

Goodpasture Small Hunter A Knife Steel and Knife Maker To Pay Attention To

This is a knife designed and produced as a precision cutting tool. It is not intended for use as a digging, chopping, hammering and prying multi-purpose tool with a cutting edge included. This knife is made with a thin .085 inch blade stock ground to an admirably thin .010 to .012 inch edge. Since this knife has a minimum cutting wedge profile to push through a cut it allows the user to make cuts with a minimum of effort. The flat grind from spine to edge provides excellent slicing characteristics in thicker cutting media as well as thin.

The steel that composes the blade of this knife is a proprietary alloy termed 420 modified. Knifemaker Robert Fisher (www.fisherknives.com) is currently distributing different size steel bars of tapered stock produced specifically for stock removal knife makers.

The alloy composition of this steel is: .4 carbon, .6 silicon, .5 manganese, .5 nickel, 13.7 chromium and .27 molybdenum. With its modest carbon content we might deduce that this steel can be capable of a high degree of toughness when heat treated to an Rc hardness of 55 to 57. In my early testing of knives made with this steel, my first test knife provided exceptional cutting endurance as well. But tests of subsequent knives didn't duplicate the performance of the first knife tested.

Since the first knife had been finished by Tom Goodpasture after being blanked and heat treated by Tom's ABS Mastersmith mentor, Tom was unable to provide much information on what procedures might have contributed to the significantly longer lasting cutting edge of the first knife. This created a bit of an impasse to duplicating knife one until Tom suggested making a knife of the same blade steel and stock thickness which included cryo treatment tempering in addition to standard heat treatment procedures. He hoped to be able to demonstrate a definitive measurable advantage to cryo treatment of this specific steel for longer cutting endurance. The blade shape of this knife was one of Tom's personal patterns which he calls a small hunter.

Tom is currently a stock removal maker only. He makes a variety of fixed blade patterns in 12C27 stainless, 420 modified stainless, D2 and 01 high carbon non-stainless. The highest percentages of Tom's knives are produced as kitchen cutlery which can be found on the web at www.bladegallery.com but his patterns include hunting knives and fighters. Handle materials include several colors of micarta, cocobolo wood and bone.

Tom's knives are definitely influenced by the philosophy that knives with thin edges make the best cutting tools. Tom has developed more confidence and skill over time as a knifemaker and I have found his edges are predictably thin without being failure prone. My knives of preference are nearly always those with the thinnest edges. I frequently find that edge geometry and heat treatment make a greater difference than steel alloy in producing a knife with superior cutting performance.

I was enthusiastic about testing Tom's first knife that was both heat treated and cryo tempered by Progressive Heat Treating of Richmond, VA. Many knife enthusiasts will make their own assessments of how sharp a knife can be. It is only a minor percentage of users who use a knife regularly and intensively enough to be able to make an accurate assessment of different knives' relative cutting endurance.

This is the reason I have tried to develop a cutting test which can be duplicated nearly anywhere that accurately establishes the relative cutting endurance of both large and small knives. One simply cuts ½ inch manila or sisal rope using only 1 to 1 ¼ inches of blade. Count the number of slices of rope accomplished until the edge dulls to the point of sawing ineffectively at the rope.

Different people may tend to use differing amounts of force to cut with so actual cut counts may vary. But the same people will tend to use the same amount of force to cut with. The comparative results of testing different knives should show the same relative results between knives as documented by the same tester. This has the potential to allow different knife users to validate each other's comparative results between different knives with different steels.

I have found through my own testing that knives made with the same alloy have cut counts that vary considerably and that steel selection alone will not predict how relatively long a knife can cut. It may be that small production variations of different steel production runs can contribute to measurable performance differences in finished knives. But there are so many factors inherent in knife cutting dynamics I must clearly state that whether there is any part played by steel variations is speculation of my own. I have had agreement expressed by a number of well known custom makers that variations in steel quality do affect finished knives. The frequency and degree of unacceptable effect is not predictable.

I can't say with surety that every knife Tom Goodpasture makes like mine using the same standards of production will deliver the exact same documentable performance. Documentation of cutting performance attributable to production techniques can provide more accountability to consumers than the "he says so" standards commonly offered and accepted on faith. Objective testing can validate what is actual and help distinguish what is not as a means of quality control for knifemakers and consumers alike. Knives might only be tested for a specific standard when a user wants to brag or complain. Having a high performance cutting standard for kitchen or hunting knives should provide consumers with knives that cut predictably longer between sharpenings.

