

# Tape Wars

*Which Tape is best For Painting Rockets?*

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R&D  
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## **Summary**

This project was to find out what tape is best for painting a rocket. The things I was trying to find out were, I want tape to be flexible, easy to tare, easy to pull off the rocket, have a clean line after it is pulled up, it will not peel off the old paint, the paint will not bleed through under a criss-cross, and it should be pretty cheap.

I tested eight different that are common in most areas. I tested tapes laid down straight lines, I made a criss cross to test layered tape, and curve to see if it was flexible.

I did my test a straight comparison by doing the test at the same time on one board. I painted primer on the board then I wet sanded it to make the board smooth. After that I put white paint on the whole board. Then I laid down all the tapes. Now it was time to paint the black. I chose black so it would be easy to see. After the black paint was dry for two days I pulled off all the tape and started pulling of the and finding my results.

What I found out was that the best tape for straight lines and criss cross was Tamaiya yellow masking tape. For making curves the best tape is Scotch Green tape because none of the paint gets under the tape. For large areas the Scotch Blue tape works best because it has a clean line, can cover large areas, and peels up easy.



## **The objectives of the work**

I am trying to find out which band or type of tape is best for painting. I want the tape to be flexible, easy to tare, easy to pull off the rocket, have a clean line after it is pulled up, it won't peel off the old paint, the paint won't bleed through under a criss-cross, and it should be pretty cheap.

## **The Approach Taken**

Step 1: I picked out eight tapes that I thought would be the best and easy to find in other stores.

Step 2: I went to the stores to buy the tapes.

Step 3: I got a plastic board with a smooth surface to put the different tapes on.

Step 4: I painted grey primer of the board so the other paint would stick well. And then I wet sanded it to make it smooth.

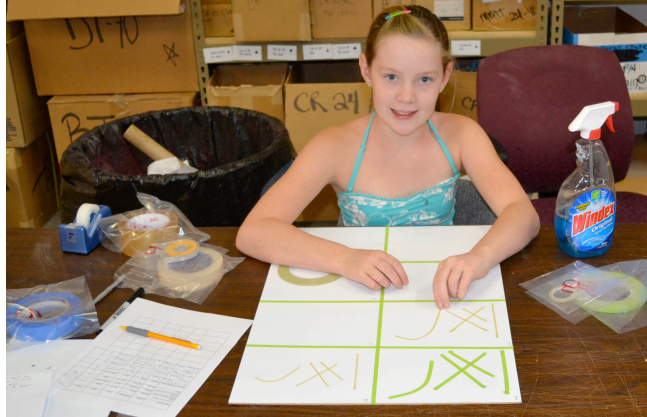


Step 5: I painted the whole board white using Rust-oleum Painter's Touch brand.



Step 6: I waited two whole days for the white paint to dry. Then I divide the board into eight equal sections. To divide the board I used tapeline that would be white.

Step 7: I started to lay down the tape. First I did a straight line with each tape so I could judge how the edge looked. Next I made a criss cross with each tape to see if the paint would go under the tape if the tape overlapped. I then tried to form the tape into a circle. This was to test how flexible the tape is. Some of the tapes didn't bend. I cut the wider tapes to 1/4-inch strips to see if that would held. I only one got into a reasonable circle.



Step 8: I painted two coats of black on the board. I had to let this dry for two days.



Step 9: I peeled off the tape and made my evaluations. I also measured how much curvature each tape had made.



Step 10: I put a piece of tape so that if you looked at my board you could see what the tape looked like.

I found out that six of the eight tapes made a perfect straight line. Also, four out of the eight tapes made a perfect or super close to perfect criss-cross. Only three of the tapes made a noticeable curve.

## The Data Collected

After the paint was dry I got a piece of string and tried to measure the small part of the circle. I made this measurement the radius. I then I made the chart below.



