



Are More Expensive Acrylic Paints Better?

Question/ Hypothesis

Is more expensive acrylic paint better than less expensive acrylic paint?

I believe that the brand of paint that we spent the most money on will be better than the less expensive acrylic paint.

By saying "better" I mean that the acrylic paint is fastest to dry, has color vividness, does not crack when dry, and has gloss.

Introduction

Have you ever been to the store looking for acrylic paints but don't know which one to choose? Will one paint be better than the other for your art projects? In this experiment I will be testing 5 paint brands varying in prices to see if there is a difference in the overall quality and dry time.

I am testing the connection between price, dry time, and quality which includes color vividness, cracks, and gloss.

Research

- Meant to be fast drying
- Water based
- Considered durable
- Water resistant when dry
- Usable on many surfaces
- Has qualities of oil & water paint
- Easy to remove if not dry
- Hard to remove if dry
- Non- toxic unlike other paints
- Holds color better than other types of paint
- After 12 hours acrylic paint considered cured

Materials

- Acrylic paint (5 brands)
- 50 Mini canvases (2.56in x 2.56in)
- 5 Brushes
- 10 ML syringes (x5)
- Legal sized printing paper
- Elmers glue stick
- Poster board (x2)
- Thermometer
- Kitchen timers (x5)
- Scissors
- Scotch tape
- Disposable bowls (x5)

Variables

Dependent Variables:

- Time
- Amount of paint used per canvas

Independent Variables:

- Paint Brands
- Canvas/ Material

Controlled Variable

- Temperature (room temp at 72° F)

Acrylic Paints

Label	Brand	Price Per Ounce	Ounces Per Bottle
A	Grumbacher (Walmart)	\$1.70	2.5 oz
B	Liquitex (Michael's)	\$1.37	4 oz
C	Essentials (Walmart)	\$0.78	4 oz
D	Craft Smart (Michael's)	\$0.37	4 oz
E	RichArt (Dollar Tree)	\$0.25	4 oz

*1oz = 29.574ml

Set Up for Dry Time Tests

1. Folded legal sized paper in half horizontally.

2. Glued 5 canvases in a row inside the folded legal sized paper. (Repeat x5)

3. Glued paper w/ canvases onto poster board.

4. Set up other materials (syringes, paint bottles, paint brushes) by labeling them from A-E.



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Set Up for Color Vividness/ Cracks/ Gloss Tests

1. Glue canvases onto poster board in 5x5 grid

2. Glue on time frames on left sides of poster board

3. Set up all other materials (syringes, paint bottles, paint brushes) and get them ready for use

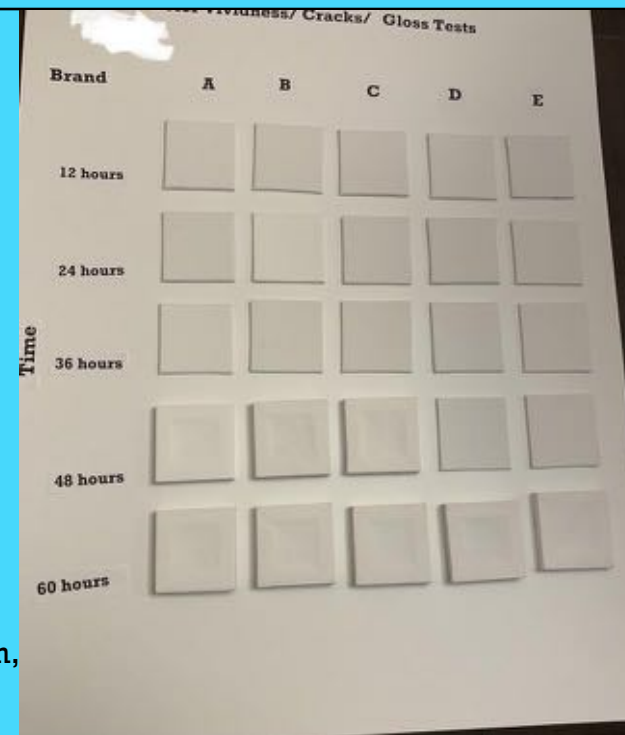


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Acrylic Paint Brands Labeled for Testing



Procedure for Dry Time Tests: All Tests Run At 72° F

1. Label paint containers, A-E, label brushes and syringes to match paint containers.
2. Fill syringes with 10ml of paint from each brand
(5 ml will be used for dry time tests. 5 ml will be used for color vividness / cracks / gloss tests).

