharp knife is easier to work with and safer to use than a dull one. Fixed-angle sharpening kits are available and recommended if you are new to sharpening blades, a consistent grind from tip to base is necessary to properly sharpen you knife (please note that damage to your blade from home-sharpening is not covered by our warranty).

While not in use you should oil and store your blade in a cardboard scabbard type of sheath. Never store the knife in a leather/nylon/Kydex® sheath (even if the knife comes in these type of sheaths) as these sheaths can retain moisture which will accelerate the rusting/oxidation process. A cardboard sheath will wick moisture away from the blades surface as well as help to prevent debris and dust from accumulating. For best results a low moisture/humidity room-temperature environment is preferred for storage. The blade should be re-oiled periodically during this period. Remember that all steels will eventually rust/oxidize but that with proper maintenance you should experience reliability and longevity on your product throughout the years.

MULTI-TOOLS:

BTI Tools LLC recommends regular maintenance and upkeep on your multi tool. For maximum benefit on the life of the product you should regularly clean and dry your multi-tool after use. When necessary, use a light oil to oil the pivot points. Always be sure to clean the handle set and blade after each use. A mild solution of water and soap should remove any debris and dirt that would have accumulated during use (always avoid harsh detergents such as dish soap, and chlorine products). We do not recommend fully immersing the tool in water. To remove debris from inside the handle you can use a Q-Tip or toothpick. A can of compressed air also can be useful for cleaning these hard to reach areas (please always read the instructions and warnings on the compressed air can as some of these products use an accelerant which could damage the products finish). After exposure to salt water or if extremely dirty please first rinse the tool in fresh water or with a mild solution of water and soap then completely dry with a soft cloth. Next apply a desiccant (drying agent) or a light coat of water-displacing oil (we recommend WD-40 or 3-in-1). Finally wipe down and lightly lubricate the tool's surface and pivot points. This process should remove any debris and dirt which could inhibit the tool's functioning but should also help to prevent rusting and oxidation on the surface steel. It is not recommended that you store the tool in a pouch or sheath for long periods of time, moisture can remain trapped in the fabric of the sheath/pouch and or tanning oils in leather sheaths might accelerate rusting and oxidation.

CONSUMER AWARENESS STATEMENT:

The blades that go into every cutting tool are extremely sharp. Be very cautious when opening, using or sharpening this product. Cutting tools are intended to be used as working tools, they are not weapons and should not be used as such. If an injury occurs during the use (or misuse) of a BTI Tools cutting tool, this is a risk that our customers assume and BTI Tools can in no way be held accountable. Locking systems such as liner locks, safeties, frame locks and lock back mechanisms are added features designed to help keep blades in the open position when fully extended. These systems are not designed to take pressure or blows to the backside (dull side) of the blade and failure of these systems can happen when not used properly. When a cutting tool is used properly the cutting pressure exerted on the blade will always be against the cutting edge of the blade pushing and keeping the blade in the open position, when used properly it is not possible for the blade to close when in use.

NOTE: Not all cutting tool have blades that lock in the open position. If you have purchased a cutting tool with a locking blade please see the instructions below:

HOW TO CLOSE LOCKING KNIVES

LOCKBACK KNIVES: Hold the knife open with the blade pointing down. Depress the lock firmly with your thumb to release the locked blade. Then with your other hand ease the blade into the closed position.

LINER LOCK OR FRAME LOCK MECHANISMS: Carefully hold the knife and move the liner or frame lock to the side to release the locked blade. With your other hand ease the blade towards the closed position. Make sure your handle is clear of the blade's path, slowly close the blade the rest of the way.

Misuse of your product can cause serious injury or even death. Misuse often will result in a product failing and breaking in which cases the BTI Tools warranty will not apply. Failure to properly maintain your product may cause it's mechanisms to not function properly and could also result in injury to you and/or damage to your product.

Use with approved eye protection to protect from debris. Flying debris can result in eye or other injury. Use cutting edge for cutting wood only. Contact with hard object can result in blade or head chipping.

Do not use to strike with or against another tool, hardened nail, or other object. Do not use if blade is dull, chipped, or otherwise damaged or if handle is broken or loose. Blade is sharp. Handle with Care. Contact with blade can result in injury. When not in use, store in safe place.

