NITROMETHANE

Use of Hobby Fuels Containing Nitromethane as Precursors for Improvised Explosives

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Naval CIED Knowledge Network –
Dahlgren, NC - 2013

NCETR – ATF, DOJ
ATF Forensic Sciences Laboratory

Historical Examples

- Oklahoma City
  - AN and NM

- Korean Air – Flight 858
  - NM and Ethylenediamine (“PLX”)
- ETA (Basque Separatists)

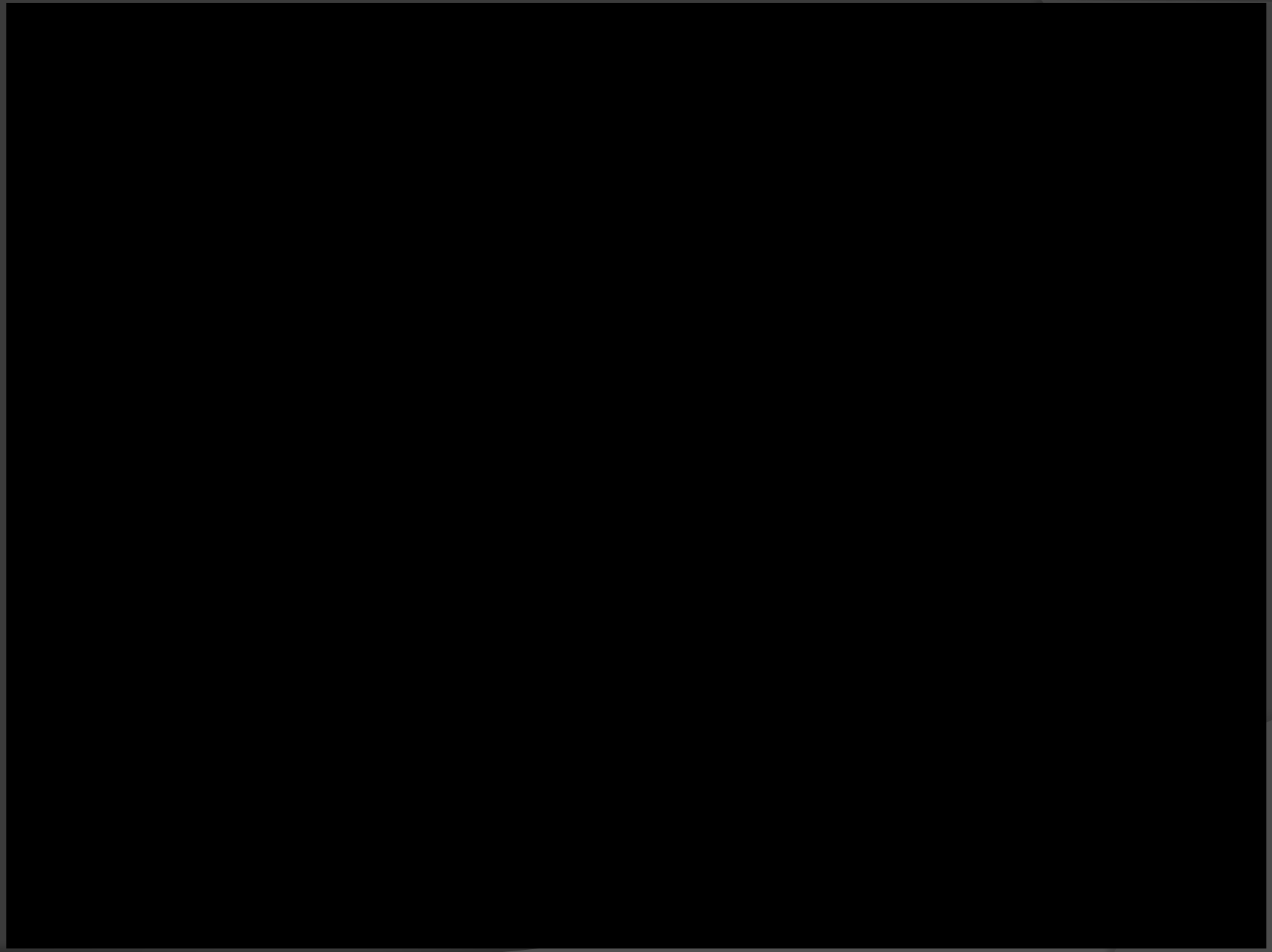
Nitromethane Explosives

Mixtures[1]	Detonation Method	Designated Name
		Nitrome
33% Nitromethane, 66% Ammonium Nitrate by weight.	Booster + No. 8 Detonator	None
95% Nitromehtane, 5% Diethylenetriamine by weight	No 8 Detonator	None
95% Nitromethane, 5% Ethylenediamene by weight.	No. 8 Detonator	PLX
94% Nitromethane, 6% Aniline by weight.	No. 8 Detonator	AEREX
96.5% Nitromethane, 1.5% Microspheres (sulphur dioxide), 2% Polyetheleneoxide gel.	No. 8 Detonator	None
100% Nitromethane	Booster + No. 8 Detonator	None

Just one SMALL set of examples!

Objective

- Hobby fuel → reliable HME
  - Extract the nitromethane completely
  - OR - Increase the concentration



Introduction

Work from the perspective of:

- Chemical hobbyist
- Amateur enthusiast
- Clandestine bomb builder

NOT professional chemists with unlimited resources!

Internet Information/Supplies

- Information
  - YouTube
  - Patents
  - Web forums
    - E.g. – ScienceMadness, RogueScience
- Supplies
  - Ebay
  - AMAZON!!

Nitromethane Explosives [Archive] - The Explosives and Weapons Forum - Mozilla Firefox

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Nitromethane Explosives [Archive] - The ...

parazite.nn.fi/roguesci/index.php/t-1896.html

nitromethane from racing fuel

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The Explosives and Weapons Forum > Energetic Materials > High Explosives > Nitromethane Explosives