3. Set out 5 bowls and place syringes and matching brushes (separated by brands) into each bowl.

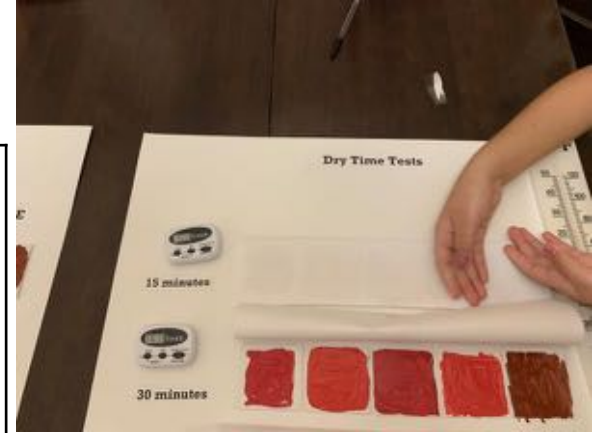
4. Apply 1 ml of paint from each brand (in order from A-E) on each canvas on 15-minute row. This will be repeated for every row after completing step 5.

5. Use brush to spread the 1ml of paint onto each canvas on the row, using only the brush that matches that brand being spread. Repeat this step after completing step 4 on each row.

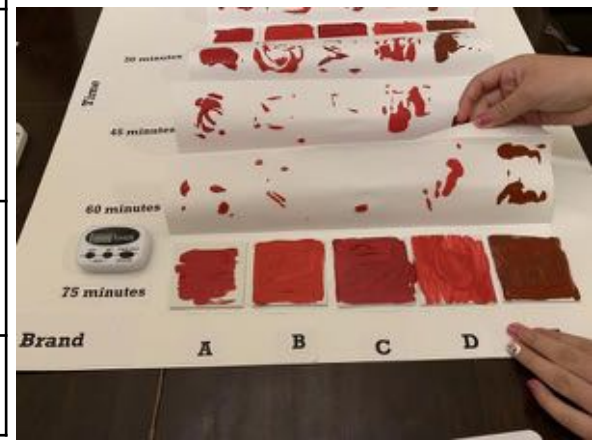
6. After completing step 4 and 5 of each row, start timer with minutes matching time, 15 min, 30 min, 45 min, 60 min, and 75 min. Repeat timer setup after every row to start time.

7. At reached time, fold down the top part of the legal sized paper onto painted canvas making complete contact between dry legal sized paper and canvas row.