Caution: This is not a toy, keep away from children.

RELEASE, ASSUMPTION OF RISK, WAIVER OF LIABILITY AND INDEMNITY AGREEMENT

By purchasing any item produced by BTI Tools LLC the buyer assumes responsibility to ascertain and follow all applicable international, federal, state and local laws in owning, carrying, having, shipping, transporting and using any BTI Tools LLC product. The buyer expressly agrees to indemnify and hold harmless BTI Tools LLC for all claims resulting directly or indirectly from the ownership, purchase, transportation or use of the item in violation of applicable federal, state and local laws or regulations. BTI Tools LLC is not liable for misuse of any BTI Tools LLC product purchased either directly from BTI Tools LLC or from a dealer/distributor. You must be 18 years of age to purchase BTI Tools LLC products. BTI Tools LLC warranty gives you certain legal rights. You may have other rights, which vary in different states and municipalities.

Warranty Information

BTI TOOLS LLC LIMITED LIFETIME WARRANTY FOR CUTTING TOOLS

This product is warrantied to the original consumer purchaser, for as long as he or she owns this product. Coverage ends if you transfer or sell the product to someone else or if the product is modified in any way. The warranty covers defects in materials, manufacture or assembly. If one of our products ever breaks or fails due to material or manufacturing defect we will repair or replace the product.

The warranty does not cover normal wear, damage caused by abuse, misuse, improper handling, loss, accident, alterations, neglect, disassembly or improper sharpening. Cosmetic damage which occurs over time and use, such as scratches on a products finish or coatings on a product rubbing or wearing off are normal and are not covered by the warranty. Our products rarely fail because of a defect and in most cases the failure or breakage is due to "tool abuse". "Tool abuse", is when the product is used for unsuitable non intended purposes. Examples would be using a knife for any other purpose than cutting (pounding, prying, using as a screwdriver, throwing the knife etc). Multi-purpose tools are not intended to replace full-sized tools and are for use only on light or moderately heavy-duty applications. Collapsible batons are not pry bars etc. Always use the proper tools for the proper intended purposes.

Locking systems such as liner locks, safeties, frame locks and lock back mechanisms are added features designed to help keep the blade in the open position when fully extended. These systems are not designed to take pressure or blows to the backside (dull side) of the blade and failure of these systems can happen when not used properly. When a cutting tool/knife is used properly the cutting pressure exerted on the knife blade will always be against the cutting edge of the blade pushing and keeping the knife blade open, when used properly it is impossible for the knife to close when cutting.

Misuse of your product can cause serious injury or even death. Misuse often will result in your product failing and breaking in which cases the BTI Tools warranty will not apply. Failure to properly maintain your product may cause it's mechanisms to not function properly and could also result in injury to you and/or damage to your product.
All natural materials such as Buffalo Horn, Sheep Horn, Mother of Pearl, Pickbone, Stag Horn, etc. are subject to natural processes such as cracking over time and are not covered by this warranty.

INTERNATIONAL CUSTOMERS

Please take your item(s) to your local dealer where the product was purchased, ask that they contact BTI Tools LLC with regard to your defective item and BTI Tools LLC will include replacement parts or a replacement item on their next shipment of goods to our authorized distributor in your area. If you are unable to find a dealer or distributor in your area we ask that you send your item in for repair/replacement to our facilities following the normal warranty procedure with the exception that the cost of shipping may be adjusted upon receipt of the item in order to cover return shipping to your out of country location.

THE BTI TOOLS LLC ACCESSORY WARRANTY

BTI Tools LLC has a one (1) year limited warranty which covers defects in materials, manufacture or assembly. The warranty does not cover normal wear, damage caused by abuse, misuse, improper handling, loss, accident, alterations, neglect or disassembly on any accessories including but not limited to sheaths, sharpeners, tactical pens and carry and deployment systems. Proof of purchase may be required.
Any accessories falling under this limited warranty must be returned for evaluation.

THE BTI TOOLS COLLAPSIBLE BATON WARRANTY

All BTI Tools LLC expandable batons are warranted to the original consumer purchaser, for as long as he or she owns this product. Coverage ends if you transfer or sell the product to someone else or if the product is modified in any way. This warranty covers defects in materials, manufacture or assembly and includes a repair or replacement guarantee, under normal field use, against breaking, bending, torn grip and if rust or corrosion prevents the batons from functioning. This warranty covers defects in materials, manufacture or assembly. If one of our products ever breaks or fails due to material or manufacturing defect we will repair or replace the product.

