KAPOK
The “Old School” Filler

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My introduction to Kapok

Somewhere around 1980, when I was first learning about handloading, I was on a gunshop range with an older gentleman named Tassin. He was shooting some kind of bottle neck caliber that was barely making a pop. Me, being in my late twenties and a certified know-it-all, I had to run my mouth about there being something wrong with his powder. Rather than breaking his foot off in my butt(which he should have!), he invited me to his house to see how he did it. That was my introduction to Kapok.

Some facts about Kapok

Kapok is a fiber from the seed pods of the Kapok tree. The tree is found predominantly in South East Asia and the rain forests of South America. The fibers are harvested for use in stuffing pillows, stuffed toys and the like. From some time in the early 1900s to some time about the 1980s or so, it was used extensively as filler in life jackets.

It is Ivory in color and very light weight. The amount I was able to stuff in a two pound coffee container only weighs three ounces. The individual fibers are so fine, they are barely discernable to the naked eye. Kapok is so light in weight, a single fiber will float in the air like a particle of dust. I managed to get a single fiber in a four digit micrometer and got a reading of .0002 inches thick. To give you some idea of what that looks like, that's one twentieth of the thickness of a sheet of common paper.

Being a natural fiber, it is flammable. Because the fibers are so fine, it burns very quickly. A small tuft of Kapok held between the thumb and index finger and lit with a match or lighter will burn completely in less than a second. It burns cleanly, generating no smoke at all.
After Mr. Tassin introduced me to Kapok, I began to research it and it's use in handloading. I have experimented with it and tested it in various applications and to varying degrees of success and the purpose of this article is to share with you what I have learned.

As I mentioned earlier, Kapok is extremely flammable. This is a good characteristic of a filler as there is no chance for a cinder or remnant of ash to be left in the barrel after a shot. Neither is there any chance for burned particles to fall back into the action after it is opened.

The two primary purposes of any filler are to keep the powder located against the flash hole in the cartridge case and keep the powder from moving to insure uniformity of the load. Kapok lends itself very well toward filling the void, but does not perform well simply used as a locator as does a tuft of Polyester(Dacron).

Polyester has the characteristic of expansion memory and that characteristic makes it cling to the inside of a cartridge case when it is located over a very small charge in a medium to large capacity case. Kapok does not have this characteristic and it is best used as a complete filler as it cannot be trusted to stay put over a small charge in a large case. However, it does lend itself very well to keeping a slightly reduced charge located and uniform. When the variable of powder position is eliminated, regardless of the density, that characteristic lends to better accuracy.

Kapok also lends itself well toward being used as a compressed filler. The practice of compressing a filler in a bottle neck cartridge is normally considered a dangerous one, but it can be employed in straight wall rifle cases like the .45-70 and all handgun calibers. Although compressing a filler in a handgun caliber is a rather odd practice, I have experimented with it for the sake of doing so and have found that it does lend toward accuracy in rifles chambered for handgun cartridges.

**Applications, practices & principles of using Kapok as a filler**

As best I have been able to learn from researching the history of using Kapok in handloading, it was first used in bottle neck calibers. The purpose was to eliminate the variable of powder position in charges significantly less than complete case density. At that time, it was thought that causing the powder charge to be held in exactly the same position for every shot would contribute to accuracy. This theory is still open to speculation, but some shooters have said that it does aid in achieving better accuracy, especially at long ranges where a slight difference would manifest itself. On the other hand, the laws of physics dictate that any variable that is eliminated contributes to a more consistent and uniform result. This article will not discuss the merits of Kapok, insomuch as whether it actually contributes to accuracy, but how it is applied and used. You may draw your own conclusions based on your own testing.
In any rifle caliber cartridge case, as the volume of the charge is reduced, the volume of space left increases. This condition provides for the powder to move in the case. When Kapok is inserted in the case over the charge, the ability of the powder to move is eliminated. However, there comes a point in the reduction of the charge and the increase of the amount of Kapok added where the amount of Kapok becomes a hindrance, even a danger.

Most testing has shown that as much as 25 to 30 percent of the total case volume can be filled with Kapok before a problem evolves. The problem manifests itself in high chamber pressures. When a charge with a significantly large amount of Kapok over the powder is ignited, the Kapok tends to compress as it is forced through the bottle neck of the case. The more Kapok there is over the charge, the more pressure that develops based on the large amount of Kapok being forced through the neck. Bear in mind, however, this condition can change between calibers and dimensions of cases. The value of a maximum of 25 to 30 percent is not hard and fast. Very large volume cases (E.G.-.30-378 Weatherby Magnum) with small diameter necks may not allow the use of that much Kapok. On the other hand, medium volume cases with larger diameter necks (E.G.-.35 Remington) may be able to hold more than 50 percent of the case volume in Kapok.

**Kapok in bottle neck calibers**

**Rifle powders**

When the choice is made to incorporate Kapok as a space filler, the handloader must understand that an appropriate powder, with respect to burn speed, must be used. The use of Kapok does not provide for using a faster powder than the choices that are normally specified per caliber choice. However, Kapok does provide for reducing the powder charge below the minimum suggested charge. This is accomplished because the Kapok eliminates the possibility of SEE syndrome manifesting.

