

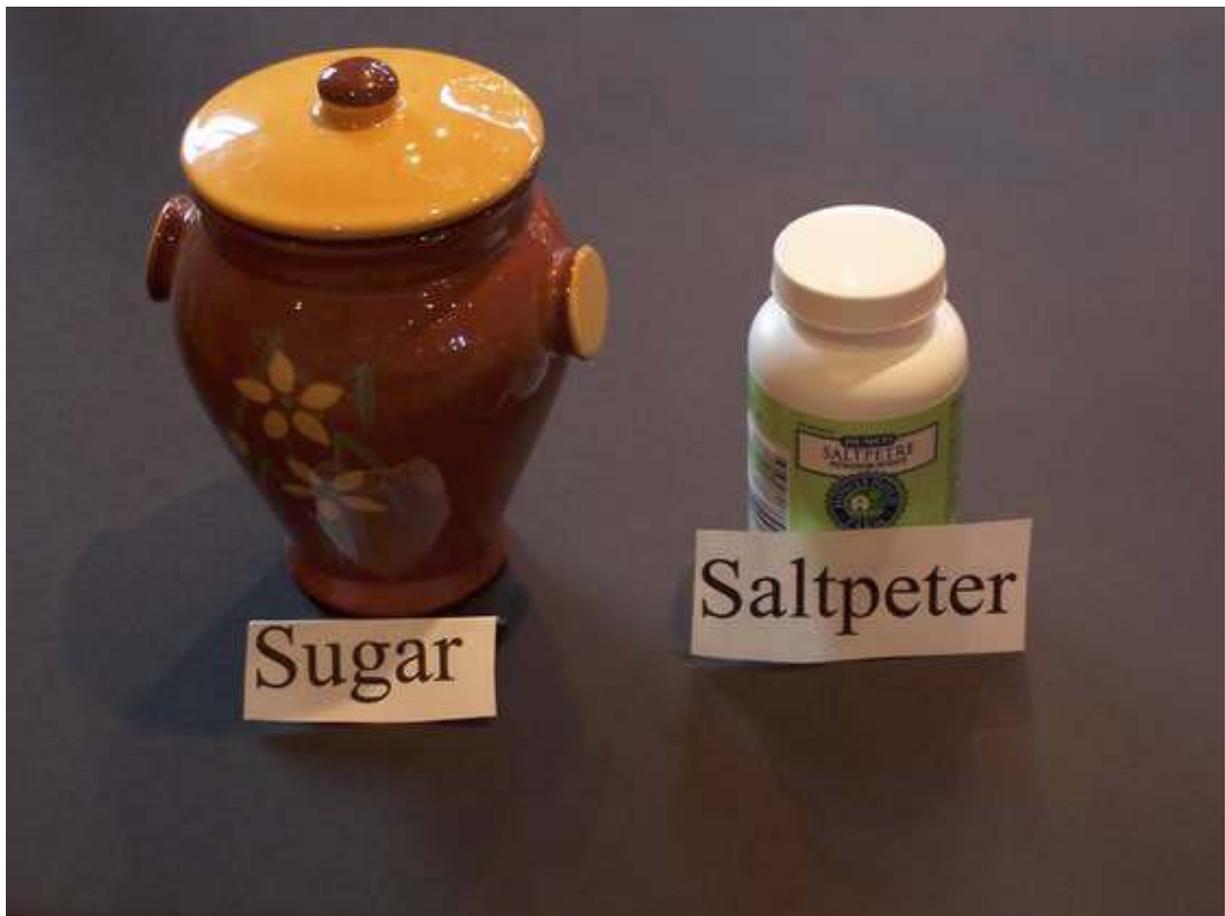
# THE SMOKE GRENADE AND PAINTBALL GRENADE RECIPE GUIDE



## **Making Smoke Bombs/Grenades**

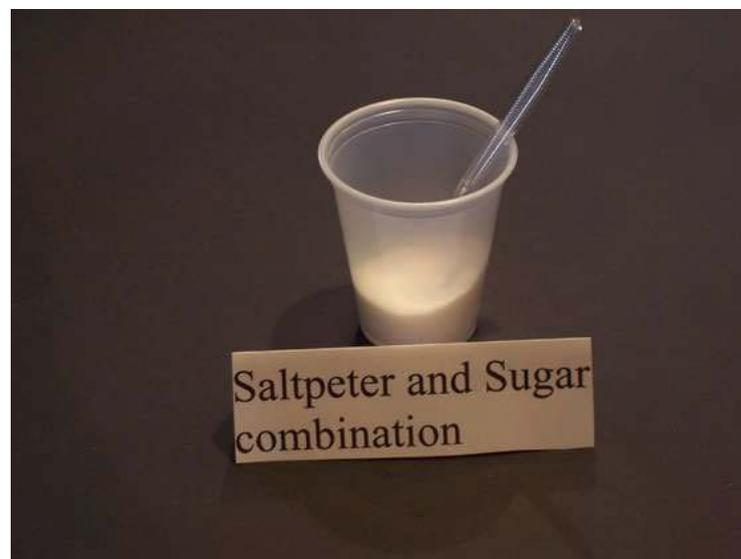
### Smoke Bomb Materials

- sugar (sucrose or table sugar)
- potassium nitrate,  $\text{KNO}_3$ , also known as saltpeter (you can find this at some garden supply stores in the fertilizer section, some pharmacies carry it too)
- baking soda
- organic powder dye if making colored smoke bomb
- skillet or pan
- aluminum foil



## How to Make a Smoke Bomb

1. Measure out 30 grams of Saltpeter and 20 grams sugar. You can make larger amount but just keep the 3:2 ratio. Measurements don't need to be exact, but you want more  $\text{KNO}_3$  than sugar. For example, you can use 1-1/2 cups  $\text{KNO}_3$  and 1 cup sugar. If you use equal amounts of  $\text{KNO}_3$  and sugar, your smoke bomb will be harder to light and will burn more slowly. As you approach the 5:3  $\text{KNO}_3$ :sugar ratio, you get a smoke bomb that burns more quickly.



2. Now a pan is need to be made. First take a piece of aluminum foil and fold it in half, then in half again, and once more. Refer to the pictures for more help. Note\* the "Pan" is not the only way to cook the mixture, you can also use a glass bowl or cylinder to cook in, but the glass will be rendered unusable after. Apply low heat to the pan. Now this is the only hard part. You have to cook the mixture without burning it. Now if you leave it on for to long it will burn catch fire and smoke will be everywhere, so I recommend doing this outside. Stir the mixture with a spoon using long strokes. If you see the grains of sugar starting to melt along the edges where you are stirring, remove the pan from the heat and reduce the temperature before continuing.



