Lake Pigments

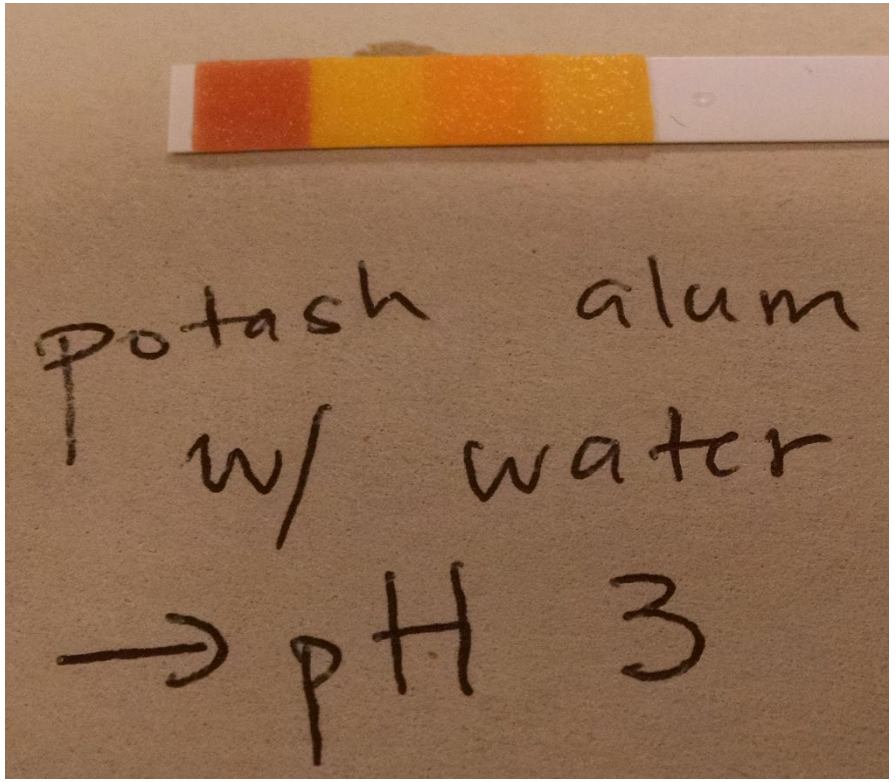
Recipes from *Natural Colorants for Dyeing and Lake Pigments*

Columbia University Libraries, Conservation Lab

Naomi Rosenkranz, Spring 2015

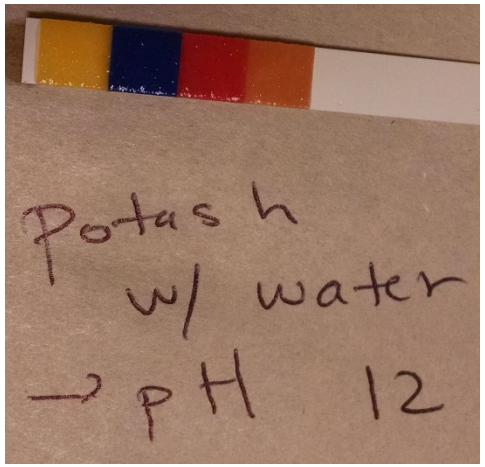
Potash Alum

- Aluminum potassium sulfate
- $KAl(SO_4)_2$



Potash

- Potassium carbonate
- K_2CO_3
- Alkaline



Cochineal

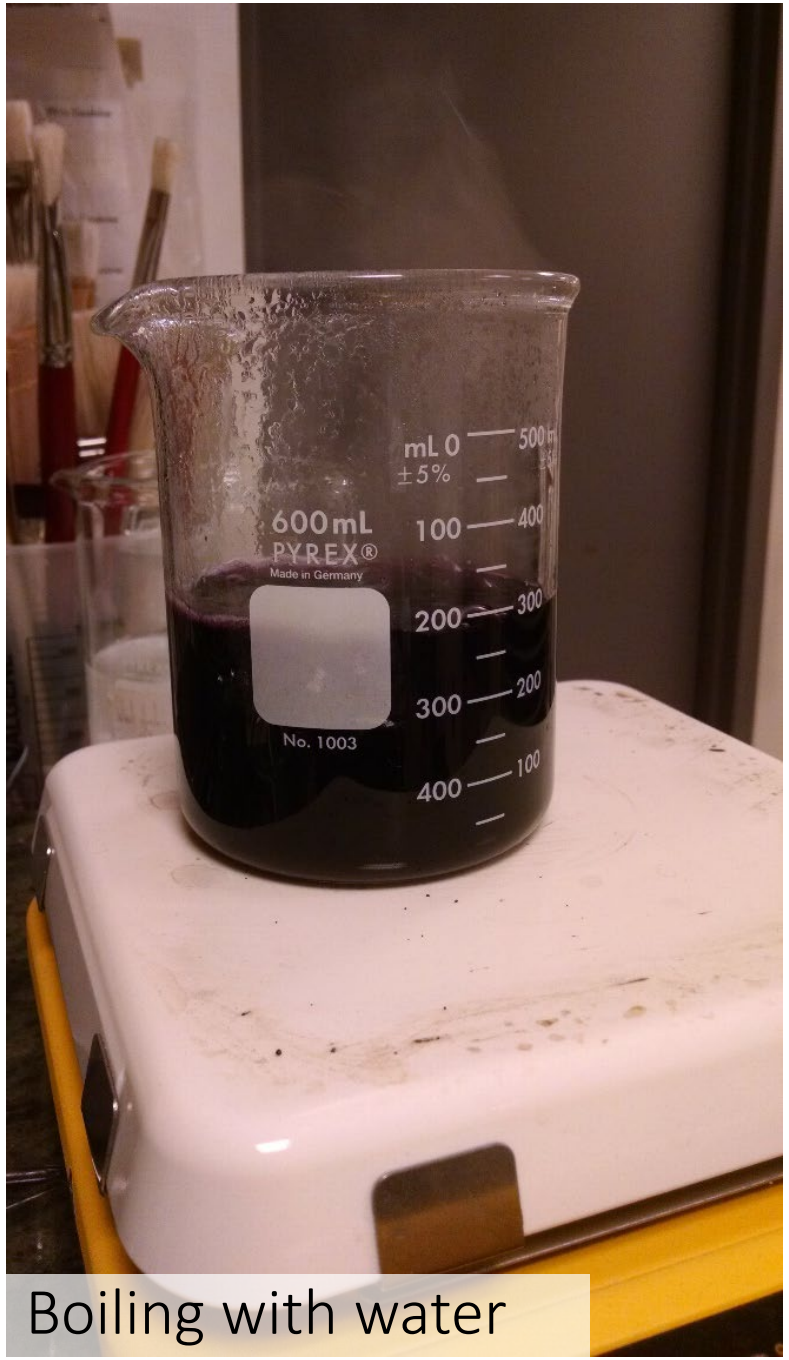
Ingredients:

- 0.24g cochineal (raw material) – ground to fine powder
- 300 ml of 0.1M potassium carbonate solution ((13.82g in 1 litre water)
- 10g potash alum in 50 ml water
- Water to wash

Recipe:

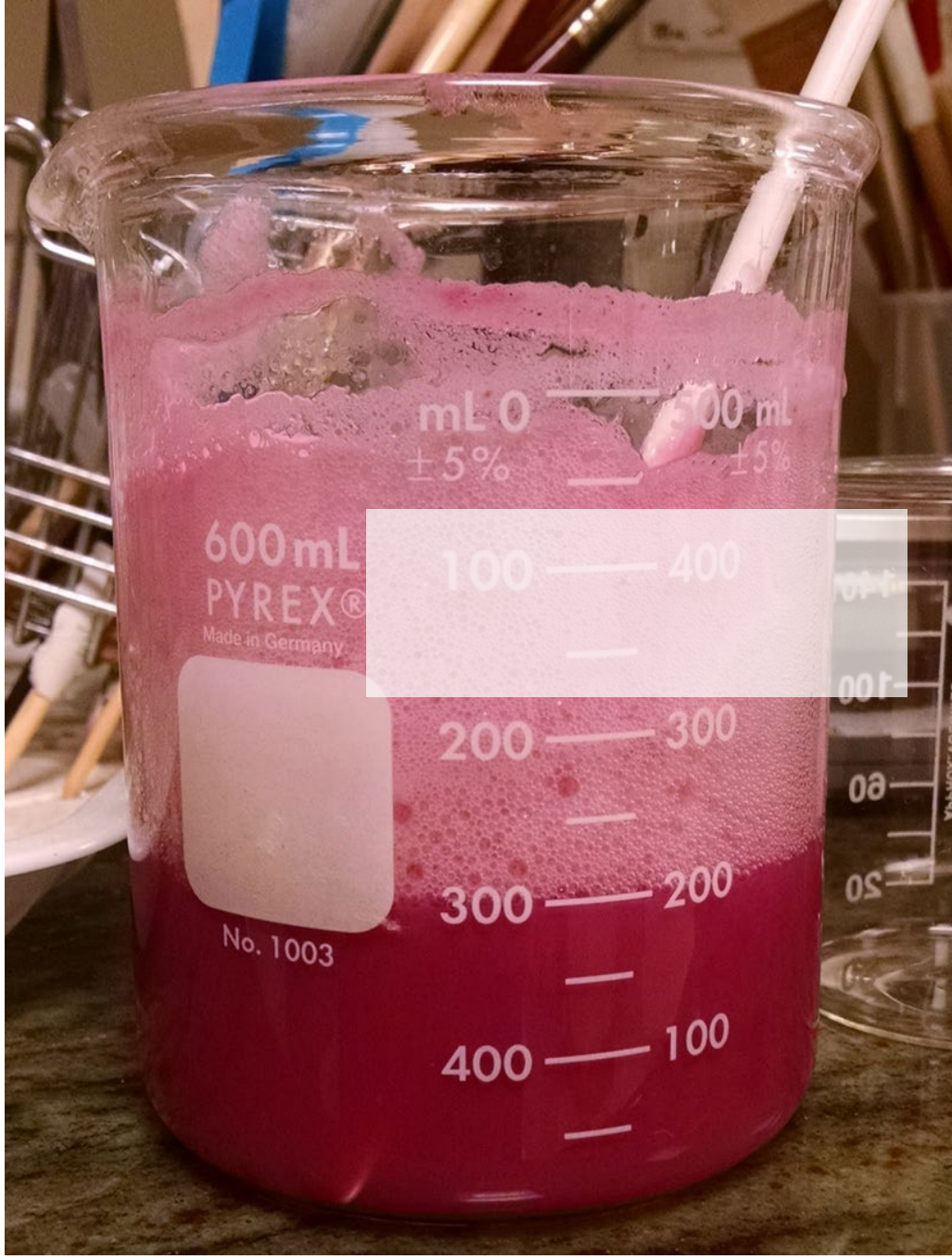
- Put cochineal in 600 ml beaker and add 300ml of 0.1 M potassium carbonate solution (
- Bring to a boil and boil for 15-20 min
- Filter off purple-red solution (through folded filter papers)
- Using heat, dissolve 10g potash alum in 50 ml water
- Warm purple alkaline solution to about 50 ˚C and add alum solution very gradually, stirring, until there is no further effervescence, the pH is about 6-7, and precipitation of purplish-red lake pigment appears to be complete
- Leave to settle overnight
- Next day, filter the pigment, wash with water until filtrate is clear (pour water over the filtered pigment) and allow to dry

