HOW TO SHARPEN A KNIFE

Absolute Peak Whetstone Knife Sharpener

PREFACE

The information contained in **"HOW TO SHARPEN A KNIFE: Absolute Peak Whetstone Knife Sharpener,"** and its components, is meant to serve as a comprehensive collection of strategies that the author of this eBook has done research about. Summaries, strategies, tips and tricks are only recommendations by the author, and reading this eBook will not guarantee that one's results will exactly mirror the author's results.

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WHAT IS A WHETSTONE?

Welcome to the exciting world of whetstone knife sharpening! Whether you are brand new to knife sharpening or have years of experience, this eBook aims to provide you with valuable information, tips, and tricks to help you learn more about knives and how to hone your knife sharpening skills.

First, what exactly is a Whetstone? Many people mistake the meaning of “whet” in whetstone to mean “wet”. While whetstones are indeed used while wet (as we will talk more about later), “whet” is a word that actually means to sharpen a blade. So whetstone simply means sharpening stone, or a stone that is used for sharpening. Whetstones are either natural or artificial stones that have properties making them ideal for sharpening and honing blades.

Natural stones were first used in ancient Japan to sharpen knives and swords. The sharpness of Japanese knives and swords became famous around the world, and even today the art of sharpening knives and swords using natural stones lives on in Japan. Natural whetstones, typically have excellent grades and can be used with either oil or water. They are often made from a material called Novaculite, which is a variety of quartz.

While natural stones can be used to create razor sharp edges, as can be seen in Japanese blades, artificial whetstones have become a more popular option in the modern world of knife and blade sharpening. Aritificial whetstones are composed of ceramic, silicon carbide or aluminum oxide (also called Corundum).

One reason artificial whetstones have gained favor today is that many of the whetstone properties can be controlled and tuned to meet specific sharpening needs. The particle size in artificial whetstones is controlled to produce a whetstone with consistent grit throughout the stone. Also, the proportion of abrasive particles to binder can be controlled to create stones

of different grits, that sharpen faster or slower as desired. Essentially, an artificial stone can be created to suit any set of specifications or needs.

Another advantage of artificial whetstones is that these stones are usually double-sided, with a coarse grit on one side and a fine grit on the opposite side. This means that by purchasing just one whetstone you are able to sharpen a dull knife on the coarser grit side, and use the other, finer grit side to hone a knife edge to razor sharpness.

Perhaps the biggest advantage of modern artificial whetstones is the method of lubrication. Many sharpening stones require oil to lubricate or act as a cutting fluid on the sharpening stone surface while sharpening. Modern artificial whetstones use water for lubrication instead of oil, which makes the process of sharpening and honing much cleaner and easier. In this case, the water acts as the cutting fluid on the whetstone surface and carries away the tiny particles of metal and stone that break away in the sharpening process.

Varieties Of Sharpening Stones

- **Whetstones or Water stones**

Whetstones are also sometimes called water stones, or wetstones because they use water instead of oil to sharpen blades. These come in both natural and artificial varities, and a wide range of grits and sizes.

- **Oil stones**

As the name indicates, oil stones require oil for sharpening. Oil stones are sometimes called Arkansas Stones. The oil acts as a cutting fluid that carries away the tiny particles of metal and stone that come loose while sharpening, and do not work well with water.

- **Diamond Stones**

Diamond abrasive stones are the hardest and most durable types of sharpening stones. Diamond stones are made by bonding diamonds to a hard surface which creates a very fast and hard sharpener. These

sharpeners can be used with water or can be used dry. Due to the hardness of the diamond surface, these stones always remain flat and can last indefinitely.

Knife Basics

Now that we have had an introduction to sharpening stones, let's learn more about knives.

Sharp Knives are Safe Knives

Chefs and other professions require their knives to be sharp at all times to make their jobs easier and safer. Unforntunately, no matter how expensive the knife, or what type of steel the knife is made of, every knife will dull with use.

In the kitchen, cutting with a dull knife can damage delicate fruits, vegetables, or garnishes and mar their taste and appearance. In addition to ruining a meal, dull knives can be the cause of painful and serious accidents. Cutting with a dull knife requires a great amount of force in order to push the knife through the material. With the use of excessive force the knife can easily slip or jolt from the material being cut into a finger or hand. On the other hand, sharp knives are able to easily glide through the material being cut using only minimal force, and allows you to always maintain control of the knife.

Proper Knife Care

Like any tool, knives must be properly maintained and cared for in order for them to remain in good condition and to perform optimally. Knives are relatively simple tools and therefore require relatively simple care and maintenance.