Tape Name	Circle Radius
Scotch 233 Green Tape	5 1/4inch
Pactra Mt 108	1 1/2inch
Scotch 218 Fine Line Tape	1 1/inch
Tamiya Masking Tape	18 1/8inch
Scotch Blue Tape	21 1/4inch
usage Genernal	21 3/4inch
Scotch Magic Tape	24inch
Staples Packaging Tape	12 3/8inch



Here is a chart of all the tapes cost.

Tape Kind	Store	Cost	Length	Thickness	Cost Per foot
Scotch 233 Green Tape	Dales	\$3.35	180feet	6mm	\$0.02
Pactra MT 108 Masking Tape	Hobby Town	\$6.20	20feet	1/8inch	\$0.31
Scotch 218 Fine Line Tape	Dales	\$14.13	180feet	1/8inch	\$0.08
Tamiya Maskaging Tape	Hobby Town	\$4.70	about 120feet	6mm	\$0.04
Scotch Blue Tape	Walmart	\$2.97	180feet	1inch	\$0.02
Usage General Tape	Walmart	\$0.77	180feet	1inch	\$0.01
Scotch magic Tape	Staples	\$2.99.	108feet	3/4inch	\$0.03
Staples Packaging Tape	Staples	\$8.49	375feet	2.8inch	\$0.02

To rank each tape I created a scale system where 10 is best and 0 is worst. I evaluated each criteria:

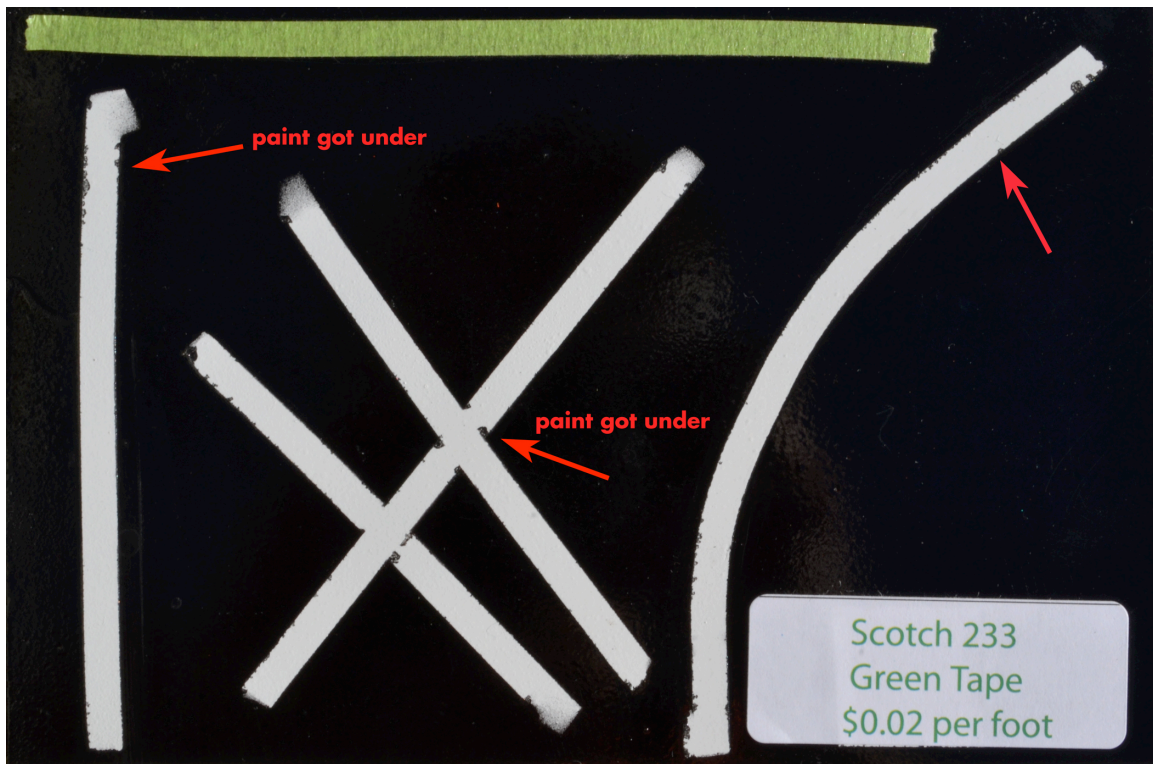
- Straight line – how well the edge is
- Criss cross
- How flexible(circle)
- How well is tares
- How easy it pulls up
- How cheap it is
- If it pulled up the old tape

Then I added up all the numbers to get a total and the tape with the highest total is the best. The chart below shows the results.