Cochineal (ground)



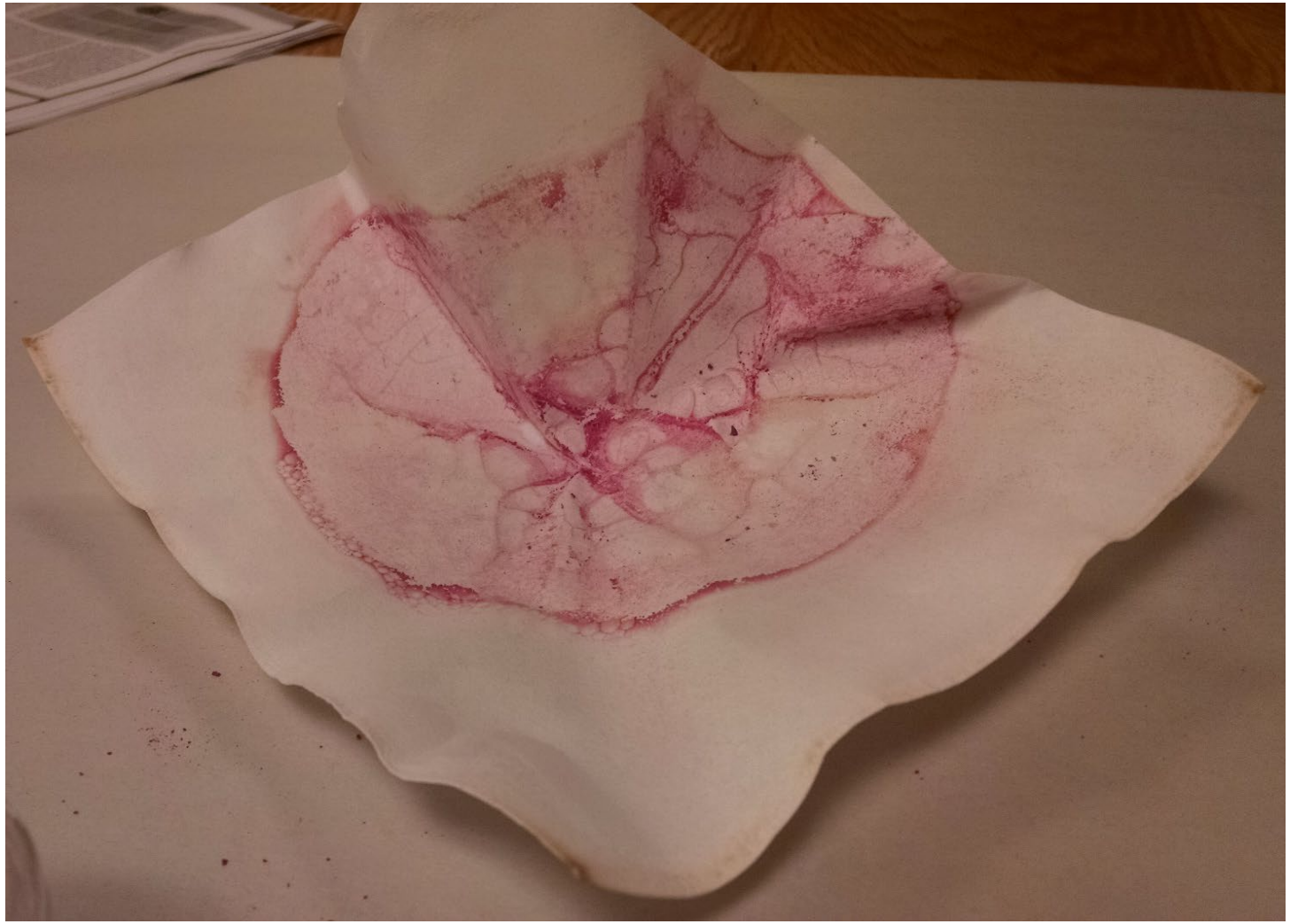
Boiling with water

With potash and potash alum

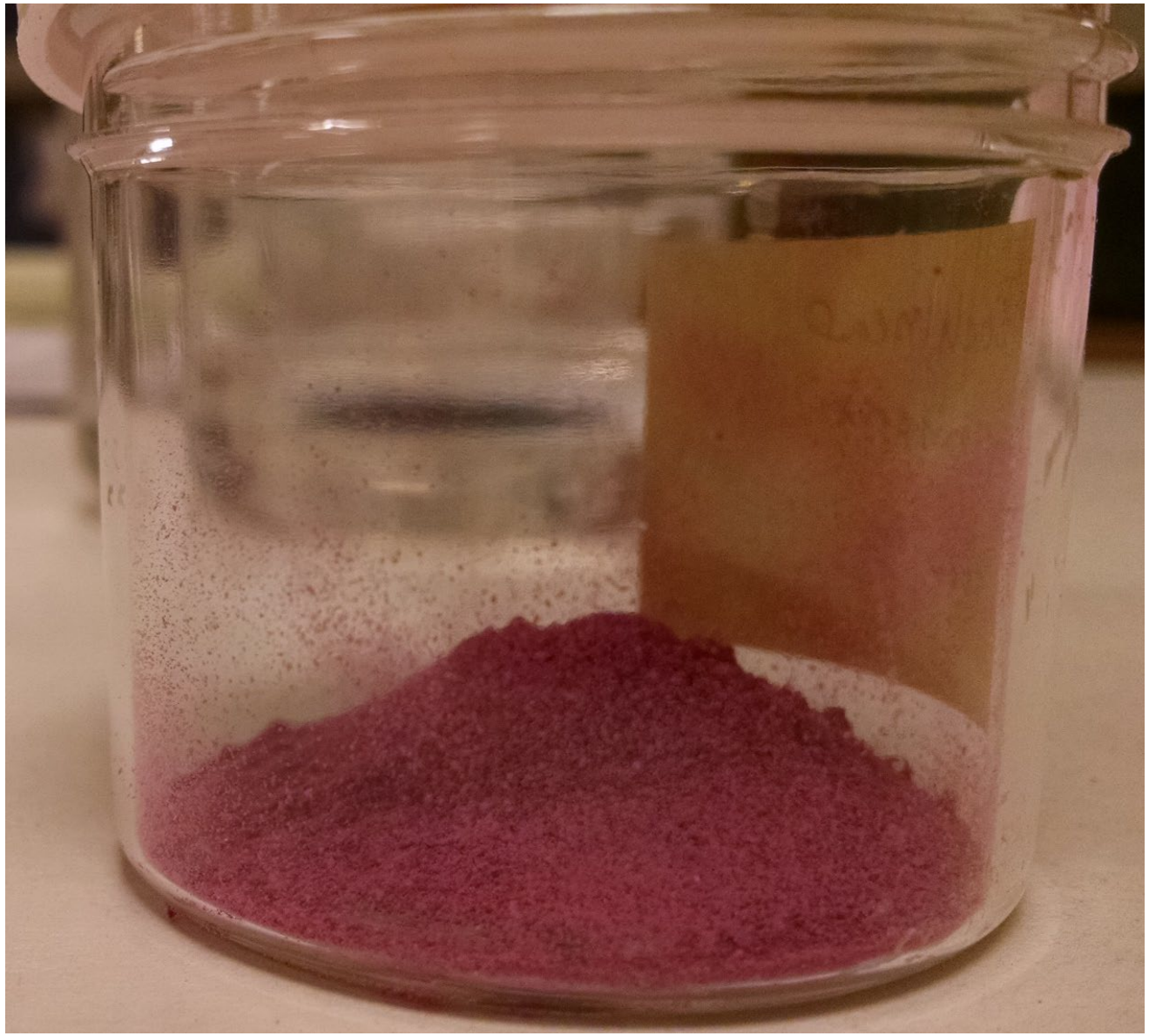


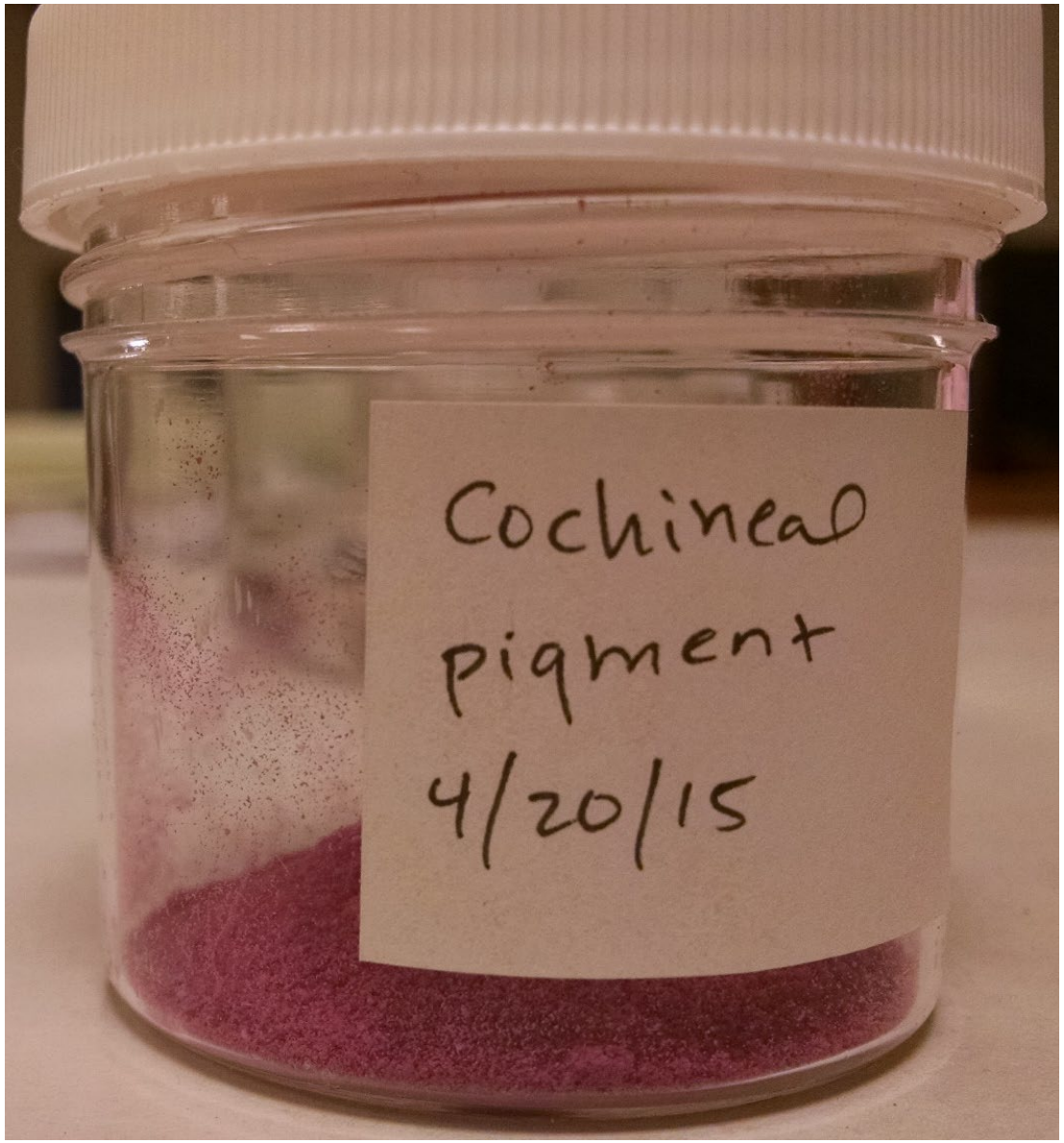
Cochineal solution, settled overnight

Filtered,
ready to be dried



Pigment, filtered




Cochineal
pigment
4/20/15

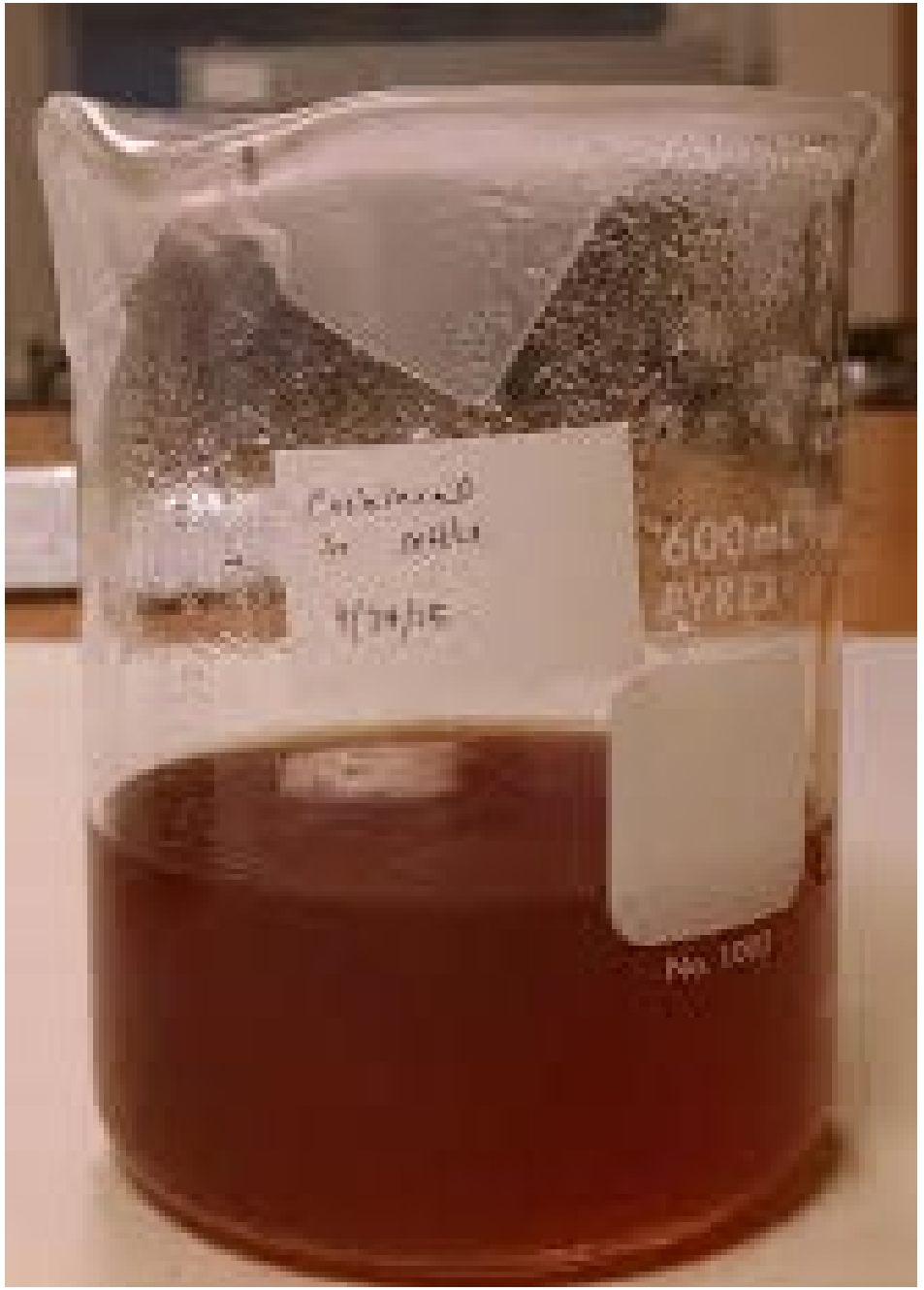
Ink – 1:9 Pigment:Gum Arabic Solution

	Gum arabic	Egg white
Madder #1		
(settled overnight) Madder #2		
Cochineal		

Cochineal #2

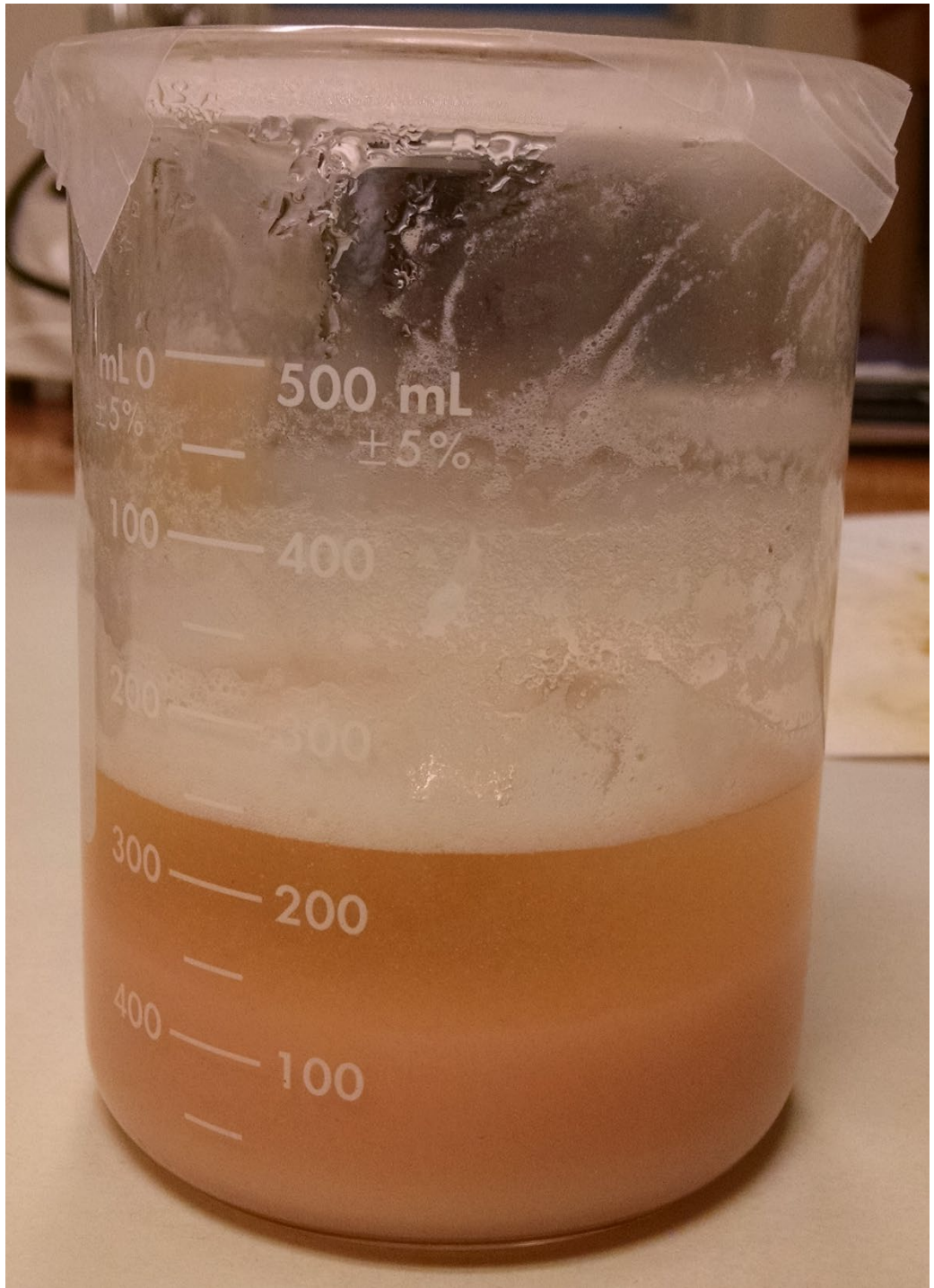
Left to settle overnight after boiling, then filtered