The warranty does not cover normal wear, damage caused by abuse, misuse, improper handling, loss, accident, alterations, neglect or disassembly. Cosmetic damage which occurs over time and use, such as scratches on a products finish or coatings on a product rubbing or wearing off are normal and are not covered by the warranty.

Any batons falling under this limited warranty must be returned for evaluation.

AUTOMATIC KNIVES

BTI Tools LLC does produce a small range of USA made automatic knives. Any automatic knife returned to BTI Tools LLC must include an "Automatic Knife Opening Acknowledgement Form" or must be returned through an authorized BTI Tools Dealer/Distributor.

Please note BTI Tools LLC produces a range of non automatic cutting tools featuring push button locking mechanisms. These knives are not sold by BTI Tools LLC in automatic form and conversion of these models into automatic knives voids the BTI Tools LLC warranty and will not be accepted for repair purposes.

Any automatic knife sent in to BTI Tools will not be returned to the sender without the signed "Automatic Knife Opening Acknowledgement Form", NO EXCEPTIONS.

Trademarks and Patents

PATENT INFORMATION

The products of BTI Tools LLC may be covered by one or more of the following United States utility and design patents (other patents pending):

Utility:
6308420, 6550142, 6651344, 6810588, 7111402, 7797838, 8348539, 8595941, 8967899

Design:
D469365, D469366, D482257, D482258, D505057, D512624, D519018, D539616, D539631, D554964, D560460, D561295, D561554, D562102, D562932, D578857, D599640, D599641, D600090, D613145, D613438, D627852, D630292, D632154, D632539, D632755, D646324, D647562, D647563, D647963, D651647, D652081, D660676, D670149, D685848, D688933, D689934, D692289, D692480, D706605, D733515, D734117, D737111, D746922, D768454, D768455, D768456, D768457, D768458, D768459, D769694

TRADEMARK INFORMATION

The following are pending, registered and/or common law trademarks & associated logos of Bat-tenfeld Technologies INC., and BTI Tools LLC: (Alphabetically):

1ST RESPONSE	GUN BUTLER	SCHRADE EXTREME SURVIVAL
24/7	H.R.T.	SCHRADE OLD TIMER
ADVANT-EDGE	HAMMER BRAND	SCHRADE TOUGH
AMMO VAULT	HOMELAND SECURITY	SCHRADE UNCLE HENRY
AQUANAUT	HOOYMAN	SCHRADE UP
BATTENFELD TECHNOLOGIES, INC.	IMPERIAL	SCHRADE WALDEN
BLACK OPS	JACK-MASTER	SCHRADE WATER RAT
BLAZE THE NEW TRAIL	JETHRO	SCHRADE WESTERN EDGE
BOGGEAR	LA CUISINE	SEARCH & RESCUE
BOG-POD	LAND SHARK	SEASWEPT
BOMB TECH	LEROY	SHARPFINGER
BONEYARD	LITTLE PAL	SHASTA MC'NASTY
BORDER GUARD	LITTLE RICKY	SHIZNIT
BR PIVOT	LOCKDOWN	SHIZZLE
BULLSEYE	LONG LIVE THE BLADE	SOLSTAR SMART LIGHT
CALDWELL	M.A.G.I.C.	SPEC OPS
CAPYBARA	MAG CHARGER	SPECIAL OPS
CHEROKEE	MAGNUM RIFLE GONG	SPECIAL TACTICAL
CLIPHANGER	MANILLA FOLDER	SPLINTER
COLORSHIFT	MOE	STABLE TABLE
CUTTIN' HORSE	M-SAT MULTI-SWITCH ADVANCED TECHNOLOGY	STAGLON
DEADSHOT	NEEDLE	STRONGER THAN ALL
DELTA FORCE	NEW YORK KNIFE CO.	SURE-LOCK
DELTA SERIES	NITRO	SWITCH-IT
DSS	NON-TYPICAL WILDLIFE SOLUTIONS	TAYLOR BRANDS
DSS-DISTANCE SEEKING SENSOR	NXT	TAYLOR BRANDS LLC
DURA EDGE	OASIS	TEXAS HOLD 'EM
ELK HORN	OLD TIMER	THE LEAD SLED
ELK HUNTER	ORANGE PEEL	THE RANCHER
E-MAX	OUTBACK	TIDBIT
EVERLASTINGLY SHARP	OWL HEAD	TIPTON
EXTRACTION & EVASION	PHANTOM	TRACTOR UP
EXTREME OPS	POCKET PROTECTOR	TRADESMAN
F.A.T. WRENCH	POSI-LOCK	ULSTER
FAJEN	PRISCILLA	ULTRA GLIDE
FIELD HAND	PRO HUNTER	UNCLE HENRY
FIELD SKINNER	PROFESSIONALS	URBAN TITANIUM CAMO
FIELDPOD	QUE-N-SKEW	VERI-SHARP
FIRE CONTROL	RAPSCALLION	VIPER
FRANKFORD ARSENAL	RELY ON YOU	WALDEN KNIFE CO.
FRONTIER	S.O.R.T.	WESTERN EDGE
GALAXY	S.W.A.T.	WHEELER
GALAXY GREEN BEAM	SAFE-T-GRIP	WHIPPERSNAPPER
GOLDEN BEAR	SAFE-T-LOCK	XLA BIPOD
GOLDEN ROD	SAINT HUBERTUS	X-TIMER
GRIP A LEGEND	SCHRADE	ZYLITE
GUIDE-MASTER	SCHRADE CLIPHANGER SYSTEM	