Knives should be hand washed, cleaned, and dried after each use. Failing to clean residue from a knife's surface can cause the surface to stain or rust depending on what is being cut and the type of steel used in the knife.

The residue can also build up on the sides or cutting edge of the knife which can cause the knife to perform poorly.

Avoid putting knives in the dishwater. The dishwasher detergent contains harsh chemicals that can slowly erode away the knife's edge. Moreover, the knife will bang into other cutlery during the wash cycle which will quickly take the sharp edge off of the knife. It is always best to wash knives by hand in hot soapy water, being careful not to cut yourself in the process. Once the knife has been propery cleaned, rinse the soap off and towel dry.

It is best to store a knife in a knife block, magnetic strip or sheath. Never store your knives in a utensil drawer. Just like in the dishwasher, knives stored in a utensil drawer will bump into other utensils and will quickly loose its sharp edge. Knives stored in a block or magnetic strip will avoid metal-to-metal contact with the cutting edge and will remain sharp much longer.

Following these few simple rules will help you keep your knives sharper longer, and will ensure that your knife is always up to the task at hand.

HOW TO SHARPEN A KNIFE

Whetstone knife sharpening is an art that has been mastered by many knife aficionados through the centuries, including the legendary Japanese knife makers we talked about earlier in this e-book. Although there are easier methods to sharpen knives today (electric knife sharpeners) chefs and other knife enthusiasts still prefer to sharpen knives the way it has been done for hundreds of years. With a little patience and practice anyone can develop the skills needed to sharpen with a whetstone and enjoy the satisfaction of using a blade that you hand sharpened yourself to perfection.

The Absolute Peak Whetstone Knife Sharpener Kit is the perfect sharpening stone kit for those with lots of experience with knife sharpening and beginners alike. The Absolute Peak Whetstone is a high quality artificial 2-sided whetstone made of Corundum. One rougher lower-grit side is used for sharpening a dull knife while the smoother higher-grit side is

used for honing a sharp edge. The kit also includes a silicone stone holder, a non-slip bamboo base, knife sharpening angle guide, and a microfiber polishing cloth. This kit has everything you need to sharpen your knives to razor sharpness.

Absolute Peak Whetstone Knife Sharpener Instructions

1. Soak Whetstone in water for about 10 minutes.

2. Place the Whetstone in the Silicone Holder & Bamboo Base with the coarser side facing up (blue side).

3. With your fingers, drip some water onto the whetstone so that the surface is very wet.

4. Place the Angle Guide along the spine (or back side) of the blade.

5. Lightly grip the handle of the knife with your dominant hand and lay knife flat across the whetstone with the edge of the blade touching the whetstone.

(If Not Using Angle Guide: Raise the back of the blade up until the cutting edge is pressed against the Whetstone at an angle of 18 to 22 degrees. The angle depends on the type of knife, but you should be able to feel when you have matched the angle of the knife).

6. In a smooth stroke, gently push the knife across the Whetstone from tip to heel, or heel to tip, trying to keep a consistent angle across the entire knife's edge.

7. Repeat this for 5 to 10 strokes on the same side and then flip the knife over and do the same number of strokes on the other side, being sure to use the same angle and amount of pressure on both sides.

8. Repeat step 7 until the knife is sharp. Test by cutting a sheet of paper. The knife should slice through the paper easily.

9. Flip the stone over to the higher grit side (the white side) and repeat step 7 to hone the knife's edge.

10. Repeat the process until you have reached the desired sharpness.

11. Rinse knife and use the Absolute Peak Microfiber Cloth to polish the knife (**WARNING**: DO NOT run cloth or hand across cutting edge. It should be very sharp and will cut you).

Testing The Sharpness Of A Blade

Now that you have spent some time sharpening your knife, you might be wondering if it is any sharper than when you started. One option that I DO **NOT** recommend, is to gently touch the edge of the knife to feel the edge. It can be difficult to tell how sharp the knife is, and you may cut yourself if you press too hard on a knife that is very sharp.

A better method for testing the sharpness of a knife is by cutting through a piece of printer paper or newspaper. When you are first starting out it might be helpful to perform this test before and after you sharpen the knife so you can see how all your hard work is paying off. Take note of how difficult it is to cut through the paper before sharpening. The knife will struggle to start the cut through the paper. Instead of cutting the paper, the knife will start to tear or rip the paper. After sharpening, the knife should easily start cutting through the paper and continue to slice through in one smooth clean cut.

Instructions for Testing the Sharpness of A Blade:

- Hold a piece of printer paper or copy paper in the air by its edge with your index finger and thumb.
- Hold the knife with your other hand and place the blade on the top edge of the paper.
- Angle the blade away from the hand holding the paper to avoid injuries.