Settled overnight

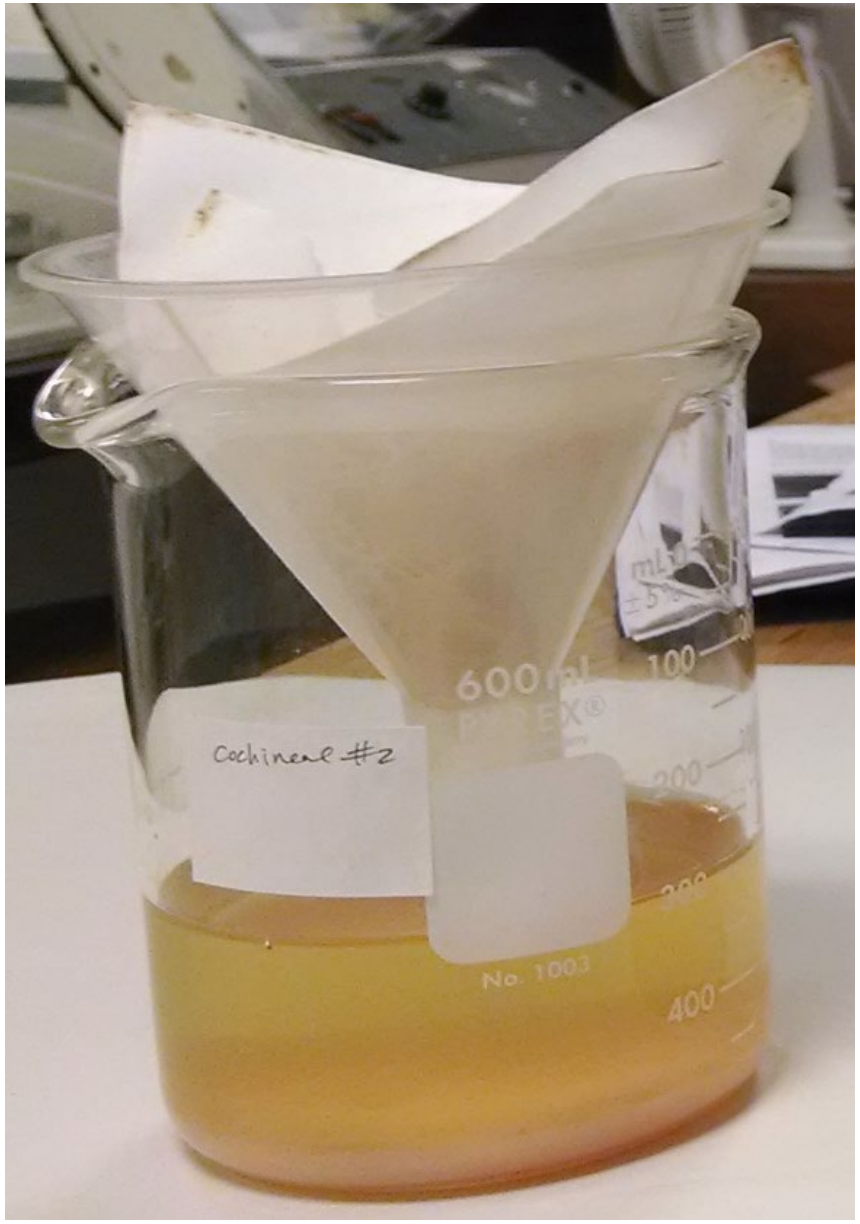


With potash and potash alum

Settled overnight

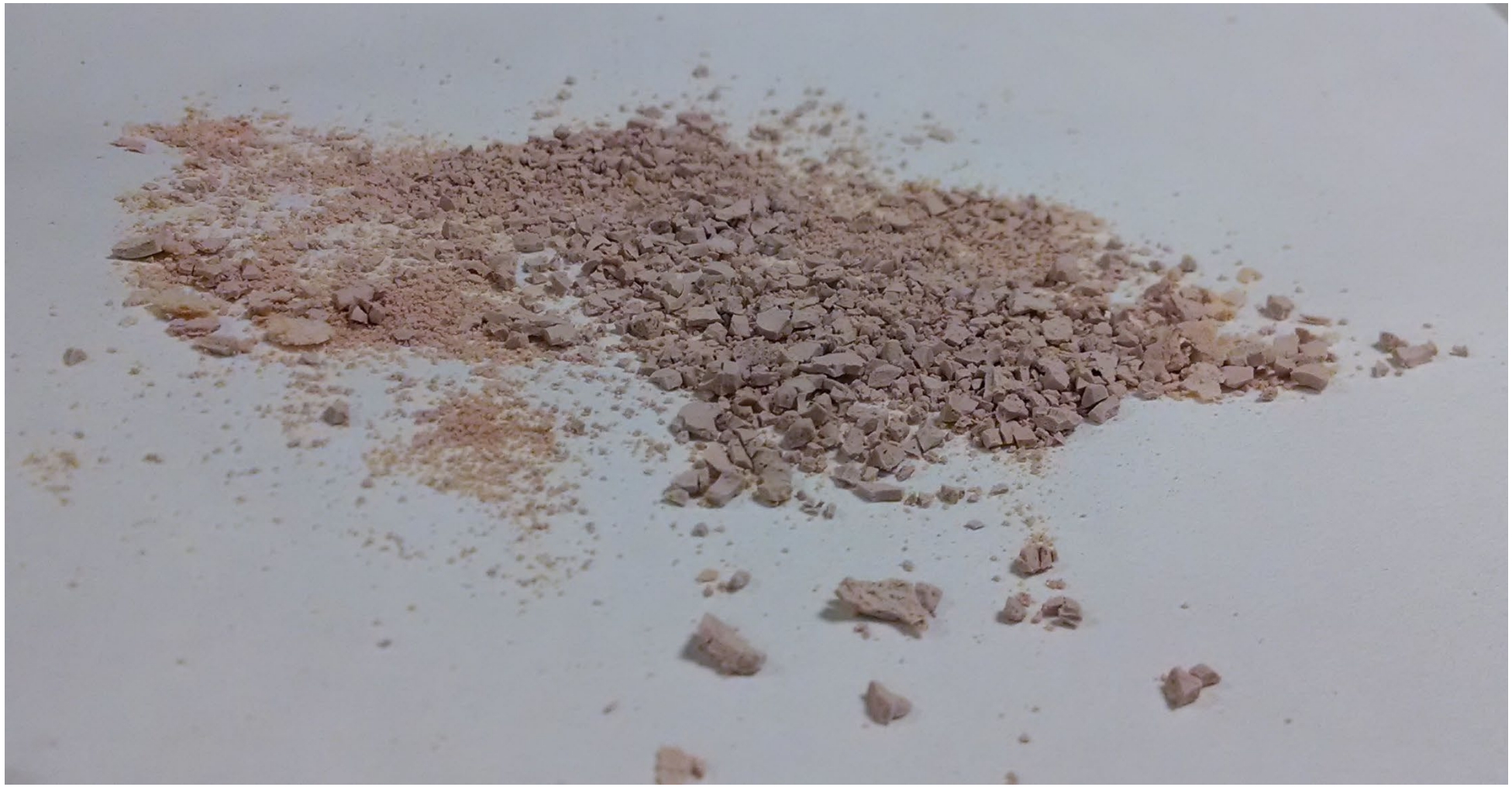


Filtering

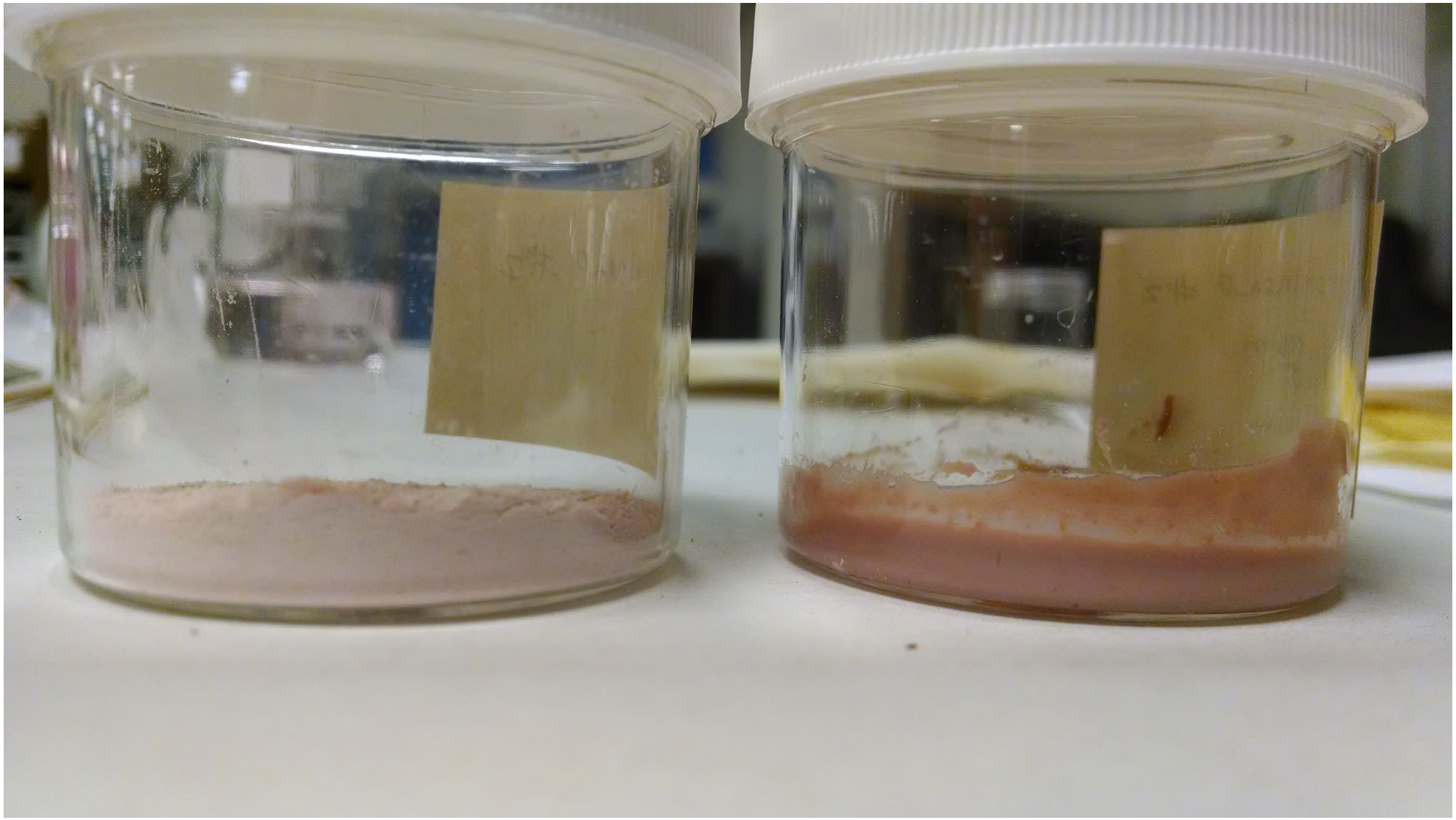


Filtered overnight

Washed



Ink – 1:9 Pigment:Gum Arabic Solution



	Gum arabic	Egg white
Madder #1		
(settled overnight) Madder #2		
Cochineal		
(settled overnight) Cochineal #2		