Associated product configurations and designs including the registered designs/product configurations of U.S. Reg. Nos. 2,984,344, 3,506,417, 3,691,152, and 3,368,278.

Steel Information

Steel is a critical component of any knife. The purpose of this guide is to provide a more detailed look into steel to help assist you in better defining what your own preferences are and why. As a word of caution this information is not intended to be all-inclusive nor could it ever be as the world of steel is ever evolving. The quest for higher performance steels has led to the development of many new excellent materials over the years and there are currently over 3,000 different types of steel, each having its own positive and negative attributes.

Of course steel is not the only factor that determines a knife's performance. Blade geometry, heat treatment processes, handle geometry, and other materials used in the production of the knife all contribute to how the end product will handle particular jobs. It is not possible to tell just by looking at a blade how well the item has been heat treated and it is only possible to make an educated guess as to how well the handle and blade geometry will work. However by knowing the grade of steel used you are better able to understand the alloying elements involved giving you something measurable to go by when determining your own preferences.

The result of knowing the grade of steel can unfortunately sometimes put the end user into a trap of placing too much of an emphasis on the steel itself. A knife is more than just the steel that goes into it and its important to recognize this. In fact so many modern steels perform so well that knife decisions can often be made based on other factors than just the marginal increases in steel performances.

Often the question of "what's the best steel" or "which steels rank better than others in terms of best to worst" come up. There is never a truly correct and accurate response to this as the blade geometry of the product, the quality of the heat treatment, the materials used, and the tasks or goals of the end user all will factor in to determine how well a product will perform and in turn how well the user will be satisfied with the product.

BTI Tools uses specific blade steels to create the most efficient balance of properties based on the anticipated applications of our products.

Steel is an alloy of iron, other metals, and carbon. Stainless steel refers to a family of corrosion-resistant alloy steels which contain of a minimum of 10.5% chromium. A common misconception is that stainless steels will not stain, rust, or corrode. Stainless steels will simply stain less than other steels that do not contain chromium. Each alloy in the various steels lends unique properties to the stainless steel.

When selecting the steel for the various products we factor in the overall performance requirements of what the tool will be used for, the goal price range for the end product, and the costs of manufacturing and finishing the item(s). As with any materials there are generally trade-offs. For instance while higher alloy levels and final hardness levels keep an edge longer they also will make it more difficult to field sharpen a blade. Some alloys can be found to be low in nickel, which will result in increased staining if not kept regularly oiled and cleaned after use. Knives that will be placed to hard use must be constructed with very tough steel materials so we will use steels that are considered to have high ductility (or toughness) over a higher hardened steel. Please note that final hardness levels are achieved not only by factors of composition but from proper heat treating and quenching, of which we pay great attention.