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View Full Version : Nitromethane Explosives

Pages : [1] 2 3 4 5 6 7 8 9 10 11 12 13 14

Axt May 6th, 2003, 02:02 AM

I know some nitromethane exposives have been talked to death, so ill try to keep it too comps ive yet to see mention of. Note that all links are .wmv movies, so you will need to download & rename the .jpg extension and open with a late version media player if you wish to see them.

Pure nitromethane can be sensitised by disolving 5% triethylenediamine (hardener in quick curing two part epoxy) to form a liquid explosive simular to the military PLX.

I wont confess to my chemical ignorance by trying to name this explosive salt, but it is formed by the reaction of -5°C nitromethane with sodium hydroxide, here its ignited in the open, problem is that its slightly damp. Usually it would burn faster, no crackling and less smoke. If someone chooses to try this, be warned that the reaction is very hot and a little bit of NaOH goes a long way!

Anyone else have experiance with nitromethane compositions, or its derivitives to add?

The *art* and *science* of amateur experimentalism

Author:	Subject: Nitromethane extraction
plasma Hazard to Self ★★ Posts: 77 Registered: 20-5-2002 Location: Norway Member Is Offline **Mood:** Surprised	posted on 21-5-2002 at 11:49 **Nitromethane extraction** I have one gallon of fuel for r/c cars witch contains 15 % nitromethane, 18 % oil and the rest is methanol. How can I extract the nitromethane. When mixed with water I can remove the oil with a eye-dropper, but is it possible to remove the methanol ?

“I have one gallon of fuel for r/c cars witch contains 15% nitromethane, 18% oil and the rest is methanol. How can I extract the nitromethane. When mixed with water I can remove the oil with a eye-dropper, but is it possible to remove the methanol?”

