

11. When the nitroglycerin is as acid-free as possible, store it in a clean container in a safe place. The best place to store nitroglycerin is far away from anything living, or from anything of any value. Nitroglycerin can explode for no apparent reason, even if it is stored in a secure cool place.

189. Cellulose Nitrate

by Exodus

I used to make nitrocellulose, though. It was not guncotton grade, because I didn't have petroleum (H_2SO_4 with dissolved SO_3); nevertheless it worked. At first I got my H_2SO_4 from a little shop in downtown Philadelphia, which sold soda-acid fire extinguisher refills. Not only was the acid concentrated, cheap and plentiful, it came with enough carbonate to clean up. I'd add KNO_3 and a little water (OK, I'd add the acid to the water - but there was so little water, what was added to what made little difference. It spattered concentrated H_2SO_4 either way). Later on, when I could purchase the acids, I believe I used 3 parts H_2SO_4 to 1 part HNO_3 . For cotton, I'd use cotton wool or cotton cloth.

Runaway nitration was commonplace, but it is usually not so disastrous with nitrocellulose as it is with nitroglycerin. For some reason, I tried washing the cotton cloth in a solution of lye, and rinsing it well in distilled water. I let the cloth dry and then nitrated it. (Did I read this somewhere?) When that product was nitrated, I never got a runaway reaction. By the way, water quenched the runaway reaction of cellulose.

The product was washed thoroughly and allowed to dry. It dissolved (or turned into mush) in acetone. It dissolved in alcohol/ether.

WARNINGS

All usual warnings regarding strong acids apply. H_2SO_4 likes to spatter. When it falls on the skin, it destroys tissue - often painfully. It dissolves all manner of clothing. Nitric also destroys skin, turning it bright yellow in the process. Nitric is an oxidant - it can start fires. Both agents will happily blind you if you get them in your eyes. Other warnings also apply. Not for the novice.

Nitrocellulose decomposes very slowly on storage if it isn't stabilized. The decomposition is autocatalyzing, and can result in spontaneous explosion if the material is kept confined over time. The process is much faster if the material is not washed well enough. Nitrocellulose powders contain stabilizers such as diphenyl amine or ethyl centralite. DO NOT ALLOW THESE TO COME INTO CONTACT WITH NITRIC ACID!!!! A small amount of either substance will capture the small amounts of nitrogen oxides that result from decomposition. They therefore inhibit the autocatalysis. NC eventually will decompose in any case.

Again, this is inherently dangerous and illegal in certain areas. I got away with it. You may kill yourself and others if you try it.

Commercially produced Nitrocellulose is stabilized by:

1. Spinning it in a large centrifuge to remove the remaining acid, which is recycled.
2. Immersion in a large quantity of fresh water.
3. Boiling it in acidulated water and washing it thoroughly with fresh water.

If the NC is to be used as smokeless powder it is boiled in a soda solution, then rinsed in fresh water.

The purer the acid used (lower water content) the more complete the nitration will be, and the more powerful the nitrocellulose produced.

There are actually three forms of cellulose nitrate, only one of which is useful for pyrotechnic purposes. The mononitrate and dinitrate are not explosive, and are produced by incomplete nitration. If nitration is allowed to proceed to complete the explosive trinitrate is formed.

(III. 3.22.2)