BTI Tools sources premium steel from many international suppliers. The information chart referenced below shows a reasonable range of the compositions of the various steels we utilize. The blade steel we use for each product is included in the catalog to help make this information easy for you to locate.

STEEL TERMS

Alloy: A material that is dissolved in another metal in a solid solution. A material that results when two or more elements combine in a solid solution.

Corrosion Resistance: The ability of a material to resist deterioration as a result of a reaction to its environment. Provided by the elements Chromium (Cr), Copper (Cu), Molybdenum (Mo), and Nitrogen (N).

Ductility: The ability of a material to be stretched or drawn, plastically deform appreciably before fracturing. Provided by the element Manganese (Mn).

Edge Retention: The ability of a material to resist abrasion and wear. Provided by the elements Carbon (C), Chromium (Cr), Manganese (Mn), Nitrogen (N), and Vanadium (V).

Hardness: The resistance of a steel to deformation or penetration analogous to strength. Provided by the elements Carbon (C), Chromium (Cr), Cobalt (Co), Molybdenum (Mo), Nitrogen (N), and Phosphorus (P).

Hardenability: The ability of a steel to be hardened by a heat treating process. Provided by the elements Manganese (Mn), Molybdenum (Mo), and Tungsten (W).

Heat Treating: A controlled heating and cooling process to prescribed temperatures and set limits for the purpose of changing the physical properties and behavior of the metal.

Impact Strength: The ability of a material to resist cracking due to a sudden force.

Rockwell Test (HRC): A measurement of steel hardness based on the depth of penetration of a small diamond cone pressed into the steel under a constant load.

Tensile Strength: Indicated by the force at which a material breaks due to stretching. Provided by the elements Chromium (Cr) and Manganese (Mn).

Toughness: The ability of a material to resist shock or impact. Provided by the element Chromium (Cr).

KNIFE STEEL SELECTION CHART

1070: This is a plain carbon steel which means it has a low resistance to corrosion and low to medium edge retention. The benefit of this steel is that it is very easy to sharpen and will take an extremely sharp edge.

1095: This is a plain carbon steel which means it has a low resistance to corrosion and low to medium edge retention. The benefit of this steel is that it is very easy to sharpen and will take an extremely sharp edge.

4034: A good quality grade of stainless steel. This steel is known for its ability to be honed to a razor sharp edge. While this steel has medium edge retention it is a very easy steel to field sharpen. A choice steel to use for an everyday carry product.

4116: A fine grained stainless steel. The balance of carbon and chromium content give it a high degree of corrosion resistance and also impressive physical characteristics of strength and edge holding. Edge retention in actual cutting tests exceeded blades made of 420 and 440 series of stainless steels. Other alloying elements contribute to grain refinement which increase blade strength and edge toughness and also allow for a finer, sharper edge.

420J2: A good quality stainless steel commonly used in knife blades as well as for impact cutting tools such as axes, hatchets, and machetes. Known as a hard, strong steel, this steel has decent edge holding capabilities and is easy to resharpen , sticking a good balance of the most desirable traits for knife steel.

2Cr13: A good quality stainless steel commonly used in knife blades as well as for impact cutting tools such as axes, hatchets, and machetes. Known as a hard, strong steel, this steel has decent edge holding capabilities and is easy to resharpen.

3Cr13: A good quality stainless steel commonly used in knife blades as well as for impact cutting tools such as axes, hatchets, and machetes. Known as a hard, strong steel, this steel has decent edge holding capabilities and is easy to resharpen, sticking a good balance of the most desirable traits for knife steel.

7Cr17MoV: A good quality stainless steel that has a high tensile strength. This steel has excellent corrosion resistance and can be honed to a razor sharp edge.

8Cr13MoV: A high quality stainless steel similar in properties to AUS-8. This steel exhibits extreme toughness and excellent edge retaining capabilities.

9Cr14MoV: A high quality stainless steel. This steel has good corrosion resistance and excellent edge retaining capabilities.

9Cr18MoV: A higher end stainless steel commonly used in precision surgical instruments. This steel has good corrosion resistance and excellent edge retaining capabilities.

AUS-8: A very high quality stainless steel known for extreme toughness and excellent edge retaining capabilities. This steel has great corrosion resistance and is easy to sharpen.