- Try to cut the paper with a slicing motion away from the hand holding the paper.
- Repeat the process once or twice.
- A ripped, torn, or crumbled paper or no cut in the paper at all, indicates a dull blade.
- A knife that easily slices through the paper leaving a smooth clean cut is very sharp and should perform well for uses in the kitchen.

Anatomy of a Knife

Most Common Edge Styles

Now that you have read how to sharpen a knife, let's learn more about the type of knife edges you will encounter. Knives come in all shapes and sizes, and have been designed and developed for a myriad of different uses and aesthetic preferences. Despite all the style variations, the cutting edge is what makes a knife a knife. In the following section we cover some of the most common knife edges.

Principal Term to Know

The term *bevel* is used for any surface on the blade that has been ground to form the edge. The primary bevel is the largest and most visible bevel, and can vary widely in depth depending on the knife from a 1/32" to 3/8" or larger. Near the very edge of the knife blade the primary bevel turns into a steeper bevel, which is called the *secondary bevel* or blade edge. Now, take a few minutes to inspect the different knives you have in your kitchen. See if you can identify where the primary bevel begins and where the primary bevel transitions into the secondary bevel.

Now that you are more familiar with the anatomy of a knife's edge, let's review the most common type of knife edges

Knife Edge Styles

- **V-edge**

The most common knife edge is called the V-edge, and as the name indicates, the edge looks exactly like a “V”. The V-edge has two slanting sides usually of equal sizes that intersect at a point that create the cutting edge. A vast majority of kitchen knives are ground in this style. One variation of the V-edge is called a *compound bevel* (or double bevel) which is made of a large V with a much smaller V at the very tip. The second V is so small that, it may be very difficult to see with the naked eye.

- **Convex**

Convex is a particularly sophisticated edge that resembles the cross-section of an airplane wing: Two long arcs that curve toward each other and intersect at the edge. The Convex edge is stronger than a traditional V-edge and can still be very sharp. It can be difficult to sharpen a Convex edge. Many times Convex edges will turn into traditional V-edges after hand sharpening on a whetstone.

- **Hollow**

Hollow edges are common for hunting knives and inexpensive butcher knives, but are rarely found on quality kitchen knives. The shape of the curves that create the edge curve in the opposite direction as Convex. As with Convex edges, Hollow edges will usually transform into V-edges when sharpened on a whetstone.

- **Chisel**

Chisel edges are mainly found on traditional Japanese knives, especially sushi knives, and are incredibly sharp. The Chisel edge is ground on one side while the other is left more or less flat. This type of knife edge creates very acute edge angles.

- **Serrated**

Most people are familiar with this common type of knife edge. Serrated edges are commonly found on bread knives, tomato knives, and steak knives. Like chisel-edges, they are ground on one side only, which also

makes them quite sharp. They hold their sharpness incredibly well because the actual cutting edge is hidden inside each mini-arch, protected by the pointy outer edge of the blade. Unfortunately, they are time-consuming to sharpen, and many professional sharpeners will not bother. Instead it is recommended to just buy a new serrated knife when one becomes too dull.

Odds are most of your kitchen knives will have traditional V-edges which makes maintaining them a pretty straightforward affair, but it is wise to be able to identify other knife edges.

KNIFE STEEL

Steels Can be Tough or Hard

The differences in size, shape, and style of knives is very easy to see, however, the difference between one very important knife characteristic is much harder to see. While most blades' steel look very similar, the type of steel used will determine how durable, hard, tough and rust resistant a knife blade will be. It is important to understand the characteristics and the trade-offs between different types of steel when choosing a knife.

Choosing a knife blade requires you to choose between different trade-offs. Many times you must choose between a knife blade that is tough, or a knife blade that is hard. Another trade-off is between corrosion resistance and the ability to hold a sharp edge. While different steels have different trade-offs, some steels are able to find a balance between the trade-offs.

Steel is a term used for a wide range of iron alloys, or iron that is mixed with other elements to achieve desired material characteristics like hardness, toughness, or corrosion resistance. The two most important elements added to iron are carbon and chromium.

Knife steels can be broken into two large categories: high carbon steel and stainles steel. Both high carbon and stainless steels are acceptable for use in knives. High carbon steels are generally harder, which means the edge will stay sharper for longer than stainless steel. While high carbon steel is

harder, it is not as tough. If that sounds paradoxical, think of hard as very difficult to bend but will eventually break with too much force, whereas tough is the ability to bend without breaking. Glass is an extreme example of something that is hard, but not tough. Glass will barely bend at all, even with a lot of force, but once the force reaches a certain threshold, the glass will shatter into pieces. Now think of a plastic container. Plastic will bend a lot before it breaks, and as long as it is not bent too much, it can return to its original shape without breaking. Hardness and toughness are both characteristics that are desired in a knife, but different knife steels trade hardness for toughness and vise versa.