8. Repeat step 7 at every designated time when timer indicates time is up.



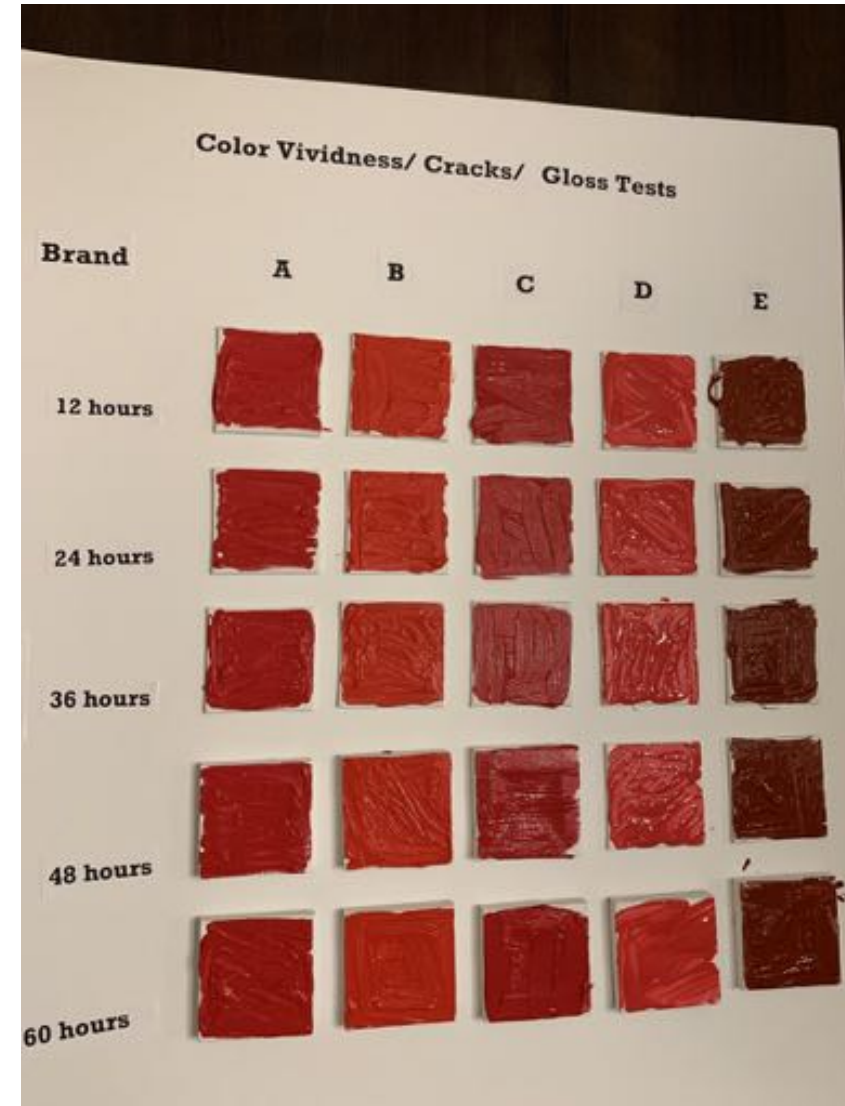
Images taken by mom 1/30/2022



Procedure for Color Vividness/ Cracks/ Gloss Tests: All Tests Run at 72° F

Image taken by mom 2/1/2022

1. Use Syringes from "Dry Time Tests" to pour paint onto rows. Pour 1 ml of paint onto each canvas for each test time.
2. Brush paint onto canvases and leave to set.
3. After 12 hours check first row and write yes or no to questions in notebook, (does it have color vividness/cracks/gloss).
4. Repeat step 3 with 24, 36, 48, 60-hour rows.



Results- Data

Results for Dryness Tests					
1= least paint on paper / 5= most paint on paper					
	Brand A	Brand B	Brand C	Brand D	Brand E
15 min	3	2	1	4	5
30 min	5	3	1	4	2
45 min	5	2	1	3	4
60 min	3	2	1	4	5
75 min	3	2	1	4	5
Averages	19/5 = 3.8	11/5 =2.2	5/5= =1	19/5 =3.8	21/5 =4.2

Results for Color Vividness/Cracks/ Gloss Tests					
CV= Color Vividness / C= Cracks / G= Gloss					
Y = Yes / N = No					
	Brand A	Brand B	Brand C	Brand D	Brand E
12 hours	CV= Y C= N G= Y	CV= Y C= N G= N	CV= Y C= N G= Y	CV= N C= N G= N	CV= N C= N G= N
24 hours	CV= Y C= N G= Y	CV= Y C= N G= N	CV= Y C= N G= Y	CV= N C= N G= N	CV= N C= N G= N
36 hours	CV= Y C= N G= Y	CV= Y C= N G= N	CV= Y C= N G= Y	CV= N C= N G= N	CV= N C= N G= N
48 hours	CV= Y C= N G= Y	CV= Y C= N G= N	CV= Y C= N G= Y	CV= N C= N G= N	CV= N C= N G= N
60 hours	CV= Y C= N G= Y	CV= Y C= N G= N	CV= Y C= N G= Y	CV= N C= N G= N	CV= N C= N G= N
Total	CV=5 yes C= 5 no G=5 yes	CV=5 yes C=5 no G=5no	CV=5yes C=5 no G=5 yes	CV=5 no C=5 no G=5 no	CV=5 no C=5 no G=5 no