D2: An air hardened tool steel. Sometimes called a "semi-stainless" steel because it does contain 12% Chromium. This steel offers exceptional edge retention as well as decent corrosion resistance. Somewhat difficult to sharpen this steel can be finished to a high polish shine.

SK5: The Japanese equivalent of American 1080 steel, a high carbon steel with carbon between 0.75%-0.85% and 0.60%-0.90% manganese. This grade of steel has an ideal balance of very good blade toughness with superior edge holding ability and is used in a variety of hand tools and cutting products.

S30V: This steel contains carbon along with high amounts of chromium, molybdenum, and vanadium. Double tempered for hardness and edge retention this steel has excellent corrosion resistance but is somewhat difficult to sharpen.

Ceramic: A ceramic is an inorganic, nonmetallic solid prepared by the action of heat and subsequent cooling. When used in the application of a knife blade the ceramic material will stay sharp for much longer than that of a steel knife. The only drawback is the ceramic material is more brittle than steel and can snap from a hard impact.

Stainless Steel Alloy Specifications

Steel	HRC	C	CR	MN	MO	N	NI	P	S	SI	Cu	V	W
65Mn	52-56	0.6-0.71		0.8-1.1				0.04	0.05				
1070	54-56	0.65-0.75		0.6-0.9				0.03	0.05				
1095	57-59	0.9-1.03		0.3-0.5				0.03	0.05				
4034	56-58	0.42-0.5	12.5-14.5	1									
4116	55-57	0.45-0.55	14-15		0.5-0.8							0.1-0.2	
420J2	52-55	0.15-0.36	12-14	1			1	0.04	0.03	1			
440C		0.95-1.2	16-18	1	0.75			0.04	0.03	1			
2Cr13	51-53	0.15	12-14	1				0.04	0.03	1	0.09		
3Cr13	52-55	0.26-0.35	12-14	1			0.6	0.04	0.03	1			
7Cr17MoV	56-58	0.6-0.75	16-18	1	0.75		0.6	0.04	0.03	1		0.04	
8Cr13MoV	58-60	0.7-0.8	13-14.5	1	0.1-0.3		0.2	0.04	0.03	1		0.1-0.25	
9Cr14MoV	57-59	0.85-0.9	13.5-14	0.3-0.6	0.2-0.25			0.035	0.03	0.3-0.6		0.1-0.15	
9Cr18MoV	58-60	0.85-0.95	17-19	0.8	1-1.3		0.6	0.04	0.03	0.8		0.07-0.12	
AUS-8	58-59	0.7-0.75	13-14.5	0.5	0.1-0.3		0.49	0.04	0.03	1		0.1-0.26	
D2	57-61	1.5-1.6	11.5-12	0.15-0.45	0.6-0.9			0.03	0.03	0.1-0.4		0.9-1.1	
SK5	57-58	0.8-0.9	0.0-0.3	0.1-0.5			0.0-0.25	0.03	0.03	0.1-0.35	0.0-2.5		
S30V	59.5-61	1.45-1.46	14	0.5	2	0.1		0.03	0.03	.5		4	0.1-0.4

Various Benefits of Elements Used in Stainless Steels

Element	Increases Corrosion Resistance	Increases Edge Retention	Increases Hardness	Increases Hardenability	Increases Tensile Strength	Increases Impact Strength	Increases Toughness	Increases Wear & Abrasion Resistance
Carbon		X	X		X			X
Chromium	X		X		X		X	X
Copper	X							
Manganese				X	X			X
Molybdenum			X	X	X		X	X
Nickel	X		X					
Nitrogen	X							
Phosphorus			X		X			
Silicon					X			
Tungsten						X	X	X
Vanadium			X		X	X		

Tough → All-Purpose → Edge Hold

USA	420HC/425MOD		440A		440C/154CM	S30V
China	2Cr13/3Cr13/65Mn	5Cr15MoV/6Cr13	7Cr17MoV	8Cr13MoV	9Cr14MoV/9Cr18MoV	
Europe		4116				
Taiwan/Japan	420J2	AUS-6/4034		AUS-8	AUS-10/ATS34	
Hardness (HRC)	51-55	55-58	57-59	58-60	57-60	59-61

Saw Cut OT Handle

Staglon® Handle

Aluminum

TPE

TPR

Polyamides (PA)

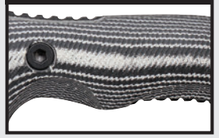
Polypropylene (PP)

Carbon Fiber

G-10

Grivory

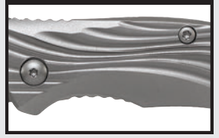
Micarta



Nylon Fiber

Stainless Steel

Titanium



Handle & Sheath Materials

Saw Cut OT Handle Scales: This lightweight and durable polymer was engineered for its excellent long-term wear characteristics.