3. Now the trick is to put it on a stove and stir it until it becomes an orangeish color. Then take it off and continue stirring for it will still be cooking. Basically you are caramelizing sugar. The mixture will melt and become a caramel or chocolate color. Continue heating/stirring until the ingredients are liquefied. Add a table spoon of baking soda, and colored dye if you want a colored smoke bomb, otherwise it will be white smoke. Remove from heat.



4. And Vola you have a smoke bomb sheet. You can set the whole thing on fire and smoke a whole yard, or you can break off little pieces and burn for smaller amounts. Allow the smoke bomb to cool, then you can peel it off the foil. Or if making a grenade pour into a mold while still warm, the videos below also show how this is done. You can pour the smoke bomb into any shape, onto an object, or into a mold. The shape and size will affect the burning pattern. If you are making a smoke grenade, pour the mixture into a cardboard, plastic, or metal tube (small pop can with top removed works good). Push a pen into the middle of the mixture to make a hole for the fuse, and let set for an hour then remove pen. Insert a fuse into the hole and pack a piece of cotton swab into hole to make it fit tightly. Wrap tube with duct tape and the grenade is ready to go. If you aren't going to clean your skillet immediately, pour hot water into the pan to dissolve the sugar (or else it will be harder to clean). Clean up any residue you may have spilled out of the pan, unless you want mini-smoke bombs on your stovetop.