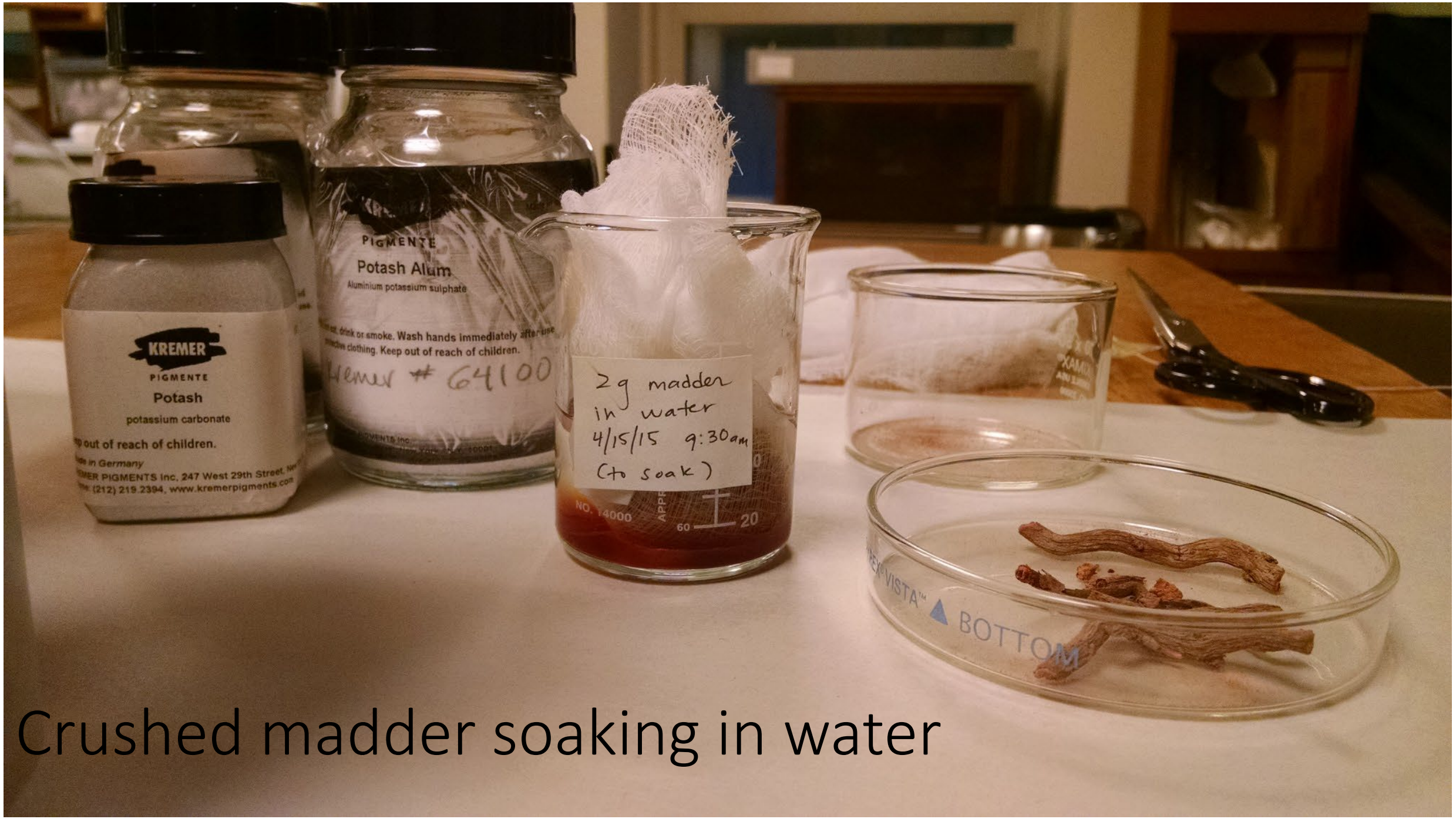

Madder #1

Ingredients

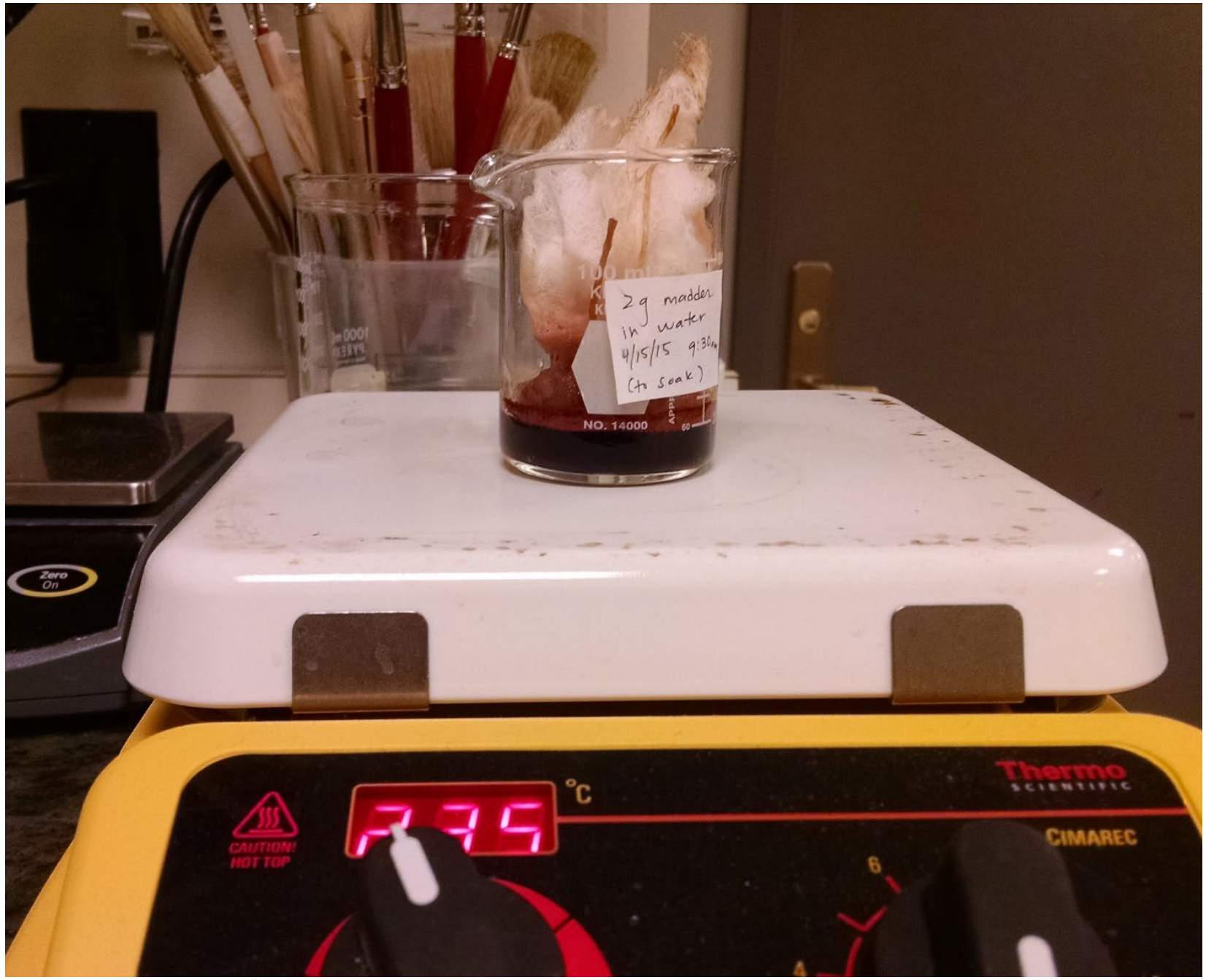
- 2g coarsely ground madder root
- Polyester netting bag (or cheesecloth or something similar)
- 60 ml water
- 1g potash alum
- 0.4g potassium carbonate
- 40 ml water
- Water to wash

Recipe:

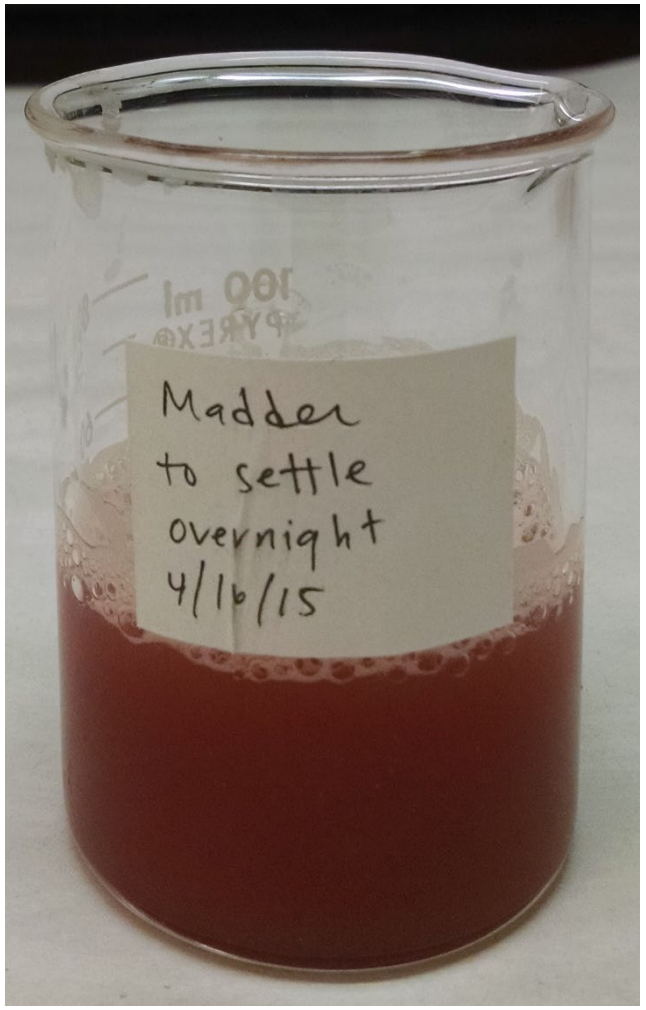
- Enclose madder in a polyester netting bag large enough to allow the plant material to move freely and water to penetrate it
- Soak overnight in 60 ml water in 100 ml or larger beaker
- After soaking, heat solution to 70 ˚C and extract dye at this temperature for 30 min
- Remove bag
- If necessary, filter while still hot through folded filter papers
- Add 1g potash alum to warm solution and heat to 80 ˚C
- Meanwhile, make up solution of 0.4g potassium carbonate in 40 ml water in 250 ml beaker
- Add dyestuff solution to this alkaline solution very slowly, stirring constantly
- Check pH (should be about 6)
- Leave to settle overnight
- Next day, filter pigment and wash with water until filtrate is clear
- Filter to remove all liquid and allow to dry



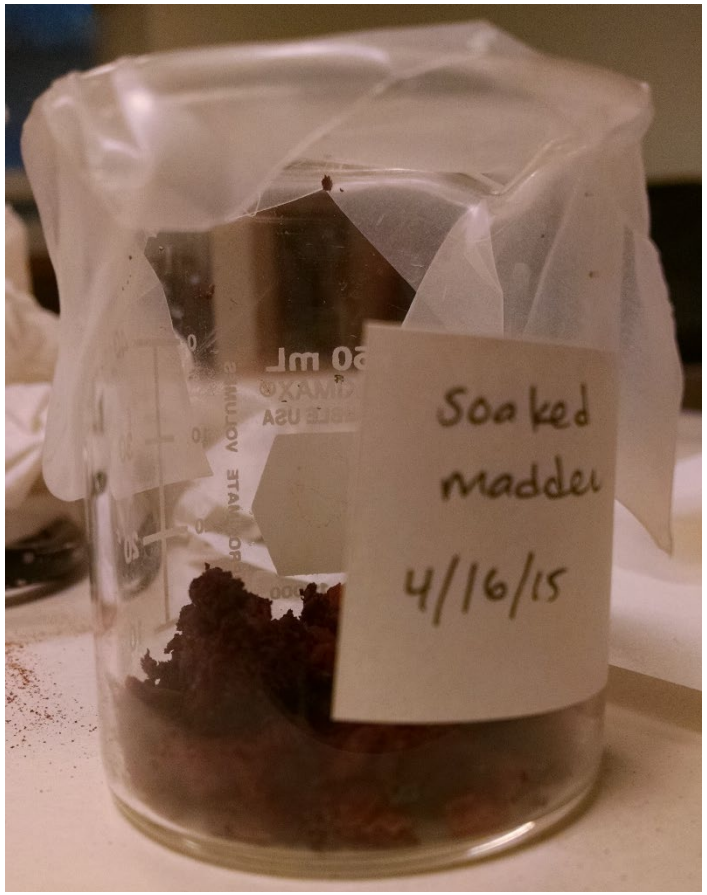
Crushed madder soaking in water


2g madder
in water
4/15/15 9:30pm
(to soak)
NO. 14000
Zero
On
CAUTION!
HOT TOP
°C
Thermo
SCIENTIFIC
CIMAREC

Madder solution, settling overnight



Soaked madder (roots)



