

Rack-A-Rock

By Madog

Rack-A-Rock is a mixture of 20% Mononitrotoluene and 80% Potassium Chlorate. It's a type of mix called a Cheddite, this name came from the town of Chedde where these mixes were first used. Other common Cheddites would be the Chlorate plastiques. Cheddites have low detonation velocities and are fairly easy to detonate. The optimal density for any Cheddite is 1.3g/cc, if it is over 1.4g/cc you will probably get an incomplete detonation. This file will only discuss Rack-A-Rock, the 20% MNT and 80% KClO₃ mix.

Production of MNT

KNO₃/H₂SO₄ Method

This method is devised by me so it probably has some bugs.

Take 20ml of concentrated sulfuric acid and add 12g of KNO₃ or NaNO₃ to it. Let it sit for a couple minutes. Add 10ml of toluene to it, stir well. Let it sit for 1/2 hour then come back and stir it again. It should nitrate for 2-3 hours. It is good to stir it every once and a while. After it has nitrated drown the reaction vessel in 300-400ml of water. Now its time to extract the MNT, MNT has a density slightly higher than water so it will sink to the bottom. I found it helpful to pour the water/MNT from beaker to beaker. When there is a nice blob of opaque yellow liquid on the bottom of the beaker take a syringe or pipette and suck it out. It is also very helpful to swirl the water/MNT, this will make all the MNT collect the middle. After getting the blob out of the water you can swirl it again to get more to collect in the middle.

HNO₃ method

This is much more efficient, it is taken from Mega's page. Thank you Mega.

Prepare a nitrating solution of 160 mL of 95% [sulfuric acid](#) and 105 mL of 75% [nitric acid](#) in a [500-mL beaker](#) set in a salt-ice bath. Mix the acids very slowly to avoid the generation of too much heat. Allow the mixture to cool to room temperature. The acid mixture is slowly added dropwise, with a [pipet](#) or [buret](#), to 115 mL of [toluene](#) in a 600-mL beaker while stirring rapidly. Maintain the temperature of the beaker during the addition at 30-40 °C by using either a cold water or salt-ice bath. The addition should require 60-90 minutes. After the addition, continue stirring for 30 minutes without any cooling, then let the mixture stand for 8-12 hours in a [separatory funnel](#). The lower layer will be spent acid and the upper layer should be mononitrotoluene, drain the lower layer and keep the upper layer. Its probably a good idea to wash it.

Properties of MNT

Soluble in alcohol, ether, and benzene; insoluble in water.

(a) meta-: Yellow crystals; sp. gr. 1.1570; m.p. 16C; b.p. 230-231C

(b) ortho-: Yellow liquid; sp. gr. 1.163; (20/4C); m.p. -9.55C; b.p. 222.3C

(c) para-: Yellow crystals; sp. gr. 1.2856; m.p. 51.4C; b.p. 237.7C;

My method seems to yield the ortho form. I don't know what Mega's method yields, but its probably the ortho form. If you somehow end up with the para you will have to melt it to make Rack-A-Rock.

Making the Rack-A-Rock

As I said before the optimal density is 1.3g/cc. Here is a chart of density and ratio calculations I made for Rack-A-Rock. The volume is the volume of the KClO₃ in milliliters that would make it have a density of 1.3. these calculations are based on the ortho form. The numbers are rounded.

KClO ₃	14g	23.2g	29g	34.8g	40.6g	46.4g	52.2g	58g	63.8g	69.6g
Volume	10.77	17.85	22.3	26.77	31.23	35.7	40.15	44.6	49	53.5
MNT	3ml	4ml	5ml	6ml	7ml	8ml	9ml	10ml	11ml	12ml

Now you just have to compact the right amount of Chlorate to the correct density and pour the MNT on and let it soak through. Especially on smaller charges it may be better to mix the MNT and KClO₃ together first, then compact them. It will have a more intimate mix and it will ensure that all of the KClO₃ gets MNT on it. This will also work with NaClO₃. I have herd that perchlorates can be used too, and I theorize that MNT would make a good sensitizer for Ammonium Nitrate.



This is the components of a 14g charge. there is a 1g PETN detonator to initiate it, there is a .22 of AP to initiate that.

Effects of the charge pictured above



Bibliography

Megalomania's Controversial Chem Lab - <http://roguesci.org/megalomania/>
For the method for MNT using HNO₃

Detonators Home - <http://edetonator.hyperlink.cz/HOME1.htm>

This is where I learned about this explosive.