MILITARY MEDIA INC.

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Primary Explosives Used in Detonators

Primary explosives are chemicals that do not burn but explode directly from a flame or spark. They are also usually very sensitive to shock. Mercury fulminate can be found in toy paper caps for use in a cap pistol. The quantity in a paper cap is about 1/10 of a grain. There are 15.4 grains in a gram so approximately 154 of them contain one gram. If you have heard one cap exploding, imagine 154 of them going at once. The following are manufacturing processes for small laboratory amounts of primary explosives. Follow safety rules if you decide to manufacture them.

Mercury Fulminate: This is one of the oldest explosives used for making detonators. It is one of the easiest explosives to make. In a glass container put 40 ml. of 90% nitric acid. If you have red fuming nitric acid, put in 10 ml. of water then add 30 ml. of acid one drop at a time until all the acid is added. Water should never be added to acid. The reaction can cause splattering of the acid.

Now, add 5 gms. of mercury metal. As the metal dissolves in the acid, some red fumes of nitric oxides may be released. Avoid breathing them. Allow the mixture to stand until the mercury is dissolved. You may want to stir the acid to help the mercury dissolve. The mercury may take some time to dissolve so have patience. When the metal is dissolved, add the acid to 75 ml. of warm 90% ethyl alcohol. in a 500 ml. glass container. In a few minutes a reaction will start. The mixture will start bubbling and frothing so the reaction must take place in a large container. White fumes will start coming out of the reaction and must not be inhaled. The white fumes will give way to red fumes then change back to white again. A precipitate will be seen to form in the liquid. This is mercury fulminate. When the reaction stops bubbling, pour the liquid into about 12 oz. of water. Wash the precipitate out of the reaction container and into the water. Filter the fulminate out of the water and wash it with a few ounces of ethyl alcohol and a final wash of a few ounces of distilled water. The fulminate should be a grayish to a white powder. It is best stored under water until use.

Mercury fulminate can be exploded by a 4 cm. drop of a 1 kilo weight. It will become "dead pressed" if subjected to pressures of 25,000 - 30,000 psi and will no longer explode but just burn.

DDNP: Diazodinitrophenol is a greenish yellow to a brown crystal and is superior to fulminate as a detonating agent. To make it, dissolve 1 gm. of sodium hydroxide in 65 mls. of distilled water then add 6 gms of picric acid to the lye solution. In another container put 10 ml. of distilled water and add 5 gms. of sulfur to the water. Now add 5 gms. of sodium hydroxide to the sulfur/water. Boil this mixture until it turns bright red. Let the solution cool off. Add the sulfur/lye to picric acid solution in four portions letting the picric solution cool down in between additions. Stir the solution while adding the sulfur/lye. Let the mixture cool off then filter out the red particles. Dissolve the red particles in 130 mls. of boiling water. Filter the solution and discard any precipitate, save the solution.

Add 80% sulfuric acid to the solution drop by drop until it turns an orange-brown color then add 15 mls. more sulfuric acid. Let the solution cool down to room temperature. Dissolve 3.75 gms of sodium nitrite (not nitrate) in 150 mls. of distilled water. Add the nitrite solution to the orange-brown solution all at once while stirring. Let the solution stand for 10 - 15 mins. The solution should be a brown color. Filter out the particles of DDNP and wash them with 100 mls. of distilled ice water. Store the DDNP under a small amount of water until use.

Lead Picrate:

When picric acid reacts with a metal a picrate is formed. The heavier the metal the more sensitive an explosive is formed. Lead picrate is a useful explosive for making improvised detonators. The picrate will explode from heat, sparks, or shock. In a small glass container put 5 gms. of picric acid. Add to this 25 mls. of ethyl alcohol and stir the two to make a paste. Add 5 gms. of lead monoxide to the paste and gently stir the mixture. This is now an explosive. Store the paste still wet with alcohol in a sealed glass container until needed.

Lead Azide:

Lead azide is probably the most commonly used explosive in modern detonators. It is not as shock sensitive as mercury fulminate. It must be precipitated in the presence of dextrin to keep the particles of azide small. Failure to do this will result in an explosion as the large crystals of azide explode from inner stresses. Dissolve 17 gms. of lead nitrate and 1.5 gms. of dextrin in 250 ml. of distilled water. Adjust the pH of the solution to 5.4 with sodium hydroxide then heat the water to 70 deg. C. While stirring the solution strongly add a solution of 6.5 gms. of sodium azide and 1.5 gms of sodium hydroxide in 250 mls. of distilled water. Continue stirring for 5 min. Filter out the lead azide and wash with about 500 mls. of distilled water. Store the lead azide under water until needed.