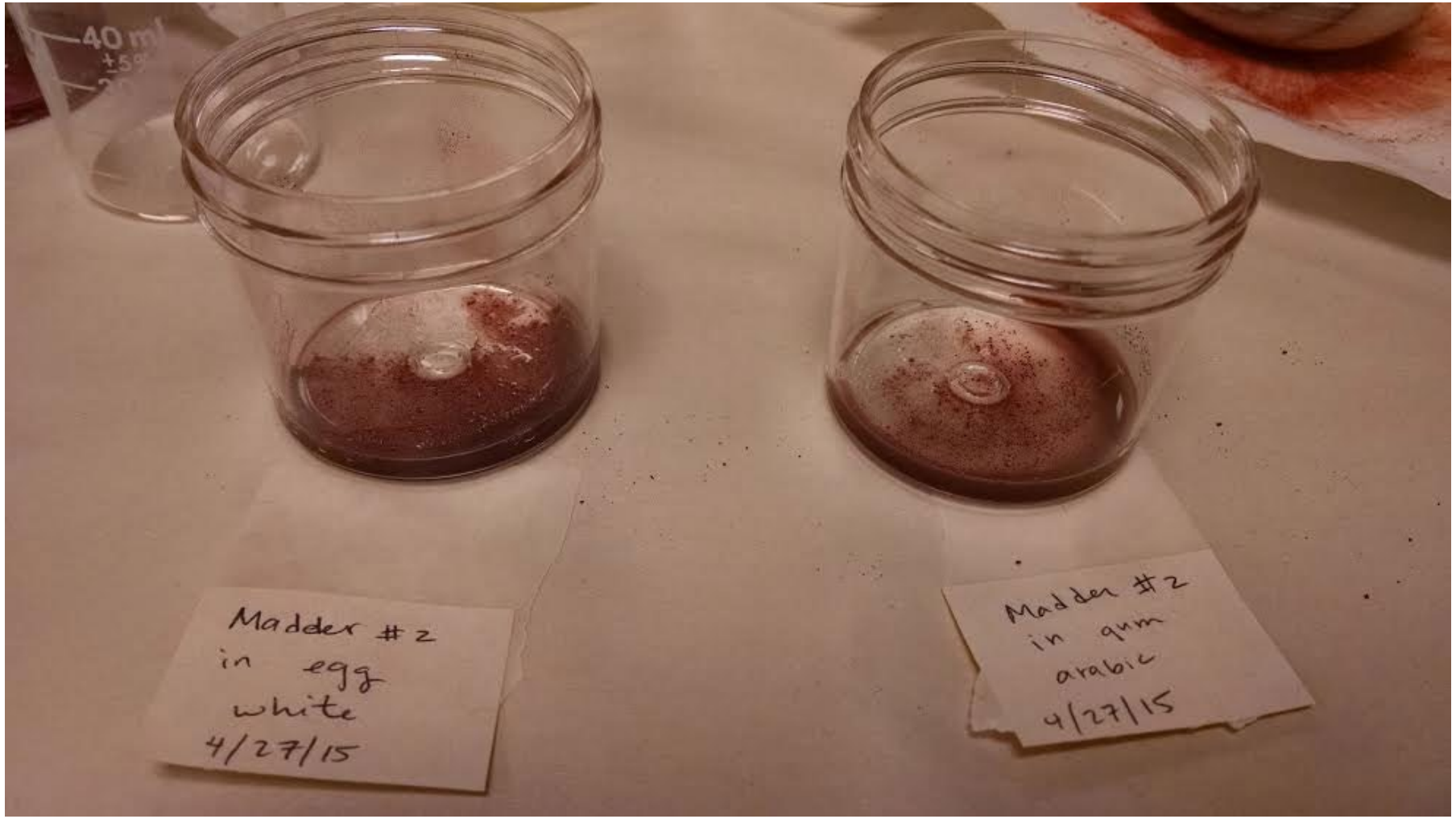
Filtered pigment

Ink – 1:9 Pigment:Gum Arabic Solution

Madder #2

Double the yield

Ink – egg white, gum arabic



	Gum arabic	Egg white
Madder #1		
(settled overnight) Madder #2		

Buckthorn Berries

Recipe calls for unripe – this one is done with ripe (changes in color)

Ingredients

- 10g ground buckthorn berries
- Polyester netting bag (or cheesecloth or something similar)
- 600 ml water
- 30g potash alum
- 180 ml water
- 10g potassium carbonate
- Water to wash

Recipe:

- Enclose berries in a polyester netting bag large enough to allow the plant material to move freely and water to penetrate it
- Soak overnight in 600 ml water in 1 liter beaker
- Next day, bring to a boil and boil for 30 minutes
- Remove bag and filter the hot solution
- Add 10g potassium carbonate and heat to 80 ˚C
- The pH will be about 11-12
- Dissolve 30g potash alum in about 180 ml water (this will need to be heated); this is an excess and not all will be used
- Add alum solution (pH of about 3) gradually to alkaline dye solution while stirring. Continue to add until there is no further effervescence. Check pH regularly. Stop adding alum when pH is about
- Leave to settle overnight
- Next day, filter pigment and wash with water until filtrate is clear
- Filter to remove all liquid and allow to dry