Stainless steel is usually made of at least 12% chromium which prevents the steel from rusting, whereas high carbon steel can easily rust if not properly cared for. Stainless steel is also tougher than high carbon steel, but not as hard and therefore will not wear as well, but may be better suited for chopping uses.

High carbon steel is iron alloyed with more carbon but usually has much less than 12% chromium. Without getting too technical, the carbon mixed in with the iron molecules makes the alloy harder than plain iron.

Now that you know some of the basic differences between the two types of steels, let's consider some of the more conventional carbon steels available on the knife market.

High Carbon Steel Alloys

- **10xx Series**

One of the most popular steels used for knives is 1095. It is a pure steel consisting of 0.95% Carbon, and 0.4% manganese. Other 10 series sheets of steel are used for knife making such as 1084, 1070, 1060, and 1050, etc. Each of these steels has decreasing carbon content, and thus becomes less hard. At the same time, as the carbon content goes down, the toughness goes up. As such, some of the lower carbon content designs are more commonly used for swords where toughness is valued over hardness.

- **O-1**

Another high carbon is O-1 steel which gives razor sharp edges, but dulls more qucikly than A2 Steel. O-1 has 1% carbon content and also contains 1.35% manganese, 0.5% chromium, 0.35% silicon, and 0.5% tungsten. The main advatage of this steel is that it is easier and faster to hone to a razor-sharp edge but it does not stand up to abuse as well as some other steels. This is a very popular steel with forgers and bladesmiths.

- **L-6**

L-6 is very similar to O-1. This steel is commonly used in band saws. This is a very popluar steel because it maintains an edge very well, but as with other high carbon steels, it can also rust if it is not cared for properly. L-6 is very tough and is a favorite of forgers.

- **W-2**

W-2 is reasonably tough and holds an edge well due to the addition of 0.25% vanadium, 0.25% manganese and silicon. It is not as common or widespread.

- **A2**

A2 steel is almost a stainless steel, but with only 5% chromium it does not meet the requirement for stainless steel. It has 1% carbon, 0.6% manganese, 1% molybdenum, and 0.2% vanadium. Even though it does not have enough chromium to be considered a stainless steel, it is not prone to rust. A2 steel is popular for combat knives due to its toughness. The toughness of the edge of the A2 steel is improved by cryogenically treating the blades at -320 ℉. A2 steel is much harder than O-1 carbon steel, and although harder to sharpen, it maintains an edge longer. One problem with A2 steel is that it tends to fracture more easily when the bevel is ground less than 30 degrees. A2 is tougher than D2 and M2 but has less wear resistance.

- **M2**

M2 Steel is a fine-grained molybdenum/tungsten high-speed tool steel. It has 0.85% carbon, 0.25% manganese, 4.2% chromium, 0.30% silicon, 5% molybdenum, 6.35% tungsten, and 1.9% vanadium. It is an excellent choice for high-temperature applications. For example, the annealing temperature of M2 steel is approximately 1000° F. It is slightly tougher and more wear resistant than D2, however, M2 rusts more easily.

- **D2**

"D" series steels are classed as cold work tool steels. D2 steel is a premium tool steel. With 1.5% carbon content, it is better at holding an edge than less exotic stainless steels. D2 has a relatively high chromium content (11.5%) and is sometimes referred to as a "semi-stainless." It is a well-respected, air hardened, high carbon, high chromium tool steel. It has 1% molybdenum, and 0.9% vanadium. It is extremely wear resistent.

D2 steel is one of the toughest knife blades you can get and is a favorite amongst the best custom knife makers. Anyone who has ever used a good D2 steel blade will rave about the its cutting ability, durability, and edge holding properties. Simply put, D2 steel can produce one of the best blades available for a working knife.

- **5160**

5160 sheets of steel are a standard spring steel. It is 1060 steel with 1% of chromium added to make it deep hardening. It is used in swords, axes or other high-impact tools. 5160 Steel is also popular for a variety of knife styles, but is usually used for bigger blades that need more toughness. It is quick and easy to sharpen and is used in chopping or hacking applications.

- **50100-B**

50100-B is the AISI designation of the same steel as 0170-6. The B designates vanadium has been added. This steel is a good chrome-vanadium alloy that is similar in properties to O-1, but it is much less expensive. It is essentially 52100 steel with one-third less chromium.