Staglon® Handle Scales: This lightweight and durable polymer was engineered for its excellent long-term wear characteristics. Cosmetically designed to mimic Stag Horn.

Aluminum: Relatively soft, durable, lightweight, corrosion resistant, non-metallic metal. Aluminum has about one-third the density and stiffness of steel and is easily machined, cast, drawn and extruded.

TPE: This black thermoplastic elastomer is basically a softer version of TPR and offers a superb flexibility and memory elasticity even under harsh conditions. Most often molded onto a harder sub structure TPE material offers excellent grip and comfort.

TPR: This thermoplastic rubber is best described as a material which has both the characteristics of rubber as well as plastic. TPR rubber is usually light in weight, has good tear strength, flexible on low temperature, weather resistant, reusable and recyclable and it performs like vulcanized rubber.

PA: A plastic material Polyamides (PA) are semi-crystalline polymers. Polyamides have very good mechanical properties, are particularly tough, and have excellent sliding and wear characteristics. Properties vary from the hard and tough PA 66 to the soft and flexible PA 12. Depending on the type, polyamides absorb different amounts of moisture which also affect the mechanical characteristics.

PP: Polypropylene (PP) is a thermoplastic polymer used in a wide variety of applications. Commonly used in manufacturing processes such as injection molding.

Carbon Fiber: This material is a woven composite of graphite fibers fused together with an epoxy resin. The result is an ultra light weight handle with an extreme tensile strength. Most often seen with a visible weave-like pattern which can be varied as can the color of the epoxy used.

G-10: An epoxy filled woven "E" glass composite, reinforced with glass fibers for strength. Originally designed for circuit boards G-10 offers the knife industry a handle which is impervious to most elements such as oils, water, and acids. It can be produced in many colors, and finished in a variety of ways, offering different amounts of texture matched to different end users.

Grivory: Polyphthalamide is a thermoplastic synthetic resin that can be used to replace metals in high temperature applications. This material is suitable for other applications such as handle materials in knives and other cutting tools. Typical characteristics are high heat resistance, high chemical resistance, abrasion/corrosion resistance, high tensile strength, high dimensional stability, and direct bonding to many elastomers to give plastic-rubber composites.

Leather Sheaths: Our leather sheaths are made of 100% vegetable tanned top grain genuine cowhide. No finished split leather, bonded or imitation leather, nor any chrome tanned leather that can cause corrosion to the knife blades. The leather is "roller coated" for durability with a rich top coat finish. The tough, durable "roller coated" finish provides for protection from the outdoor elements, is more scratch resistant and has shown proven long-lasting wear. The sheaths are stitched with heavy duty nylon thread in order to provide high tensile strength, durability and long term wear. The 24 and 20 line durable and baby durable all metal snap fasteners are nickel-plated to prevent rust and corrosion. No plastic snaps are used. Many of the styles receive nickel-plated metal rivets in strategic locations to provide added strength, durability and safety.

Micarta: Technically described as "fabric reinforced phenolic laminate", micarta is created by pouring a resin into a flat pan, then laying down a strip of linen or paper fabric, which then is saturated with a resin. This process is repeated until the desired thickness is achieved. Micarta can be in many different colors, is lightweight, and can be finished in many ways.

Nylon Fiber: A synthetic thermoplastic polymer. Engineering grade nylon fiber is processed by extrusion, casting, and injection molding and is available in glass-filled variants which increases structural, impact strength and rigidity.

Stainless Steel: A steel alloy with a minimum of 10.5% chromium. Stainless steel does not readily corrode, rust, or stain with water as ordinary steel does, it is not stain proof but rather stains less.

Titanium: A chemical element with the symbol Ti. It is a lustrous transition metal with a silver color, low density, and high strength. Two of the most useful properties of the metal are corrosion resistance and the highest strength-to-weight ratio of any metal.