Ground berries

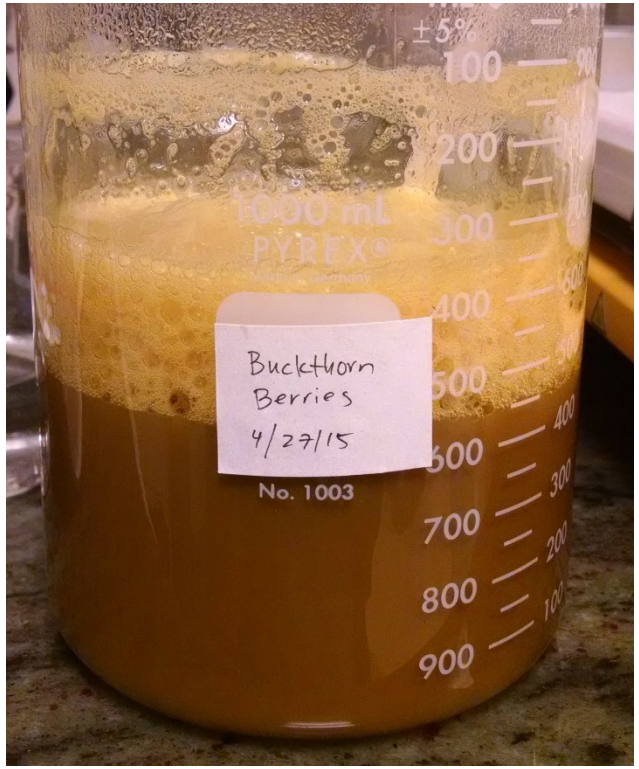
In water – to soak overnight

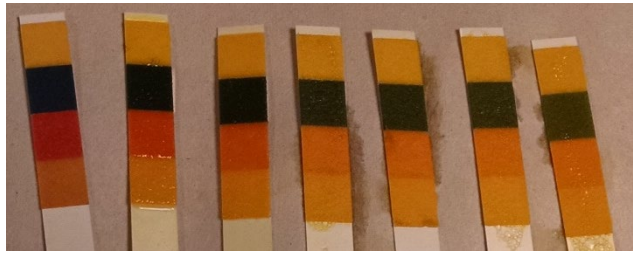
Boiling

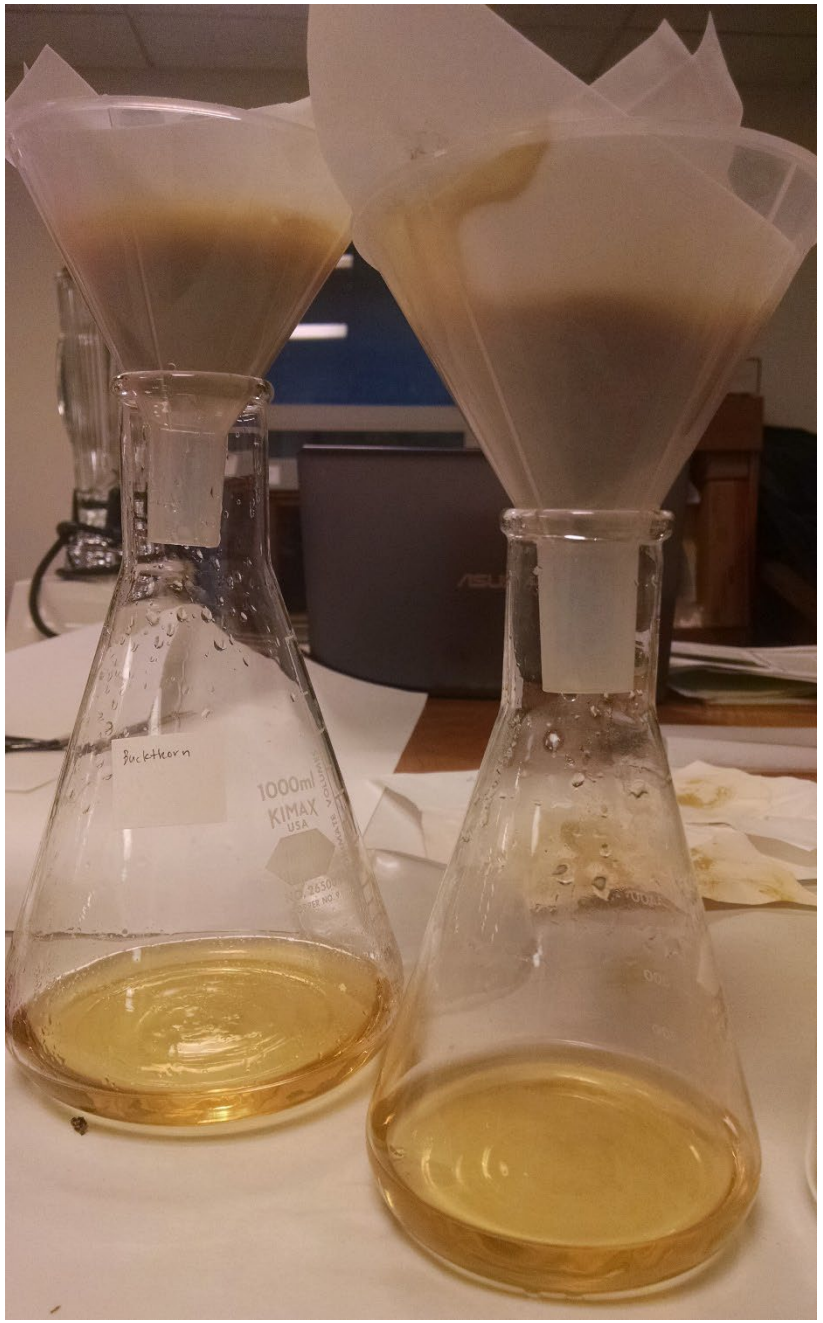
Settled overnight

Filtering

With potash alum and potash

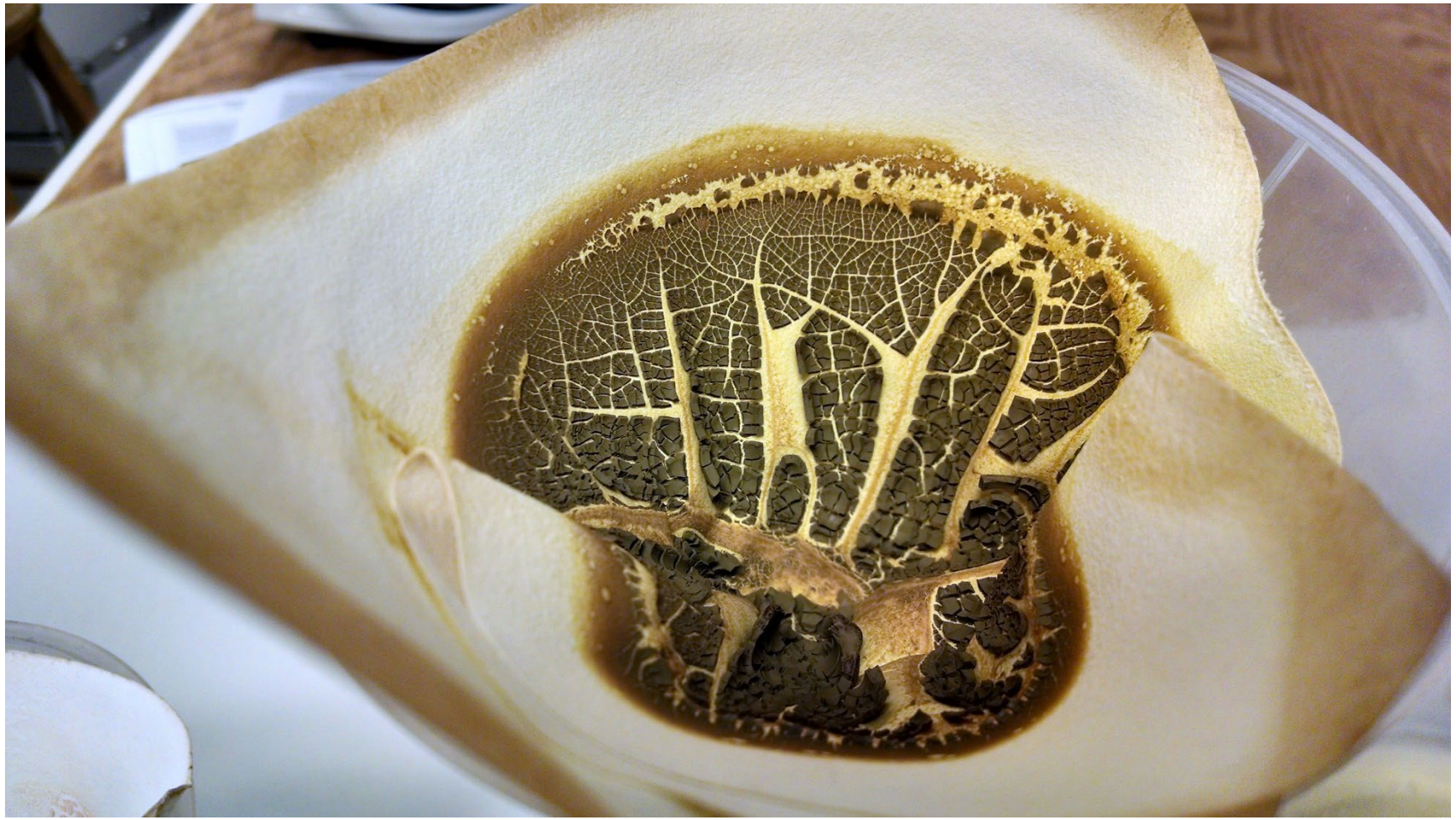




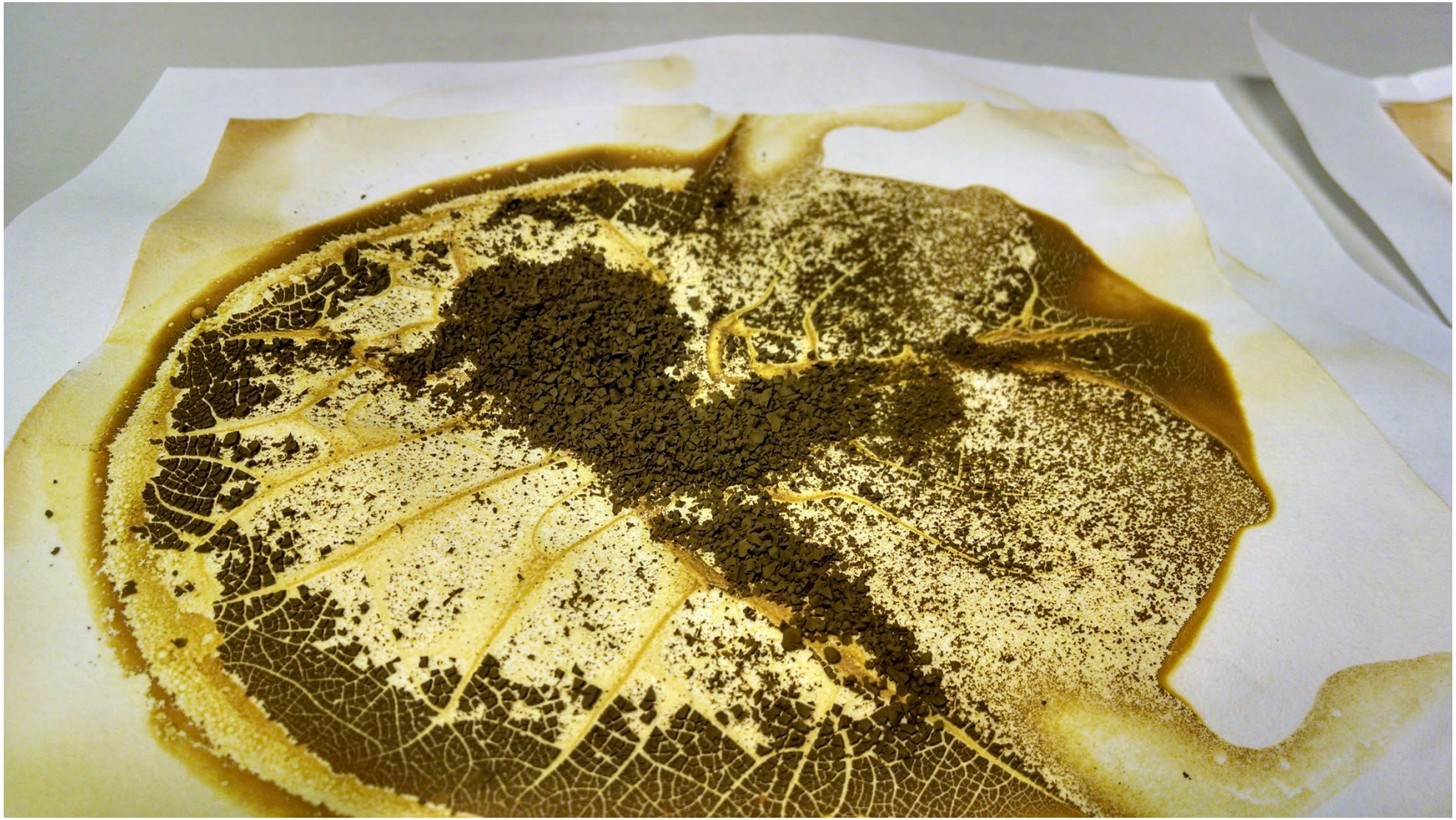


Filtering

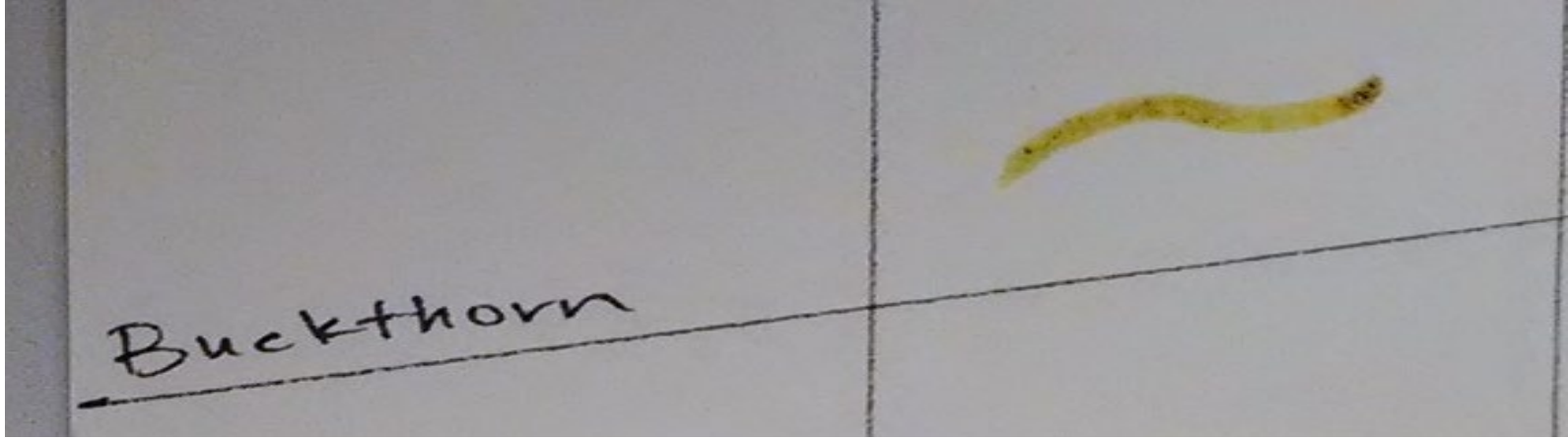