- **52100**

52100 is often compared to 5160. It has a little more carbon content than 5160, and thus holds an edge better. But it isn't as tough. The trade-off is in wear resistance. Many hunting knives are now being made from 52100 steel.

Stainless Steels Alloys

Now, let's consider the stainless steel alloys used in knife blades.

Stainless steel usually refers to steels that are greater than 11-12% chromium. However, the ASM Metals Handbook designates stainless steel as any alloy exceeding 10% chromium. The exact amount of chromium that makes a steel a stainless steel is up for debate, but the main idea of a stainless steel is that it has much more rust resistant than other types of steels due to the added chromium. There are many stainless alloys with varying corrosion-resistant properties that make them excellent choices for knife blades.

- **420 and 420HC**

420 is an incredibly soft steel because it has less than 0.5% carbon content. It will not hold an edge well, but it is very stain resistant and is often used for inexpensive knives. It is also often used to make diving knives where rusting (due to constant exposure to salt water) is a concern. 420HC is tailored to be more like 440A by including more carbon.

- **440A, 440B, and 440C**

This series of steels increases in carbon content from A - 0.75%, to B -. 09%, to C - 1.2%. 440C steel, if hardened appropriately, is an excellent knife steel. It is very tough and has good edge holding qualities. Though it does not hold an edge as good as ATS-34, but it is more stain resistant. This complete series is very rust resistant. 440A is the most rust resistant while 440C the least.

- **AUS-6, AUS-8, and AUS-10**

These are Japanese steels that roughly compare with the above 440 Series. The carbon content is increasing from AUS-6 - 0.65%, to AUS-8 - 0.75%, to AUS-10 - 1.1%. AUS-6 would more closely compare to the inexpensive or low-end 420. AUS-8 is a middle-level steel like GIN-1 or ATS-55. AUS-10 competes with high-end steels and compares well with 440C. It has slightly less chromium than 440C, but all three sheets of steel of this series have vanadium added. Vanadium improves the wear resistance and the grain, which gives these steels the ability to be sharpened to an excellent edge. These steels are often referred to as 6A, 8A, and 10A.

- **GIN-1**

GIN-1, also referred to as G-2 compares to AUS-8 and ATS-55. It has less carbon and much less molybdenum than ATS-34. It is a little higher in chromium and is typically used for the less expensive knives.

- **ATS-34**

ATS-34 steel is universally recognized for its edge holding. It is a Japanese steel that favorably compares to the U.S version, 154 CM, which is not nearly as popular. ATS-34 is stronger than 440 sheets of steel, so it is less likely that the knife tip will break during use, but it is not as rust resistant. ATS-34 is typically hot or cold rolled depending on its thickness, but both are probably annealed (heat treated).

- **ATS-55**

ATS-55 is a level behind ATS-34 because it does not have molybdenum. Without the molybdenum it is not as resistant to rust and wear. It compares favorably with GIN-1 and AUS-8

- **BG-42**

BG-42 is becoming more popular, but it is also more expensive than ATS-34, which may limit its popularity. Because of the addition of vanadium and twice as much manganese as ATS-34, it will hold a significantly better edge, and will also have better toughness than ATS-34.

- **S30V, S60V, and S90V**

This series of steels is packed with a greater number of alloys because of the particle metallurgy process that is very different from conventional steel manufacturing methods. These are high vanadium knives and compare favorably with BG-42. They are probably more wear resistant than any other stainless steel. However, they are even more expensive than BG-42 and even harder to work. This means they are mostly used by custom knife makers. S60V is often referred to as CPM T440V and S90V as CPM T420V.

If all these technical terms and descriptions are a little overwhelming, a great way to find out about the best type of knife steels is to look at what steels are used in knives that you like or knives from well respected knife makers. When you see a knife from a well known knife maker, they will usually tell what type of steel is used, and many times will explain why that steel was chosen. This is a great way to find out what steels are used for which knives, and you can find out which steels you like best by using knives made from different steels.

Final Remarks

Knives are one of the most basic but most important tools we use every day, whether in the kitchen, at work, or in outdoor recreation. Knives have evolved through the years; the selection of knives on the market now ranges from tactical and hunting knives, fillet knives to highly specialized shucking, and kitchen knives, a knife for every occasion. We hope that this eBook has helped you to learn how to select, care for and sharpen all of the blades in your life. With proper care and attention you can keep your knives sharp and in good working condition for many years. We sincerely hope that you enjoy our premium Absolute Peak Whetstone Knife Sharpener.