Tom's first cryo treated knife started out by easily cutting double the number of cuts accomplished by an earlier knife that wasn't cryo treated and the cryo treated one wasn't done cutting. My hand just got too tired to continue so I paused for another day.

At the pause I had completed 200 cuts. One week later when I started cut testing again my arthritic hands were apparently feeling stronger. I made another 120 cuts and they were all single slice cuts. More than half of the first 200 cuts had not been single slice cuts in ½ inch sisal but when I made comparison cuts in a small remnant of ½ inch manila the

Goodpasture knife made clean push cuts every time. I reiterate that this knife and others I have tested require more effort to cut ½ “ sisal with a single push cut but tend to accomplish the same total number of cuts. I just have to take rest breaks more frequently during the process. After a break, I completed 80 more single slice cuts for a daily total of 200 cuts.

This brought the total count to 400 with all of the last 200 being single slices. At this stage, the knife has surpassed excellent and is moving into superior territory for cutting endurance. Yes, Mr. Goodpasture, I do believe we are demonstrating cryo tempering can make a difference. How much of a difference may depend not only on the steel but on the exact cryo tempering procedure.

A majority of knife enthusiasts I know get their primary sense of satisfaction from judging the craftsmanship of a knife. Fit and finish are the paramount considerations. Some may insist on owning knives with Damascus blades that will never be used as cutting tools but the owners are perfectly content that their Damascus bladed knives will out cut all others because that is what they have been told. As long as no one has to bet their life on the performance of the knife, there is nothing wrong with keeping this faith in a perfect world.

Personally, I like to test the cause and effect of reality in a systematic way so I can learn what can be predictably expected from the way things are in an imperfect world. A knife is first and foremost a cutting tool for me. I want to be able to bet my life on the performance of a knife I have tested knowing how I can win based on what the knife demonstrates to me. I don't expect this perspective to ever be the majority viewpoint. Most knife people have too much fun arguing over intangibles. I really appreciate Tom Goodpasture's willingness to participate in this project so I could satisfy my own curiosity about the otherwise anomalous but highly desirable performance of a single knife which I was afraid might never be duplicated or explained.

Tom is the current president of The Greater Richmond Knife Club. He is also a full time Virginia State Trooper. He is active in a number of local and regional Gun and Knife shows. If you get a chance to see and talk with him you will be pleasantly rewarded for your efforts. Tom is one of a very few individuals I know who can position himself between opposing points of view of knife enthusiasts and recognize the merits of each without invalidating the other. While performing this balancing act he continues to maintain his own independent growth and development both as an individual knife maker and as an individual human being trying to make the world a good place to co-exist in.

Tom's knives are not intended to compete with those of more experienced makers who produce ornate knives. If you want a knife from a maker who is willing to actively develop and demonstrate the utility value of his work, then you will have difficulty finding a better partner to satisfy your individual utility needs. Tom and his knives are a work in progress. The best is still to come. However, you can be sure that the high performance cutting tools that he will be producing with tapered stock 420 modified steel which has been cryo tempered can exhibit superior cutting endurance now!

Conclusion:

The Goodpasture Small Hunter test knife makes enough slices of ½ sisal rope to be comfortably in the top 10% of all knives tested. That's a pretty impressive performance from a largely unknown maker working with a largely unknown steel. You might be able to find knives that can cut for longer than this one. You might be able to find knives that look fancier than this one. But I don't think you will find a hand made knife that cuts as long or as well as this one for the price this one is available at. As demand goes up so will the price. Check Tom Goodpasture's knives out now before too many others beat you to it. You'll be glad you did. The value of knives like these could go up markedly over time as the maker gets better known. Go to www.goodpastureknives.com for more information.

Michael S. Black
1702 Bloomfield Rd
Charlotte CH, VA 23923
msblack@kinex.net
434.223.2230



Tom Goodpasture at the 2007 Blade Show



Display of tapered stock 420 modified steel distributed by Robert Fisher at the 2007 Blade Show



A selection of larger Goodpasture cutlery items at the 2007 Blade Show



The rest of Tom Goodpasture's table at the 2007 Blade Show



Right hand view of cryo treated Small Hunter tested for this article



Left hand view of cryo treated Small Hunter



Butt end of handle showing tapered stock that comes already thicker at the spine and thinner for the edge for stock removal makers



Test knife number 1 (top) made 850 slices of rope. Subsequent knife (bottom) made 100 slices of rope. The steel and edge geometry were the same. What caused the cutting performance difference? See text.