Filtered overnight

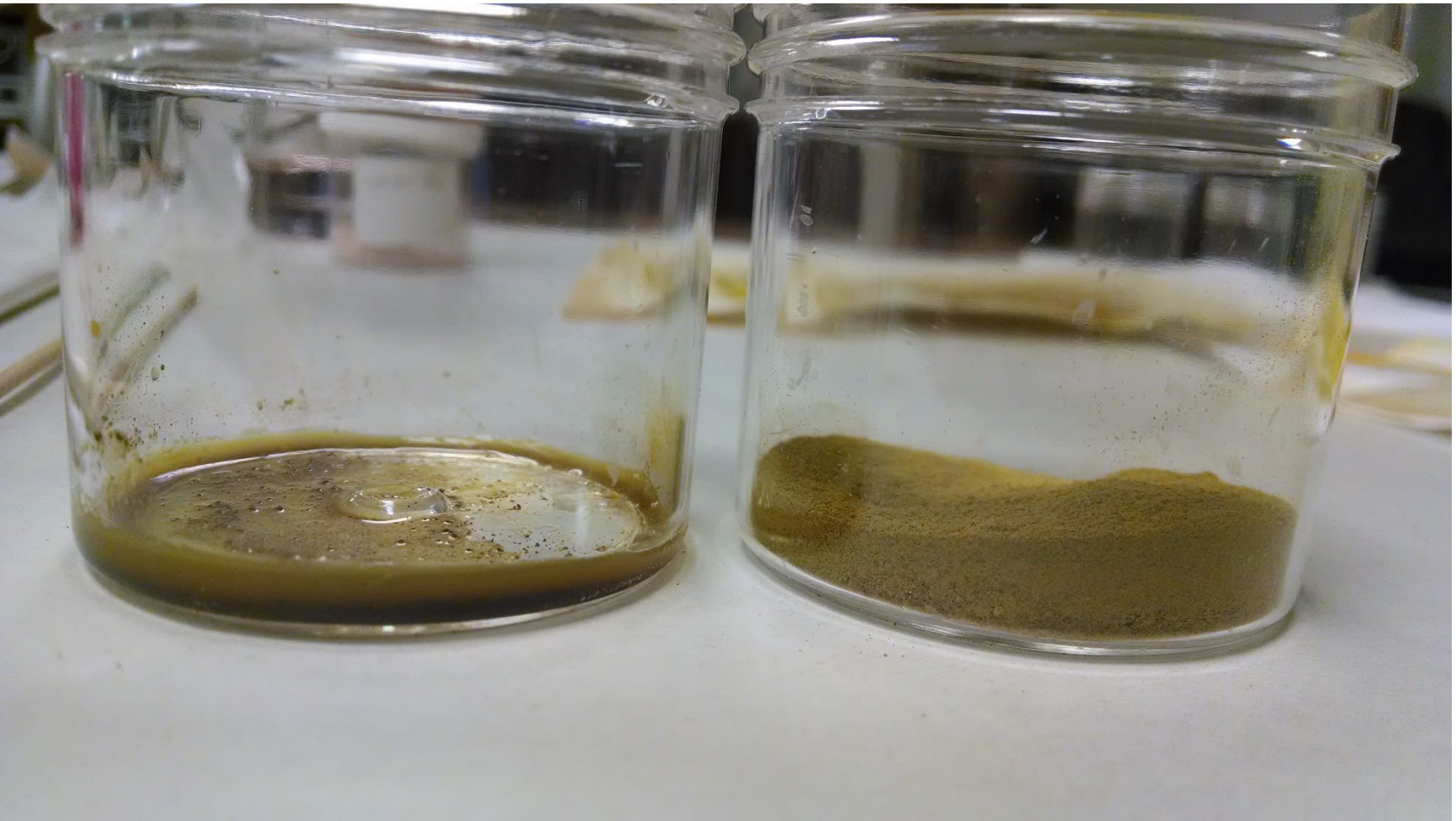


Washed



Ink – 1:9 Pigment:Gum Arabic Solution






Brazilwood

Ingredients

- 10g ground brazilwood shavings
- Polyester netting bag (or cheesecloth or something similar)
- 300 ml water
- 6g potash alum
- 250-300 ml of 0.1M potassium carbonate (13.82g in 1 litre water)
- Water to wash