## Pull Ring Smoke Grenade

### Materials

- Make smoke grenade as describe before
- Box of matches
- 1 Straw
- Electrical or duct tape
- 1 Paperclip
- 1 Elastic

### How to Make a Pull Ring Fuse

To make a smoke grenade with a pull ring fuse, follow the same instructions but instead of inserting a burning fuse follow these instructions:



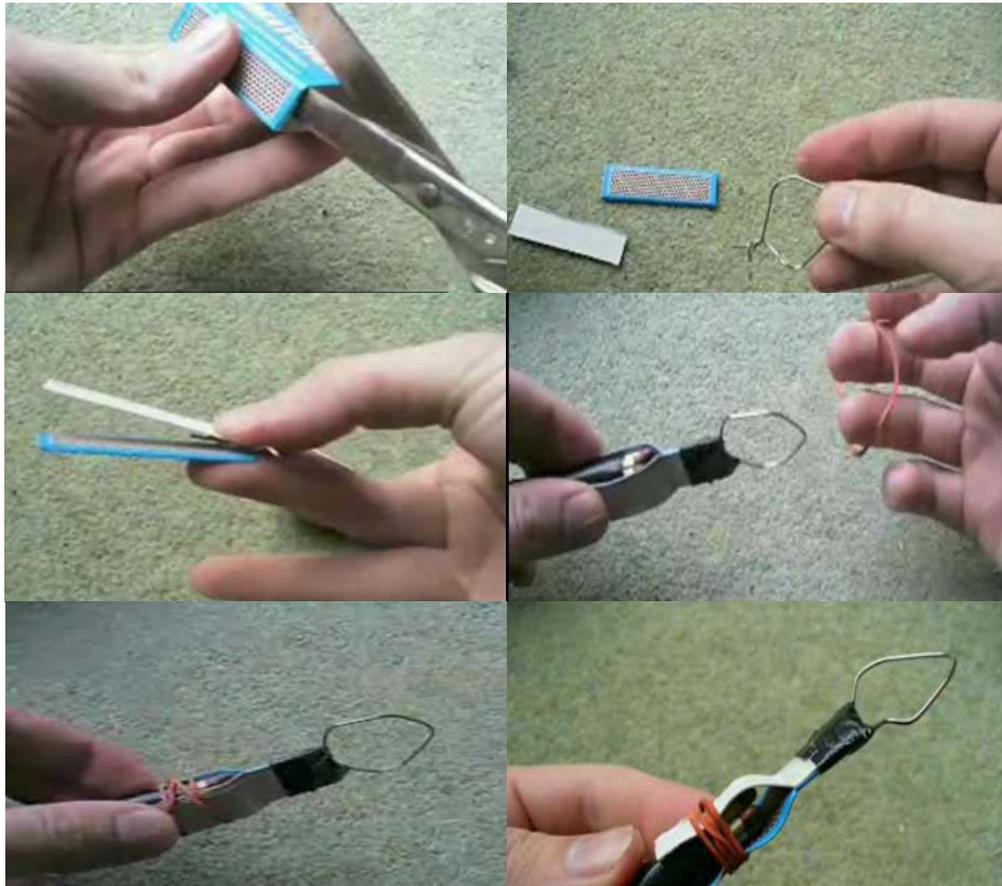
1. Fill a drinking straw with match heads and seal the end with paper tissue.