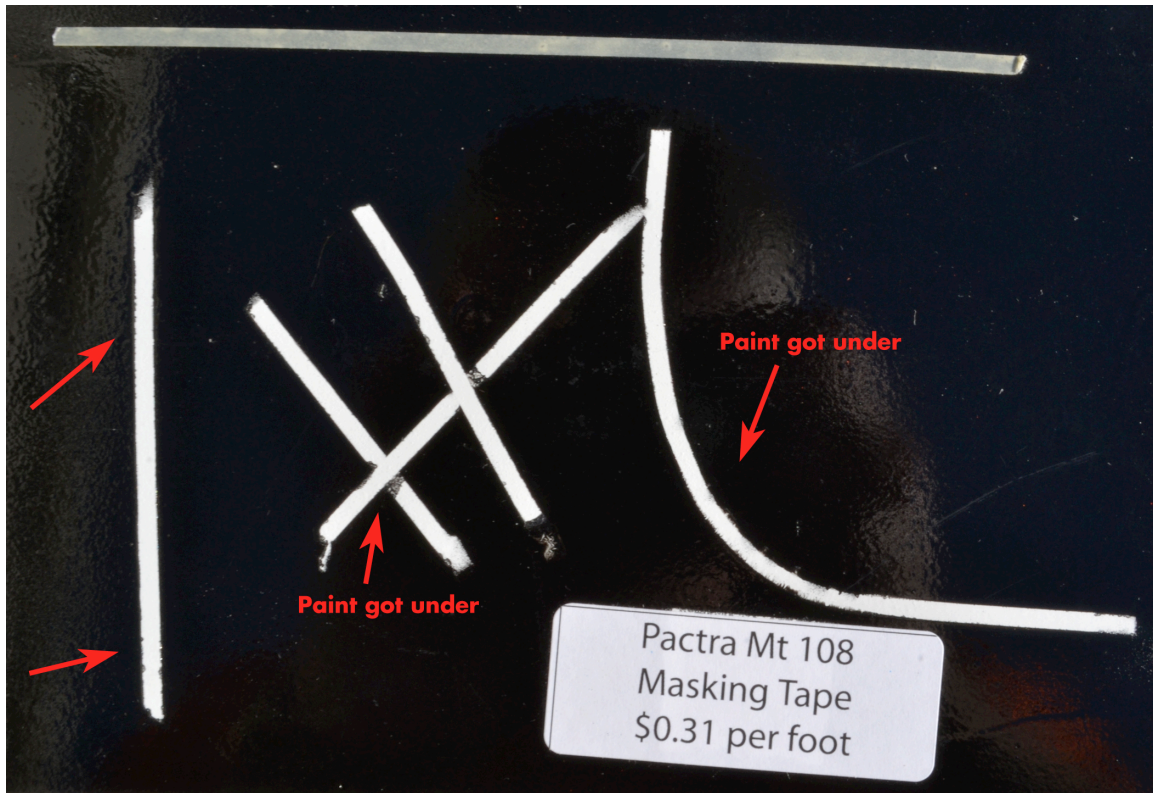
Tape Kind	Straight line	Criss- Cross	Circle	Tare	Pull up	Cost	Old paint peel up	Total
Scotch 233 Green Tape	7	4	6	8	8	9	10	52/70
Pactra MT 108 Masking Tape	6	5	7	4	10	0	10	42/70
Scotch 218 Fine Line Tape	9	5	10	4	10	4	10	52/70
Tamiya Maskaging Tape	10	10	4	8	8	6	10	56/70
Scotch Blue Tape	10	9	1	9	5	9	10	53/70
Usage Genral Tape	8	7	0	9	4	10	10	48/70
Scotch magic Tape	8	7	0	1	1	6	7	30/70
Staples Packaging Tape	9	7	1	0	7	9	8	41/70

## Results of each tape

Scotch 233 Green tape: The straight line was ok but in some places the paint got under the tape towards the edges. The criss-cross was not the best because it got under in a lot of places. The curve was pretty good but not perfect because it wasn't small. The edges of the curve were good because the paint did not get under very much. The price is a good price for tape.