Recipe:

- Enclose brazilwood shavings in a polyester netting bag large enough to allow the plant material to move freely and water to penetrate it
- Place in 600 ml or 1 litre beaker with 300 ml water
- Bring to a boil and boil gently until volume of liquid has reduced to about 160-200 ml
- Remove bag and filter off brownish solution with folded filter paper
- Add 6g potash alum and heat to 50 ˚C until it dissolves; the solution will become bright red
- Keep temperature at 50 ˚C
- Add 0.1 M potassium carbonate gradually, stirring until no further effervescence is observed
- The pH should be about 6-7
- Leave to settle overnight
- Next day, filter pigment and wash with water until filtrate is clear
- Filter to remove all liquid and allow to dry

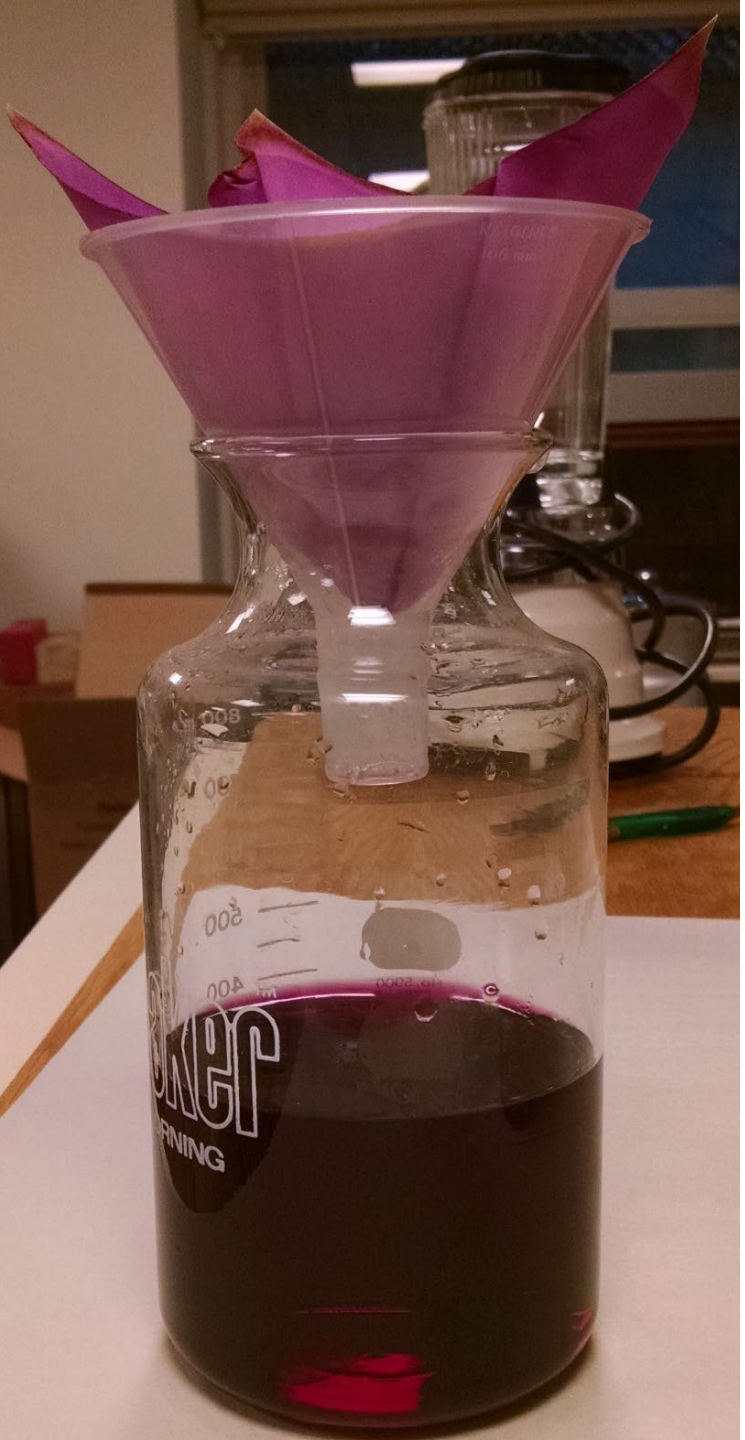
Boiling

Boiled down; potash alum added

With potash

Settled overnight

Filtering

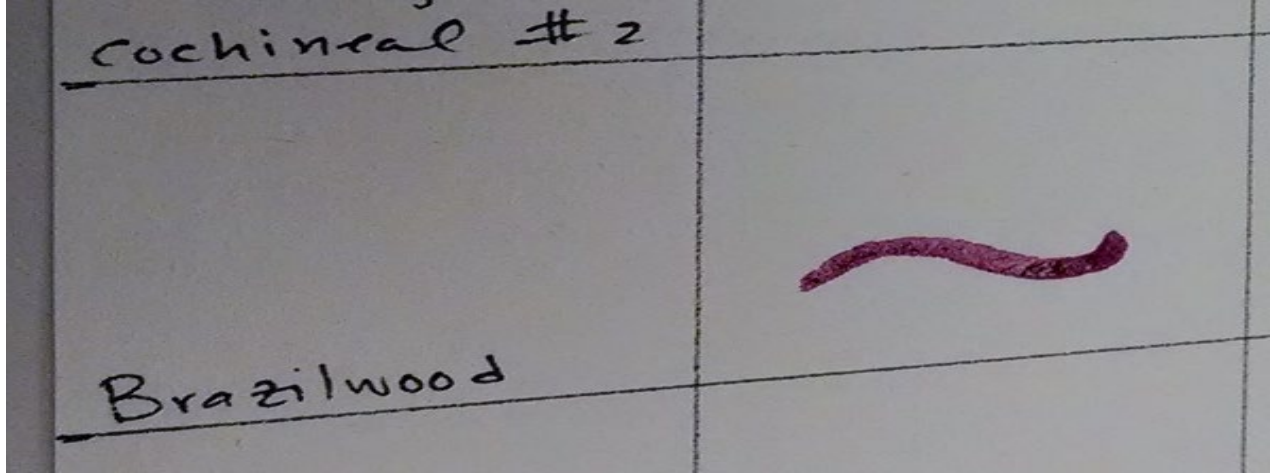


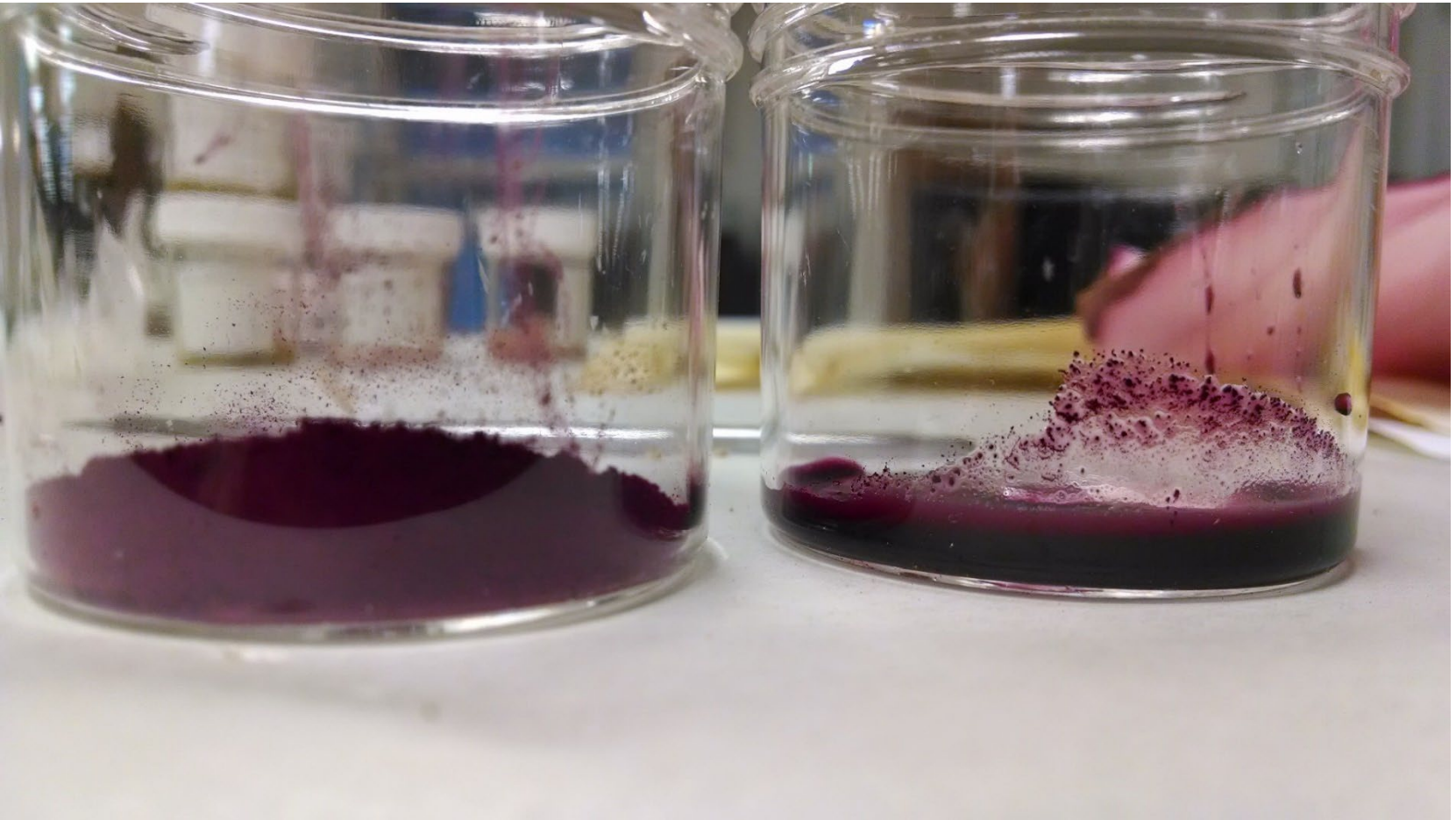
Filtered overnight


Filtered
overnight, scraped


Washed

Ink – 1:9 Pigment:Gum Arabic Solution





Miscellaneous pictures

Filtering – cochineal #2, buckthorn, brazilwood

Shelf of material

Wooden sticks carved into pen nibs

Pigment card