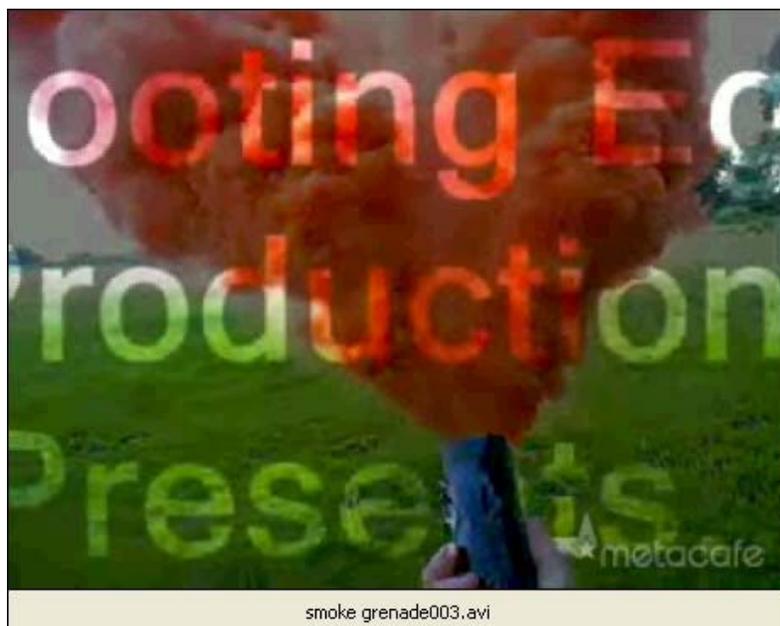
2. Wrap straw with matches and secure them with electrical or duct tape.



3. Cut match strikers off match box, and make a ring out of a paper clip. Tape the ring in between the match box strikers, insert the straw wrapped with matches in between the strikers and wrap an elastic around it.



4. The Fuse is now complete, now insert it into the fuse hole in the smoke grenade. Place another cardboard tube around the smoke grenade and pack with tissue, this will protect your hands from being burned. Now wrap the whole grenade tube with duct tape to seal it off, make sure to leave enough room at the fuse hole to pull the ring out. The video below also shows how this is done.



## Chemicals Used to Add Color Flames To Your Smoke Bombs

**You can add these chemicals to your smoke bomb to create colored flames:**

1. Red - strontium salts, most easily found in road flares
2. Orange - calcium chloride (laundry bleaching agent)
3. Yellow - sodium nitrate (common in chemistry lab)
4. Green - barium salts, such as barium nitrate (common in chemistry lab)
5. Greenish-Blue - copper sulfate (common in a chemistry lab, also found in many algicides for pool treatment) Blue - copper chloride (common in chemistry lab)
6. Purple - potassium permanganate (common in a chemistry lab, also used in sewage or water treatment)
7. White - magnesium sulfate (epsom salts, found on laundry aisle or in a pharmacy)

## Colored Smoke Bombs

The recipes for some colored smoke bombs require chemicals that may not be readily available unless you have access to a chemistry lab, but it's worth knowing how it's done. You can also just add color dye to the smoke bomb mixture which also works well. The parts or percents below are by weight. The ingredients are sifted together and ignited to produce the smoke.

### White Smoke Recipe

- Potassium nitrate - 4 parts
- Charcoal - 5 parts
- Sulfur - 10 parts
- Wood dust - 3 parts

### Red Smoke Recipe

- Potassium chlorate - 15%
- para-nitroaniline red - 65%
- Lactose - 20%

### Green Smoke Recipe

- Synthetic indigo - 26%
- Auramine (yellow) - 15%
- Potassium chlorate - 35%
- Lactose - 26%

If you can order chemicals, here are some of the dyes used to produce more colors:

### **Red**

- Disperse Red 9 (older formulation)
- Solvent Red 1 with Disperse Red 11
- Solvent Red 27 (C.I. 26125)

### **Orange**

- Solvent Yellow 14 (C.I. 12055)

### **Yellow**

- Vat Yellow 4 with benzanthrone (older formulation)
- Solvent Yellow 33
- Solvent Yellow 16 (C.I. 12700)
- Solvent Yellow 56
- Oil Yellow R

### **Green**

- Vat Yellow 4 with benzanthrone and Solvent Green 3 (older formulation)
- Solvent Yellow 33 and Solvent Green 3
- Solvent Green 3
- Oil Green BG

### **Blue**

- Solvent Blue 35 (C.I. 26125)
- Solvent Blue 36
- Solvent Blue 5

### **Violet**

- Disperse Red 9 with 1,4-diamino-2,3-dihydroanthraquinone
- Solvent Violet 13

## Smoke Bomb Recipe #2

Here is an alternate method to make a white smoke bomb, I find that the first one works better but here is another anyway. A white smoke bomb can be made from sulfur, pottassium nitrate, black powder, aluminium powder, iron oxide and carbon tetrachloride. It can be used either for signaling or screening.

