



This is to explain how to make a highly reliable, fast burning, and very high temperature rocket motor igniter. This thing burns hotter than 3500 (F) and will light reliably and quickly on a car battery or motorcycle battery. I have yet to have one fail and I think they would ignite concrete if it were flammable!!

These igniters include Magnesium powder and potassium nitrate. These two constituents should never be mixed dry, as they are a severe explosion hazard if they do. Magnesium powder itself is very dangerous and can form a cloud of powder that will flash explode violently. Do not attempt to work with these chemicals for the first time in building this igniter. It should only be attempted if you have worked with these chemicals before.

## What You'll Need

1. 1.5" piece of soda straw
2. 6" piece of bi-pole insulated copper wire (22-24 awg)
3. 1.5" piece of 30 awg Ni-chrome wire
4. Wire cutter/strippers
5. Soldering iron
6. Solder
7. Soldering flux
8. 6 g  $\text{KNO}_3$

9. Epoxy

10. Magnesium powder (preferably > 300 mesh)

11. Mixing cup

## Procedure

1. Strip both leads of one end of the bipole-insulated wire.

2. Cut one lead of the other end approximately .7" shorter than the other (see Fig. 1)

3. Strip both leads of the uneven end.

4. Take the nichrome wire, wrap it first around the stripped copper of the longer lead, then wrap about 5-6 turns around the INSULATED part of the longer lead leaving enough to wrap around the other shorter lead, and then wrap the rest around the un-insulated part of the shorter lead (look at Fig.1).

5. Take some soldering flux and put it on the un-insulated part of the wire where you wrapped the nichrome. Solder the nichrome wire wrappings to the uninsulated wire.

6. Mix a pyrogen consisting of 6g KNO<sub>3</sub>, 2.5g Epoxy resin and hardener, and 1.5g Mg powder together intimately. Make sure to mix the Magnesium powder into the wet epoxy fully before adding the KNO<sub>3</sub>, as this will greatly



[Fig.1. Detail of method for wrapping  
Nichrome wire]

reduce the risk of flash explosion with this mixture. Push this into the soda straw.

7. Push the nichrome wired end of the bipole wire and push it up into the pyrogen in the soda straw. Allow to cure.

8. Cut a slit down the soda straw and peel it off of the hardened pyrogen. You're igniter is finished.