- From the science madness forum

Amazon.com: Torco RC 100% Nitro-methane gallon: Toys & Games - Mozilla Firefox

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www.amazon.com/Torco-RC-100%25-Nitro-methane-gallon/dp/B00655PVA

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Toys & Games | Best Sellers | New Releases | Preschool Toys | Boys' Toys | Girls' Toys | Games | Outdoor | Hobby, Models & Trains | Toys Outlet | Kids' Birthdays

Torco RC 100% Nitro-methane gallon

by Torco Race Fuels

(1 customer review)

Price: $51.25

Note: Free shipping when purchased from Torco Race Fuel. Not eligible for Amazon Prime.

In Stock.

Ships from and sold by **Torco Race Fuel**.

- 100% Nitro
- More power
- Longer run times
- Cooler Engines
- Proven Quality and Consistency

Share

Quantity: 1

$51.25 + Free Shipping

In Stock. Sold by **Torco Race Fuel**

Add to Cart

or

Sign in to turn on 1-Click ordering.

Add to Wish List

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Have one to sell? Sell on Amazon

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nitromethane from racing fuel

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Frequently Bought Together

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Price for both: $79.00

Add both to Cart | Add both to Wish List

Show availability and shipping details

☑ **This item:** Torco RC 100% Nitro-methane gallon by Torco $51.25

☑ Torco RC Nitro 100% Methanol gallon by Torco Race Fuels $27.75

Customers Who Bought This Item Also Bought

Page 6 of 7 | Start over

Aluminum Powder - 30 micron - 2 Pounds

(19)

$23.00

Dynarex Instant Cold Pack, 5 Inches x 9 Inches, 24-Count

(98)

$17.49

Dynalon 312635 Water Jet / Faucet Aspirator Vacuum Pump

$37.77

Chemglass CG-1042-01 Thermometer Inlet Adapter with 24/40 Inner Joint, 80mm Height

$26.60

Sold with Nitromethane??

Aluminum Powder - 30 micron - 2 Pounds

★★★★½ (19)

$23.00

Dynarex Instant Cold Pack, 5 Inches x 9 Inches, 24-Count

★★★★½ (98)

$17.49

Amazon.com: Torco RC 100% Nitro-methane gallon: Toys & Games - Mozilla Firefox

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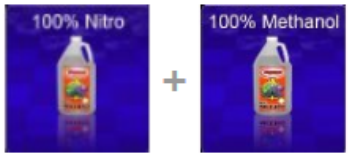

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- Torco RC Nitro 100% Methanol gallon by Torco Race Fuels $27.75

Customers Who Bought This Item Also Bought

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2 lb Sodium Hydroxide Food Grade Red Hot Devil Lye Caustic Soda Beads

(26)

$12.71

Aspirator Kit

(3)

$29.95

213A2 Karter Scientific Low Form Glass Beaker 5 Piece Set 50, 100, 250, 500, & 1000ml

(28)

$15.99

Norpro Glass Baster

(76)

$5.20

Hobby Fuel Composition

- Rotor Rage ©
  - ~30% Nitromethane
  - ~21% Oil/lubricants/dye
  - ~49% Methanol

Material Safety Data Sheet

1. Product and Supplier Information **MSDS Number**

BYRON ORIGINALS INC. BYRON FUEL PERFORMANCE BLENDED

Product Name:
Byron Originals 30% Rotor Rage Masters Blend Gallon
Byron Originals 30% Rotor Rage Masters Blend Quart

Product contains: Methanol, nitromethane and lubricants
Chemical Family or Formula: Methyl Alcohol C H3OH FW= 32.04; Nitromethane H3CNO2
Purpose: Fuel for model cars, boats, airplanes, and the like.