### Materials Required

- Sulfur
- Pottassium
- Nitrate
- Black Powder
- Aluminium Powder
- Black Iron Oxide
- Carbon Tetrachloride
- Improvised White Flare Mix
- Tablespoon
- Wooden Stick
- Newspaper
- Quart Jar with Lid
- Window screen
- 10inch Fuse
- 2 and half inch by 5 inch tin can and a lighter.

### Procedure

1. Measure 3 level tablespoons of dried sulfur into the quart jar.
2. Add 4 level tablespoons of dried pottassium nitrate to the sulfur.
3. Add two heaping tablespoons black iron oxide.
4. Place all ingredients on the window screen.
5. Mix ingredients thouroughly by sieving them onto the newspaper, repeat this 3 times.
6. Pour the ingredients back into the jar. Screw the lid on the jar tightly and mix the ingredients vigorously until even.
7. Remove the lid and add 10 heaped tablespoons of aluminium powder then mix thouroughly with the wooden stick.
8. Store in the jar with tightened lid until use.

## Usage

Wet the ingredients in the jar to a paste consistency with Carbon Tetrachloride, do this in a well ventilated area as the Carbon Tetrachloride will give off toxic gases. Add a half cup of black powder to the paste and mix carefully with wooden stick.

Measure one heaped tablespoon of white flare mix onto a four inch square aluminium foil. Knot one end of the fuse and place in the middle of the white flare mix. Fold the corners of the foil tightly around the fuse.

Place the white smoke bomb mix into the can. Place the fused white flare device into the can just below the surface of the smoke bomb paste and ignite the flare to deploy the smoke bomb

## Making Paintball Grenades

We tested them with water and found them to be drop safe with the pin in. With the pin removed and the washer placed correctly, the grenade is sensitive enough to go off from an arms-height drop.

### Materials available between most hardware stores and online

- 1/4" inside diameter, 3/8" outside diameter latex tubing
- 7/16" plastic washers (metal washers will also work). You can also use 1/2". 7/16" is pretty tight, while 1/2" is more sensitive and likely to go off. 7/16" is preferred.
- Cotter pins...these only need to be a little longer than the diameter of the washer
- Zip ties...used to seal the bottom of the grenade and to make a "ring" for the pull pin
- 60cc 1/4" tip irrigation syringe...for filling the grenades. You may need to get this from a healthcare website. Wal-Mart also sells a device similar to these syringes. It's called the "MIXMIZER" and it's used for mixing oil with gasoline so I guess you'd either look for it in Lawncare or Automotive.
- Small wood clamps...I recommend the kind that you squeeze with one hand and clamps into place as shown in the following pics.
- Children's washable paint, diluted to desired thickness. If you can, get washable tempera paint from a craft store. The best "fill" I have come up with is one part washable tempera paint diluted with one-half to one part tap water. It's very thick.
- OPTIONAL: food flavorings/extracts...Added to mark the enemy with a specific scent. We used mint so the enemy will smell fresh if hit. Orange works great and smells good too. Vanilla is too weak to cover the smell of the paint. I've yet to experiment with others...



**Directions:**

1. The first step is to cut a length of tubing. You can use any length you want, we liked a total length of about 4-5 inches best for shape. After your tube is cut, fold the last 1/2" over itself and zip tie it together as hard as you can, or tie one end of the tubing.