Pactra Mt 108 Masking tape: The straight line was the second worst line because the paint got under a lot of spots. The criss-cross was the worst of all the tapes because it got under in a lot of spots. The curve was tight but the tape came up before the paint was dry. The edges were very fuzzy. The cost is horrible; it is super expensive.

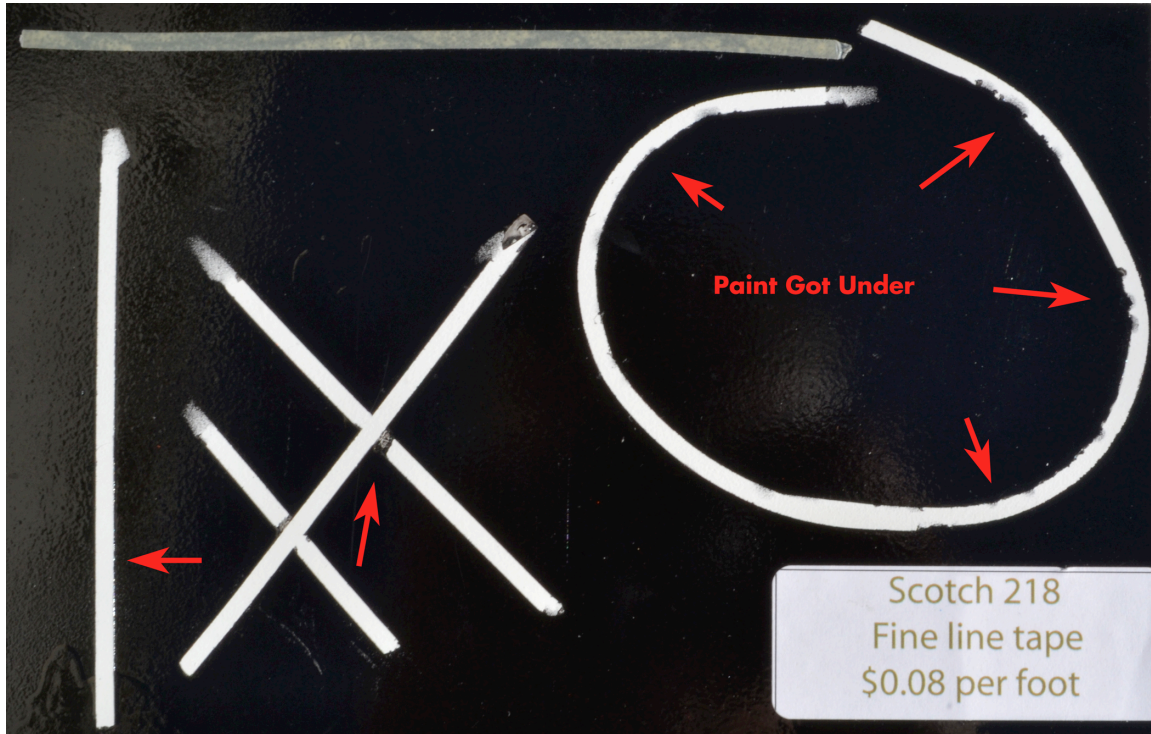


Below is a picture of the tape coming up:

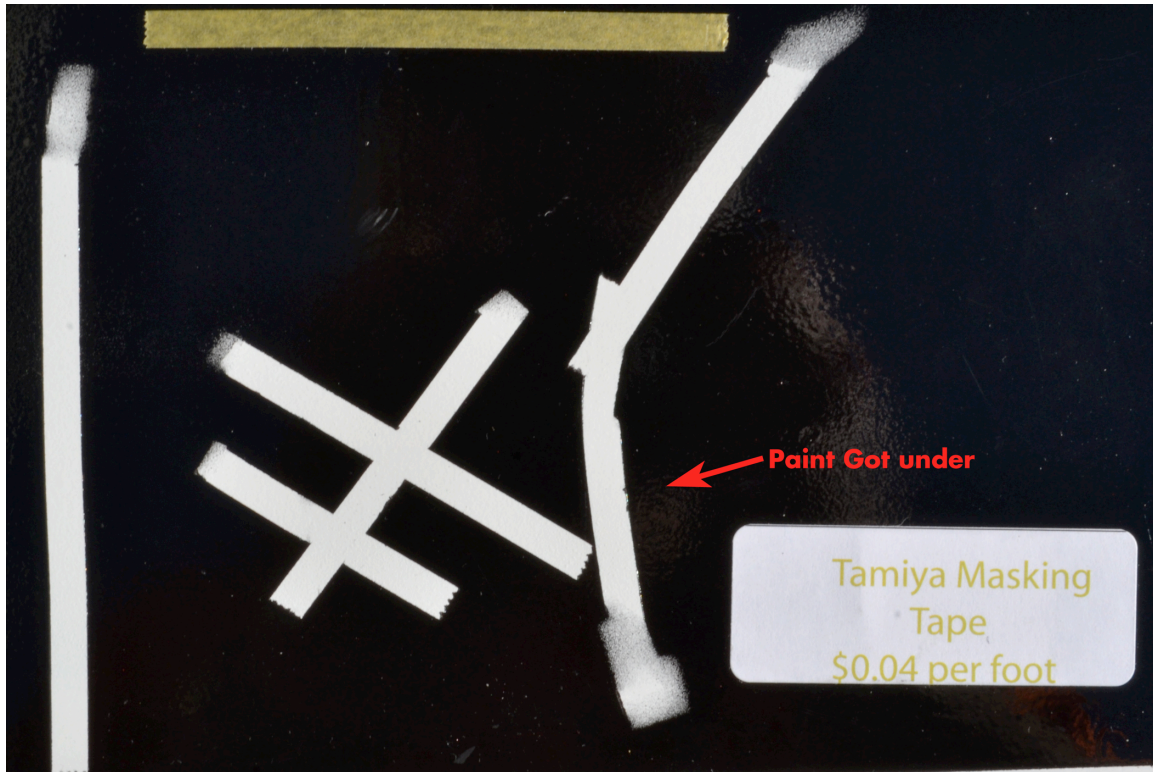




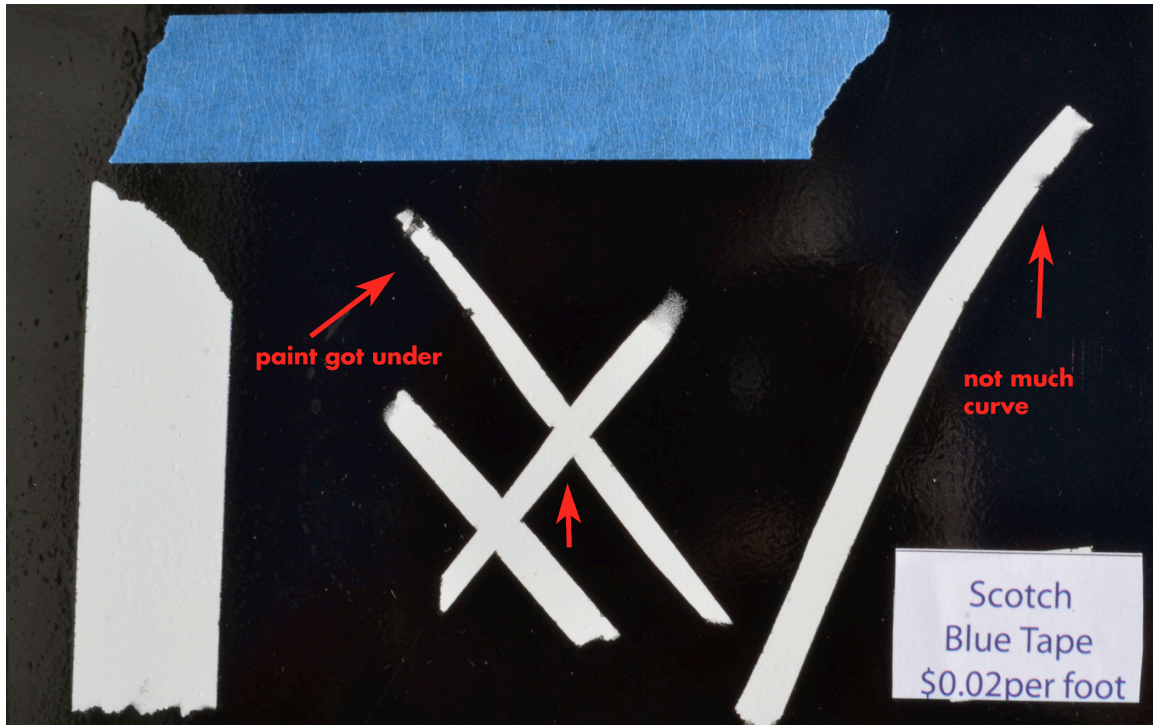
Scotch 218 Fine Line Tape: The straight line is perfect none of the paint got underneath. The criss-cross was bad, a lot of paint got under at the corners. The curve was great because it made a super tight circle for tape but the tape puckered at tight curve and paint got under. The cost is high not horrible.



Tamiya Maskaging Tape: The straight line is perfect none of the paint got under. The criss-cross is good too. No paint got under so that makes it the best of all the tapes. The curve was horrible the tape did not want to curve but the edges looked ok. The price was ok, it was not super cheap but not to high.



Scotch Blue Tape: This tape also made a perfect straight line. The criss-cross was good but there was one little spot where the paint got under. This was another tape that didn't want to curve. Because the tape was so wide, I cut it into 1/4 inch strips to see if that would help it bend. It only helped a little bit. This tape was the easiest to pull up. This tape is a good price, it is pretty cheap.





Duck Usage General tape: The straight line is the worst out of all the tapes tested. The criss-cross was bad in a couple of places. This tape did not curve. Like all the wide tapes I cut it into 1/4 inch pieces. The price is amazing, it is super cheap.