After the case is charged, the handloader should pull out of his stash of Kapok an amount that looks to be about what is needed to fill the resultant void. I admit that “about the amount” seems very vague and ambiguous, but we're not done yet.

This initial amount should next be weighed on an accurate and calibrated scale. The weight of that amount should be recorded, if only temporarily, as that value will be needed for subsequent loading. Kapok has very little density, so be prepared to experience some difficulty in getting an accurate reading from a beam scale. It's been my experience that a good quality digital scale is best for this application.

I have found that a tool useful for inserting the Kapok in the case would be something like a large finishing nail, a short section of clothes hanger wire or even a tooth pick. The object is to gently push the Kapok into the case until the void is filled. The void only needs to be filled with enough Kapok to keep the powder from moving when the cartridge is handled and/or loaded. The amount necessary to accomplish this will have to be determined by the application of common sense.
Do not attempt to compress the Kapok beyond very lightly. As was discussed earlier, this may result in high chamber pressures. Furthermore, when applying pressure to the tool used for insertion, use a very light pressure. Too heavy a pressure on the tool can result in the Kapok being pushed into the powder, thus disturbing and changing the shape of the powder column.

Once you have determined the amount, by weight, of Kapok required to sufficiently fill the void, strive to load that amount for every charge. It is important that the handloader understand that the object is to replicate the same condition of every charge. If you wish to experiment with different charges of powder and Kapok toward determining the "sweet spot", I suggest you keep accurate notes on the progression of your work.

As the amount of Kapok used increases, the likelihood of high pressures will also increase. Decrease the powder charge and increase the Kapok charge in very small amounts. I suggest the powder charge be reduced one grain at a time. If/when the amount of Kapok finally creates higher pressures than are acceptable, the indications can be seen before the pressures get too high.

**Pistol or high speed powders**

I have nothing to reveal on this as I did no research at all in using high speed powders in bottle neck calibers with Kapok. Based on what I have learned over the years, I assumed the amount of Kapok required to keep a small charge of fast powder located would most likely result in high pressures.

I admit that assuming proves nothing, but I also have enough common sense to know when under what conditions a problem is likely to occur. As was discussed earlier, Polyester has proven itself very user friendly toward using high speed powders in bottle neck calibers. Furthermore, there are quite a few high speed powders that are not position sensitive, so require no locator filler at all.

**Kapok in straight wall calibers**

Using Kapok in straight wall calibers is much easier than in bottle neck calibers. The absence of a restricted opening precludes any danger of high pressure due to compression. This also opens the door to some interesting experiments.

**Black powder charges.**

Using Kapok in conjunction with synthetic BP, I did a few experiments. I loaded a .45-70 case with a 10 % case density charge of Hodgdon's Triple Seven in 3fG. I then packed the case as full as I could with a compressed column of Kapok. On top of that, I seated an air cooled .460 round ball cast from wheel weights.
The round successfully fired. The Kapok kept the BP compressed and eliminated the chance for a total and instantaneous ignition resulting in high pressure. I continued with this procedure of experimentation through various density charges until I reached about 90%. I admit this is a rather odd load to work on, but the test proved to me the usefulness of Kapok.

Smokeless powder charges

Kapok is more useful in keeping a powder charge located in straight wall calibers than in bottle neck calibers. The powder charge can be significantly reduced, thus allowing experimentation for very light loads. As has been discussed, the amount of Kapok required to keep the powder located must determined by the handloader based on case capacity and charge weight/volume.

Sources for Kapok

Most older handloaders remember Kapok being used as the filler in life jackets from days gone by, especially military jackets such as US Coast Guard and US Navy issue. On occasion, some of these old life jackets show up at yard sales and flea markets. If you find one of these Kapok filled life jackets and consider buying one, give thought to what the contents are worth in usefulness.

As I mentioned earlier, the weight of Kapok that can be stuffed into a two pound coffee can is only about three ounces. That doesn't sound like much, but keep in mind, Kapok is very light. Considering that a grain of Kapok is about all that is needed per cartridge, that will go a long way. If you find a decommissioned life jacket, it should weigh somewhere in the neighborhood of a couple of pounds. Subtracting from that the negligible weight of the cloth and plastic bladders, there's still a lot of Kapok there. I wouldn't hesitate to pay $10 for an adult size life jacket full of Kapok.

If you can't find Kapok in the form of second hand life jackets, it can be found on the net. Below are three sources I found in just a few minutes of searching. The first listed sells it in one pound increments. The last two sell it in five pound increments.

BAMBOOFIBER.COM

AMAZON.COM

FUTONSANDBEANBAGS.COM

SAFETY ADVISORY

As with any handloading practice, the use of any product or practice not listed or shown in published manuals can be dangerous, even lethal. Many a handloader has been injured and many a fine firearm has been wrecked due to thoughtlessness and negligent practice in handloading ammunition. Should you decide to venture past the recommended procedures published
in commercial manuals, think through the process you are considering, consult with knowledgeable and experienced handloaders, go slow and above all, 

SHOOT SAFELY !!

Jim Connor, Author