General Terms

Annodizing: An electro-chemical coating altering appearance and improving texture.

Black Oxide: A coating used mostly on military knvies to avoid reflection.

Black or Grey Ti: A thin black or grey coating of titanium carbonitride, provides corrosion resistance.

Bolster: A piece of metal, generally nickel silver or stainless steel, that is located at one or both ends of a folding knife handle.

Button Lock: Found mainly on automatic knives, this type of lock uses a small push-button to open and release the blade.

Choil: A choil is a dip or cut out separating the cutting edge from the ricasso. It is also used to describe a cut out, molded or formed area where the handle and blade meet which positions/guards the index finger while gripping the opened knife.

Detent: A minute divot or dimple machined into the blade tang. A ball bearing drops into the detent hole when the knife is in the closed position, helping to hold the knife blade closed inside the handle.

Ergonomics: The applied science of equipment design intended to maximize productivity by reducing operator fatigue, safety, and discomfort. Knives which are designed to be comfortable and less fatiguing when used are labeled "ergonomic".

Finger Choil: A purposeful and specific area/curve cut out between the blade and handle. It creates a grip position point closer to the cutting edge for better control while cutting.

Frame Lock: Also known as the integral lock or monolock, this locking mechanism works in a manner similar to the liner lock but uses a partial cutout of the actual knife handle, rather than a separate liner inside the handle to hold the blade in place. To close you simply move the frame out of the way and rotate the blade into the closed position.

Handguard: Protrusion/expansion on the knife's handle proximal to the blade keeping the hand safely positioned on the handle inhibiting sliding forward.

Lanyard Hole: A small hole in a knife's handle for threading through a cord/string as a backup attachment when using the knife around water or where it may be dropped and lost.

Liner Lock: The liner lock's locking side liner is split from the top toward the bottom, similar to an automotive leaf spring (also called a lock bar) that when the blade is fully open will butt up against the tang of the blade to prevent the blade from closing. To release the lock, the user presses the lock bar back toward the handle side, at which time the blade is free to close. In the closed position the lock bar (leaf spring) rests alongside the handle and the blade.

Lockback: Also known as a spine lock, the lockback includes a pivoted latch affixed to a spring, and can be disengaged only by pressing the latch down to release the blade.

MOLLE: Modular Lightweight Load-carrying Equipment is the current system of loadbearing equipment based in the Pouch Attachment Ladder System (PALS) used by military and law enforcement. It consists of a grid of nylon webbing allowing the modular attachment of pouches and other equipment to achieve customized and mission-specific configurations.

Pommel: The knob or expansion found on the butt-end of a knife handle.

Quillion: A handguard protruding from both sides of the handle (where handle and blade meet) stopping the hand from slipping up onto the blade.

Ricasso: Unsharpened and thicker portion of the blade, just before the handle. Allows users to choke up on the blade for better control.

Scale: A knife handle made of sales or slabs of material that are riveted, screwed, or bonded together.

Skeletonized Liners: Internal steel handle liners that are hollowed out (skeletonized). In removing sections of the steel, bulk, and weight are reduced while allowing the liner to maintain its strength and rigidity.

Slip Joint: Non Locking Blade-a blade having a spring acting against it, which provides some resistance to its opening and closing as it pivots within the handle.

Spine Jimping: Small serrations, notching, or texturing located on the spine of a blade where the hand or finger grips. Jimping creates tactile resistance, adds purchase, traction, and slip resistance.

Swedge: Blade grind where a portion of the blade's spine is removed to reduce weight, add style to a blade or both.

Tang: The portion of the blade where it connects to the handle.

Tip-Up/Tip-Down: Refers to which direction the folded knife is positioned by its pocket clip. When closed and clipped in a pocket, whichever direction (up or down) the blade's tip sits defines if it is termed tip-up or tip-down.

Bolster

Button Lock

Choil

Frame Lock

Handguard

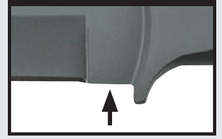
Liner Lock

Lockback

Pommel

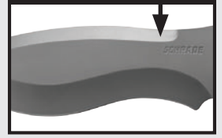
Quillion

Ricasso



Spine Jimping

Swedge



Tang

Tip-Up/Tip-Down