

How to Make Strobe Fuel

CAUTION!!

Working with pyrotechnic devices is a very rewarding endeavor that can become a lifetime passion. To ensure continued enjoyment of this hobby, please follow appropriate safety guidelines. Work in an open area outdoors, keep all pyrotechnic mixtures in closed containers, limit any compositions to only the amount needed for a particular item, store finished items in an appropriate day box or magazine, be sure to wear appropriate non-synthetic clothing, wear eye protection and keep a source of water nearby. FireSmith cannot be held responsible for any accidents or incidents resulting from the construction and use of any pyrotechnic devices. It is highly recommended to check and adhere to all local, state and federal regulations. Please consider joining the PGI and any pyro clubs in your area so that you may construct pyrotechnic items in a safe and legal environment. Additional information can be found at www.pgi.org.

Strobe fuel is one of the most powerful pyrotechnic compositions used in rocket construction. It is essentially a type of flash powder and is quite sensitive to shock and friction. Even small amounts can explode with tremendous violence. Start with small batches and work outdoors. Potassium dichromate is a particularly nasty chemical. Be sure to wear gloves and eye protection. A mask or respirator over your nose and mouth is also highly recommended. Once you've made a batch of strobe fuel, be sure to wash thoroughly. Changing into clean clothes is also a wise idea.

The formula detailed in this tutorial was perfected by Joel Harmon and produces a loud popping noise while emitting bright green flashes. Though I like the strobe rate of this fuel, to modify the frequency, adjust the ratio of 200 mesh magnalium to -325 mesh magnalium. A ratio with more 200 mesh magnalium will reduce the strobe rate while a ratio with more -325 mesh magnalium will increase the strobe rate.



Formula:

Ammonium Perchlorate (90-100 micron) 60
Barium Sulfate 15
Magnalium (200 mesh) 17
Magnalium (-325 mesh) 8
Potassium Dichromate 5
Petroleum Jelly 3

Additional Materials:

10-20 Mesh Screen
Lacquer Thinner
Mason Jar
1 Gallon Ziplock Baggie
Kraft Paper
Latex or Nitrile Gloves



Step 1

It is important that each component is free-flowing and absent of any lumps. The barium sulfate and potassium dichromate need to be milled to a very fine "talcum powder" consistency (a coffee grinder works well for this). The ammonium perchlorate and magnalium can be individually screened to remove any lumps. Do not mill any of these ingredients together. Be sure to clean the mill or grinder before switching chemicals.



Step 2

Weigh out appropriate amounts of each chemical (except the petroleum jelly) and dump them together into a Ziplock bag.



Step 3

Dissolve 3 parts petroleum jelly with lacquer thinner in a mason jar. Approximately 1/3 cup of lacquer thinner for every 500 grams of strobe fuel seems to be about right. To fully integrate the mixture, set the mason jar with the lacquer thinner and petroleum jelly solution in a pot of hot water (do this outdoors and away from any heat source or open flame). This will fully melt the petroleum jelly to create a homogenous solution.



Step 4

Pour the petroleum jelly mixture into the bag with the strobe fuel.



Step 5

Knead this mixture for 1-2 minutes. With the introduction of the petroleum jelly, the mixture is much less sensitive.



Step 6

Empty the baggie onto your screen.



Step 7

Gently pass this mixture through the screen onto a sheet of paper. Repeat the screening procedure 6 times to fully mix the fuel and integrate the petroleum jelly.



Step 8

Set the strobe fuel out to dry on a sheet of paper or cardboard. Keep it out of direct sunlight. The fuel is ready to use when it no longer smells like solvent.