Extraction Phase

Chemistry Basics

Azeotropes cannot be separated by simple distillation

Ex: 95.6% Ethanol (Bp 78.4 °C)
4.4% Water (Bp 100.0 °C)

But – the azeotrope boils at 78.2 °C

Simple Distillation

- Distillate
  - ~ 70% Methanol
  - ~ 30% Nitromethane
    - via Refractometer and GC-MS

Slightly better than expected azeotrope (88% MeOH:12% NM)

Nitromethane Azeotropes

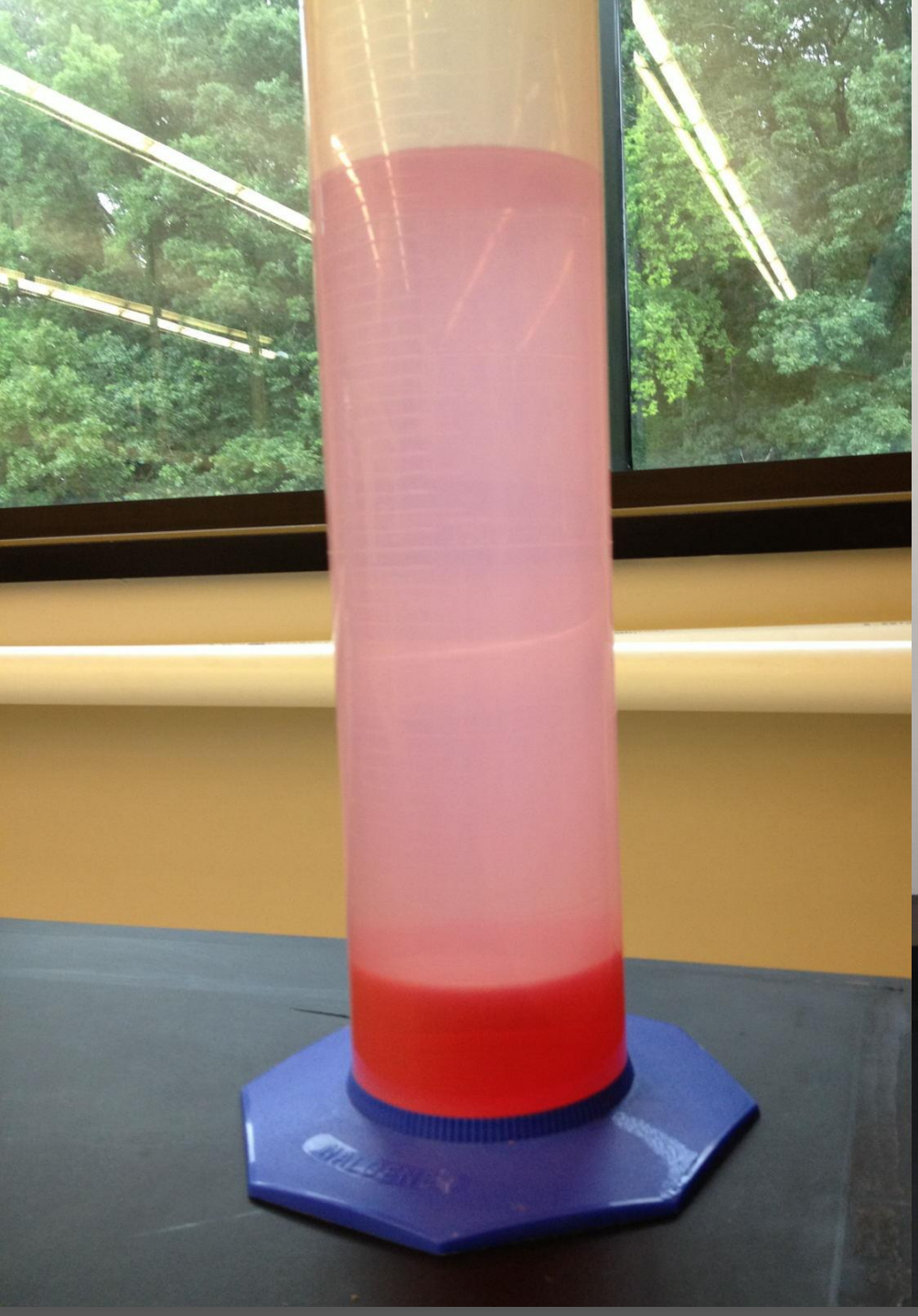
- Methanol (Azeotrope BP 64.5 °C)
  - 88% Methanol (BP 64.7 °C)
  - 12% Nitromethane (BP 101.5 °C)
- Water (Azeotrope BP 83.6 °C)
  - 26% Water (BP 100.0 °C)
  - 74% Nitromethane (BP 101.5 °C)
- Acetone
  - NO AZEOTROPE with Nitromethane! (Horsely, 1962)