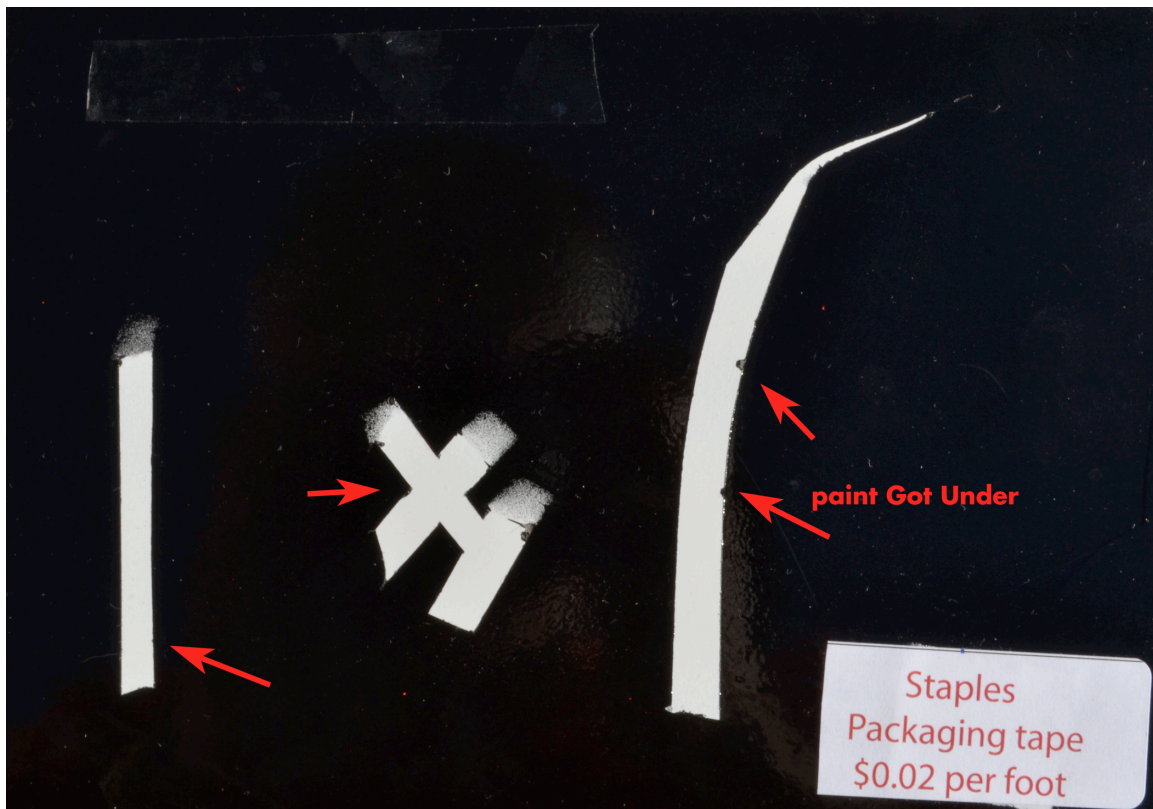


Scotch Magic Tape: The straight line was good, but not perfect. The criss-cross was ok but the paint got under in some places. This tape didn't curve either! This tape is hard to peel up because it keeps ripping when you didn't want it to. The price was ok.



This is a picture of the tape ripping when I was pulling it up.

Staples Packaging tape: I cut this tape into 1/4 inch strips because it is super wide (2 inch). It made a perfect straight line. The criss-cross was pretty good. But the curve was ok. The price was good.



### Further Work

I would like to have more tapes to test.

### **Related R&D Reports**

There are no R&D reports that are related.

### **References**

I had no references.

### **The Equipment Used**

Scotch 233 green Tape  
Pactra Mt 108 Masking Tape  
Scotch 218 Fine Line Tape  
Tamiya Masking Tape  
Scotch Blue Tape  
Duck Usage General Tape  
Scotch Magic Tape  
Staples Packaging Tape  
Paint Primer  
Water for wet sanding  
Wet Sand paper  
A yellow plastic board  
White Paint  
Black Paint

### **The Facilities Used**

The Facilities that I used were my house and Apogee Rockets.

### **The Money Spent (Budget)**

Scotch 233 Green Tape .....	3.35
Pactra Mt 108 Tape.....	6.20
Scotch 218 Fine Line Tape.....	14.13
Tamiya Masking Tape.....	4.70
Scotch Blue Tape.....	2.97
Duck Usage General Tape.....	0.77
Scotch Magic Tape.....	5.29
Staples Packaging Tape.....	8.49
Black Rustoluem Paint.....	8.31
White Rustoluem Paint.....	8.31
Paint Primer.....	8.31
Total.....	70.83



## Conclusion

There is no one great tape for everything but certain tapes are good for specific applications.

The Tamaiya tape is best for a straight line and criss cross. I liked this tape so much I used it for my sport scale model and it turned out great.

For making curves the scotch green tape because none of the paint gets under.

The Pactra tape for the money is too expensive because you don't get good results.

For masking big areas the scotch blue tape is best, and it peels up easier than most of the tapes.

None of the tapes pulled up paint under it. But this might be because I used Rust-oluem paint which sticks down really well.

My recommendation for painting scale models is doing the outline with Tamaiya tape, overlapped with scotch blue tape covering the big areas. If doing curved areas, like on a nose cone, use the Scotch green tape for the outline and again use Scotch blue tape for the big areas inside of the outline.

