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--Cloaked Warrior--  
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--P r e s e n t s--  
Improving your Rocket  
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Cloaked Warrior

Be sure that you have read the file 'How to Make Sugar Rockets' before reading this file. This file is actually Part II of that File....

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ENHANCEMENTS  
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Time Delays & Special Effects

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In order to provide room for time delays (et cetera), you will need a longer rocket casing. So go out to the store again and buy wider brown packaging tape (3 in. instead of 2 in.). But the thing is that this type of tape is not sold in most stores, so go look in a phone book for large paper suppliers that sell packaging supplies. To make a rocket casing with a time delay, you just have to follow the instructions in Part I (How to Make Sugar Rockets) except (there are some changes):

- 1> Use the 3 in. packaging tape to make a 3 in. casing.
- 2> When loading the propellant, instead of stopping at the top of the mandrel, continue working, using the flat, undrilled end of the tamp, and pack an extra 1/2 inch of propellant in on top of the mandrel.
- 3> You will need to form a tiny hole through the epoxy glue plug, to do this, (after packing the propellant) stick a large sewing needle into the propellant right at the edge of the rocket casing, you then press it into the delay powder to a depth of 1/8 of an inch, now firmly pack in your wad of tissue paper or paper towel and then pour in the front plug of epoxy.
- 4> After the glue dries and hardens, use a pair of small pliers to twist and pull the needle out of the epoxy, leaving a tiny pin-hole through the plug.

Now you're all ready to go...

Making a 'Pop' sound and smoke

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To make a 'pop' and some smoke at the end of the rocket's flight is easy. All you have to do is fill up the pin hole with black powder or Pyrodex powder and add another 1/19 of a gram (1/2 as much as you used to prime the rocket).

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Press in a another wad of tissue paper (or towel) and pour another epoxy cap on top of that. When the flame inside the rocket reaches the front of the time delay powder, it will flash through the pin hole and ignite the powder. This is how to make a fire cracker like 'pop' and a puff of smoke at the end of its flight. Making the flames a certain color is also desirable. Well, it is very simple. If you want a green flame when it is launched, this is what you do:

Go out and buy some Copper Sulfate (powder). Then you glue the powder on to the rocket casing(s) at the ends all the way around. Use Elmer's glue to do this. And that's it! When the rocket is ignited, it will be launched as the Copper Sulfate burns (Elmer's glue melts), causing green flames. You may use other chemicals to produce different colors. But be sure to use the slow lift-off option that was explained in the Part I (so that you can observe it).

Making a Nose Cone for better Performance

To make your rocket(s) fly better, you will need to make a nose cone. Make something like a witch's hat out of paper and masking tape and glue it onto the nose of each rocket. This should not require any assistance (I assume that you must know how to make a nose cone. It shaped like a funnel.)

Using the Time Delay to Pop a Parachute

To pop a parachute, fill the pin hole with black powder and add a very SMALL amount of powder on top of this. Then cut a disk of stiff paper from a 3 x 5 inch file card about 3/8 of an inch in diameter, and using on end of your powder tamp, press the paper disk into the nose of the rocket on top of the loose powder (be sure that you have not made a nose cone and have glued it onto the rocket).

Second Stage Rocket

If you want to have your rocket ignite a second stage, then use a single edged razor blade to cut the excess length of the casing off right at front of the front plug. Then fill the pin-hole with loose powder and cap the FRONT of the rocket with the powder ppaste just as you did to the back end when priming it for firing. Make sure the front of the rocket is marked, once te ends are capped, you won't be able to tell which end is which. When igniting a second stage, place the priming cap of the second stage engine in contact with the front end cap or first stage motor. When the flame in the first stage motor reaches the front of the time delay powder, it will ignite the cap at its front, which in turn will light the priming cap of the second stage engine.

Making a Second Stage Stick Rocket

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When you make a second stage stick rocket, you will need a longer stick to balance the extra weight and you will have to connect the two stages so that the second stage can slide easily away from the first after the first is spent. Wrap a single layer of paper tape around the front of the booster engine (first stage motor), so that the tape is glued to the front of the booster but sticks 1/2 an inch out in front of the finished, capped engine. After the glue dries, you can slide the tail of the second stage into this paper sleeve off the first until the priming cap of the second stage motor touches the front cap of the first. Glue or tape the longer guide stick to the second stage engine, leaving the first stage engine and its paper sleeve free. (Note: This two stage stick rocket is 2 rocket casings connected to a longer stick. This is an easier explanation.)

Substitutions & Misc.

You can mix white baking flour with epoxy glue if you cannot get the water putty. Instead of getting flowers of sulfur, you can get dusting sulfur at a nursery or fertilizer supplier. Dusting sulfur will result in a better rocket. Never put the 3 chemicals (sulfur, saltpetre, and sugar) in a blender, if you do, you'll get a real big kick out of it...

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