“Breaking Azeotropes”

- Drying agents
- Addition of a “ternary” component
- Vacuum Distillation
- Molecular Sieves

Addition of Water

- Add water to hobby fuel
  - ~2 parts H_2O:1 part Hobby Fuel
  - Methanol more soluble in water
- Wait for two layers to form
- Collect smallest layer




KIMAX
KIMBLE
1000 mL

Addition of Water

- "Pulls out" a lot of methanol
- Helps remove "oil"

- Adds some water to NM layer
- Recall
  - Water (Azeotrope BP 83.6 °C)
    - 26% Water (BP 100.0 °C)
    - 74% Nitromethane (BP 101.5 °C)

Drying Agent

- Calcium Chloride ($CaCl_2$)
  - Great for water and methanol
  - Cheap, readily available

  - Partially soluble in Nitromethane
  - Reacts with Nitromethane

Addition of Acetone

- Add Acetone to hobby fuel
- Distill off Acetone/Methanol azeotrope
- Distill off Nitromethane


1000 mL
PYREX
Fisher Scientific

Methanol Azeotrope

- Acetone (Azeotrope BP 55.1 °C)
  - 15% Methanol (BP 64.7 °C)
  - 85% Acetone (BP 56.2 °C)

(Horsely, 1962)

Addition of Acetone

- "Pulls out" all of the methanol
- Readily available
- No azeotrope with NM!

- Leaves some Acetone in NM (~8%)
- Requires quite a bit of Acetone
  - 6 parts Acetone: 1 part MeOH

Test Shots

“Sensitized” Nitromethane

- Nitromethane + second component
  - MeOH
  - Acetone
- 5% Loctite Epoxy Hardener Added
  - (10% also tested, 5% more effective)

Nitromethane and Methanol

- Methanol (% weight)

Nitromethane	Methanol	Result
97.5%	2.5%	Go
95.0%	5.0%	No Go

Nitromethane and Acetone

- Acetone (% volume)

Nitromethane	Acetone	Result
97.5%	2.5%	No Go
95.0%	5.0%	No Go
92.5%	7.5%	No Go

Hobby fuel distillate as a "sensitizer"

- "Distillate Component" (% volume)
  - 70% Methanol : 30% Nitromethane

Ammonium Nitrate	Distillate	Result
95%	5%	Go
90%	10%	Go
85%	15%	Go
80%	20%	Go (Incomplete)
70%	30%	No Go
60%	40%	No Go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Air Entrainment Method

- Nitromethane + second component
  - MeOH
  - Acetone
- Air entrainment
  - (Toilet Paper)

Nitromethane and Methanol (Air Entrainment Method)

- Methanol (% weight)

Nitromethane	Methanol	Result
95%	5%	Go
90%	10%	Go
85%	15%	Go
80%	20%	No Go

Nitromethane and Acetone (Air Entrainment Method)

- Acetone (% weight)

Nitromethane	Acetone	Result
95%	5%	Go
90%	10%	Go
85%	15%	No Go


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Conclusions

- “Complicated chemistry” is NOT necessary!
  - NM/MeOH azeotrope can be broken
- Hobby fuel viable precursor
  - Still better as an AN “sensitizer”, for now
- Air entrainment is slightly more effective vs amine sensitization*

Other potential "simple" separations

- Vacuum distillations
  - "Azeotropes break distillations, rotary evaporators break azeotropes"
  - Glassware getting cheaper
- Molecular Sieves
  - Relatively inexpensive now
  - Requires some chemistry know-how