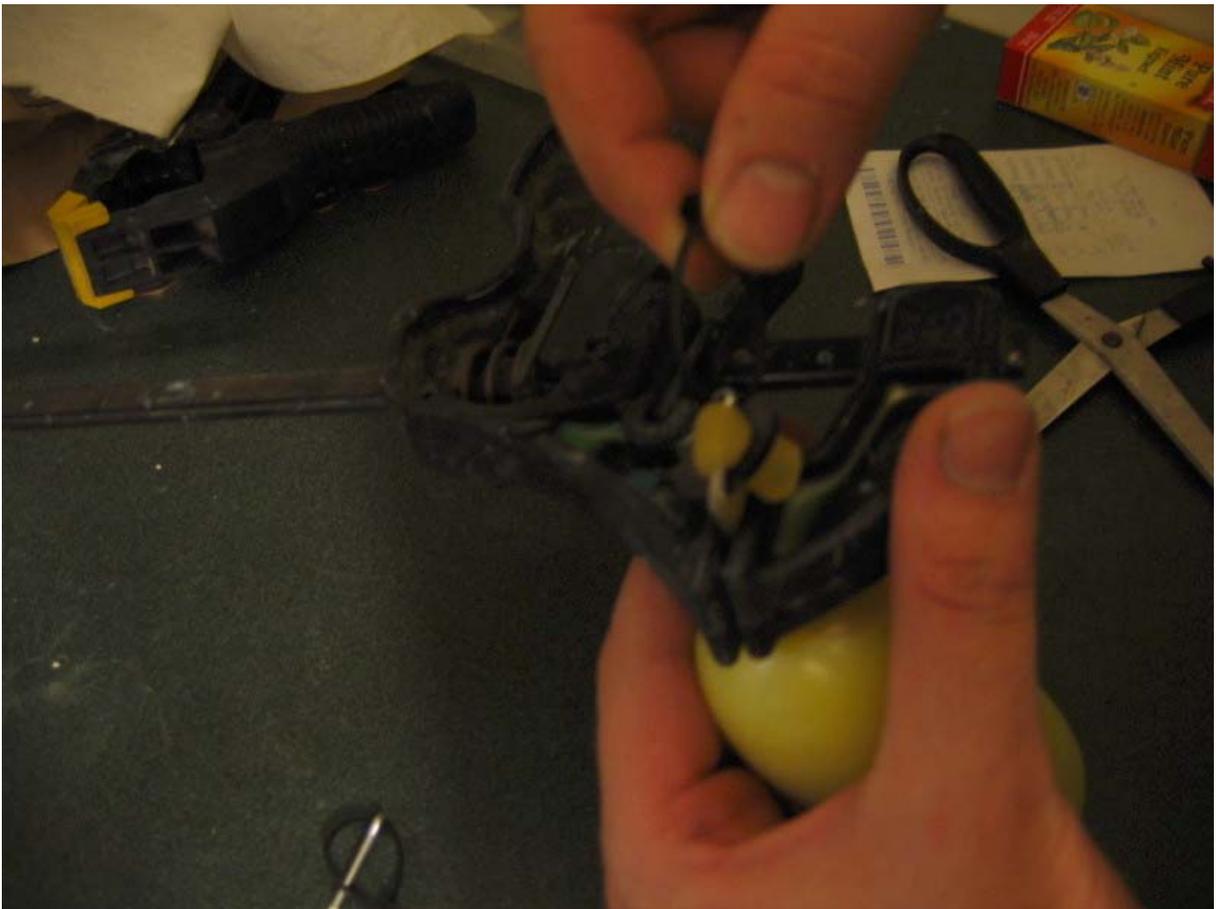
2. Next ready a syringe by drawing about 2 oz. of paint up. Secure the tube as far up the nozzle as it will go. Make sure you are pinching the hose around the nozzle so it won't leak. Make sure the push part of the syringe is braced against your chest or stomach, because once paint is in the latex tube, it will be pressurized and want to shoot the plunger right out of the syringe. Push the paint into the grenade tube and hold it with your off hand, making sure to keep pressure on the plunger and keep pinching the end of the tube against the nozzle so nothing leaks. With your other hand, clamp the grenade tube at the syringe nozzle.