Pictures of Tests Completed

Dry Time Tests & Results

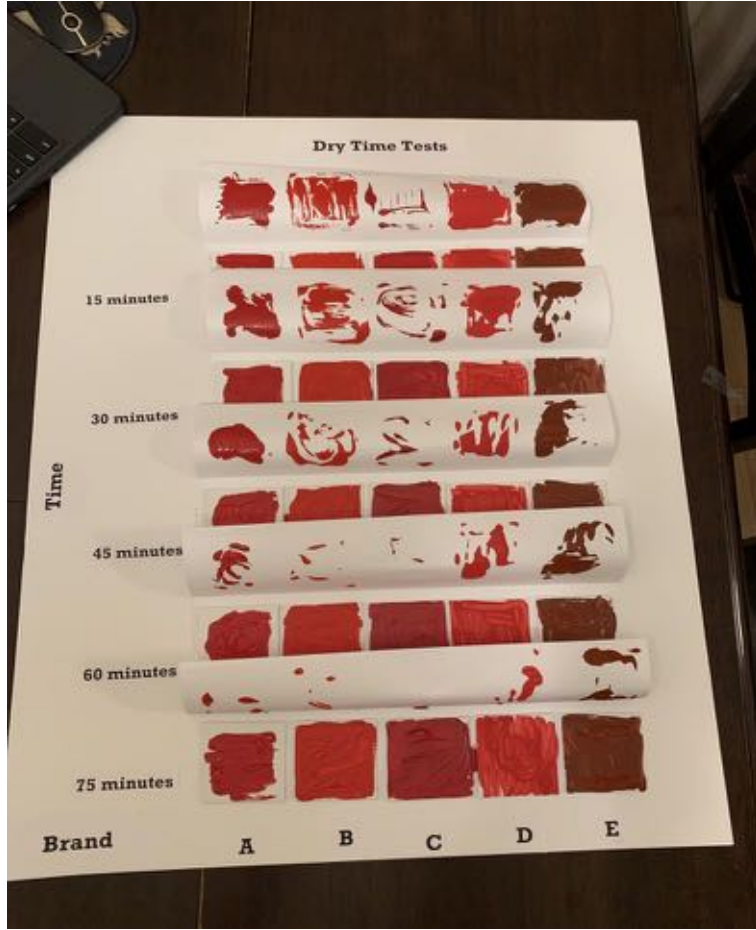


Image taken by mom 1/30/2022

Color Vividness/ Cracks/ Gloss Tests



Image taken by mom 1/30/2022

Observations and Discussion of Results

Dry Time Tests Observations

- Brand C had the least amount of paint left on the paper on average. It also had good consistency, no too thick and not too liquid. This paint being in the middle in comparison in prices.
- Brand E had the most amount of paint left on the paper on average. Which means it takes longer to dry. It was also the most liquid.
- Brand B had the second least amount of paint left on average. This brand was the 2nd highest in price per ounce.
- Brand A and D tied with 3rd and 4th places for amount of paint left on canvases on average.
- Brand C was number 1 every time I tested dry time.

Color Vividness/ Cracks/ Gloss Observations

- Brand A had color vividness, no cracks, and had gloss at all test times.
- Brand B had color vividness, no cracks, and no gloss on all test times.
- Brand C had color vividness, no cracks, and gloss on all test times.
- Brand D had no color vividness, no cracks, and no gloss on all test times.
- Brand E had no color vividness, no cracks, and no gloss on all test times.

Experiment Findings

The point of this experiment was to see if there was any connection between quality and dry time with more expensive acrylic paints and less expensive brands. My hypothesis was proven wrong because brand "C," the mid-range price brand, gave the better results out of all the other brands. Brand A, the most expensive brand had quality, but it did take longer than other brands to dry. Overall, a less expensive brand was found to have good quality and less dry time than another more expensive brand. It also had less dry time than two more expensive brands.

In testing 5 different brands, all tests ran at room temperature of 72 F, the test results showed that the fastest drying acrylic paint was not the most expensive brand, it was Brand C, the mid-range price, actual price is \$.92 cents less per ounce then the most expensive brand tested.

Brand A and brand C were both found to have better quality measured by color vividness, no cracks, and having gloss once the paint is dry.

I also found that the least expensive acrylic paints, brands D and E, did not crack over the measured time, although their finish had no gloss and no color vividness. Therefore, if seeking for a flat finish, this acrylic paint would work.

This experiment is practical and applies to the real world because artists are always buying paints, keeping within budget, and looking for specific qualities. I did this experiment to find out if in our home we needed to buy the more expensive paint to create our art while staying in budget.

In reflecting on the tests ran:

1. I could have poured more carefully on the first row, because some paints were more liquid than others, I accidentally poured 2ml instead of 1ml on one canvas due to the paint being very liquid.
2. I would have liked to run more dry time tests at additional times, like at 90 minutes, 105 minutes, etc.
3. I also wonder if more paint layers on brands D and E would add color vividness.

Image found on Bing 1/29/2022



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The End