3. Ready another syringe of paint and plug it snug into the tube. **MAKE SURE AT THIS POINT YOU BRACE THE PLUNGER AGAINST SOMETHING SOLID.** You wouldn't want pink, minty paint all over yourself, now would you? Release the clamp and push the extra paint into the grenade. Repeat the clamping procedure and fill the grenade to the desired size (we did 6 ounces). Once you get the grenade to the right size, clamp it one last time and grab a washer. Fold the end of the grenade over itself the same way as if you were going to zip tie it. Wedge the washer over the folded end of the tube.



4. Push a cotter pin through the fold of the tube (do not actually puncture it) and over the washer. Make sure the tube is stretched over the cotter pin, which should be pushing against the washer. Now you can release the clamp and the grenade should not leak or go off. Pull the tube through the washer and pin like a belt buckle to tighten it up and get a little extra tube past the pin so it doesn't slide out.



5. You now have a paint grenade! You will need to play with how tight you make the washer to get it to your liking in terms of how much force is needed to set it off. With 7/16" washers, I pretty much pull them right up to the pin. This makes the grenade rather sensitive, so much that you must be somewhat gentle when removing the pin. When they hit something, the washer is blown off and the grenade starts a-spinnin'! We tested ours (with water) from halfway up the stairs, chucking them into the bathroom. Every surface was hit with the grenade, even the ceiling. They spin pretty violently, so watch out! Here's the box we cranked out in one night



## How to make your own paint grenades Method #2

### Materials

Materials needed: A section of 1/8" rubber tubing about a foot long. (available at hose supply stores, medical supply stores, or chemistry supply stores.)

- A plastic clip tie
- A large syringe ( if you don't have medical friends, you can find syringe like "emergency pumps for basketballs" in your local sporting goods store)
- Some paint (either boiled down paintballs or children's washable non-toxic paint)
- A pair of hemostats (clamp)
- Some ball bearings of slightly larger diameter than the tubing (you can find these in your hardware store)
- Cotter pins
- Alcohol
- A rubber band (optional)
- A target

### Directions

1. Take the tubing, and cinch it down tight in the middle. If you want to make smaller; Little Betty type grenades, use only a six inch length and tie off one end of the tubing.
2. Fill the syringe with the paint mixture and inject it into one side of the tubing. Leave about 2 to 2.5 inches at the top empty.
3. Before you remove the syringe, crimp off the tubing below it with the hemostats. The filled section of tubing should look like a hotdog.
4. Lubricate one of the ball bearings with the alcohol and insert it into the tubing above the hemostats. If you still have the cap from the SquadBuster, just fold the tubing tip over and place the cap on.
5. Insert one of the cotter pins above the ball bearing, through the tubing. Leave the hemostat on until the alcohol dries. If you are making a Little Betty type grenade, you are now done.
6. Take the other empty side and repeat the process, except use the same cotter pin to hold both bearings in.
7. If you want the grenade to have maximum area coverage with a smaller paint coverage, simply leave as is. However, if you want maximum paint coverage put a weak rubber band around the grenade. The theory being this: When you pull the cotter pin out and throw the grenade, the non-banded kind will fall apart, pointing in two different directions. The banded kind will however, spray a greater amount of paint at a specific area. However, both types will spray in a radius because the release of pressure will make the hose tip wag around.

I have tested one of these, they do work, and expect about a 5 to 6 foot spray radius. Remember VERY IMPORTANT: get a good arc on these or try to throw it at something hard (like a bunker right behind your target) because you need to get enough pressure when it hits to push out the bearing (or knock off the cap). Conversely, after you have pulled the pin, DON'T squeeze the grenade or you will get very, very messy! Also, after you pull the pin, if you notice a small amount of leaking paint, throw it quickly or it will blow soon! And this should be the final result.