



Paint Process for Best Grip with Silicone Tires on MDF

Recommendations Updated: 02 02 2023

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The goal at CNC Track Design is to help you get started on a slot car layout that will exceed your expectations.

- Also implied is we want to help you avoid making any mistakes.

Remember, this is your hobby - which is supposed to be fun and enjoyable.

- A testimony to the learnings from all of your previous DIY projects.
- Everyone should see you at your best when working on your layout.
- This is a labor of LOVE, so no cuss words if you can help it.
 - If something doesn't turn out as perfect as you would like, sand it out and do it again.

If you are like me, you are finally in the moment of your life when you have the space, skill, and finances to build the type of layout that you have been dreaming about since you were a kid.

You may think that building your layout is more enjoyable than racing on it could possibly be. However, you will find out that sharing it with your friends is even more satisfying, and well worth all the effort and expense.

First race on Thunder Road, group photo.





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I did research and painting trials before building my track. See “Track Surface Matrix Prep Summary” under Grip Matrix on the CNC Track Design website. Please download and read carefully to understand the logic of the process I am going to share with you on the following pages.

The most important things you need to keep in mind before painting your CNC Track Design layout:

- **Do NOT use water based paints, especially on raw Medium Density Fiberboard (MDF)!**
- **Do NOT use poor quality or lowest cost primer/paint/rollers/brushes/tape, etc. and expect professional results!**
- **Do NOT rush the painting process.**
 - Do NOT paint on high humidity days.
 - Do NOT paint in a poorly ventilated area.
 - Protect yourself from vapors/fumes by wearing a respirator.
 - Protect your hands with latex gloves.
 - Protect your eyes with safety glasses.
 - Protect your back by having your work piece, roller tray, paint can, etc. at a comfortable saw horse height.
 - Protect your floors from drips using a suitably large drop cloth.
 - Allow plenty of time in between coats for complete outgassing of VOC's.
- **The goal is as smooth of a finish as you can create.**
 - Definitely plan to spray the final (top) coat.
 - Practice with your spray gun on scrap MDF. Prep it just like you did the track sections so you know what to expect.



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Medium Density Fiberboard, (MDF)

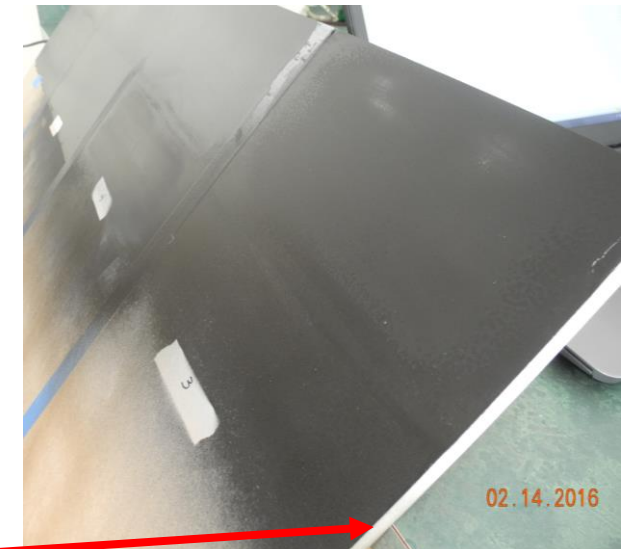
- The “quality” of MDF varies wildly!
 - It is a function of the wood species, fiber size, binders, density and consistency.
- CNC Track Design works with a lumber Expert to procure the “best” MDF products.
 - We order the absolute best and have it delivered by rail.
 - Lately this has been an issue, as rail shipments are only available every 2 months, (used to be every 2 weeks)!
 - CNC Track Design also offers (at no added cost) a C.A.R.B. II compliant No Added Formaldehyde (NAF) resin option for our California customers, or anyone that requests.
 - The best products are never cheap.
 - The best MDF is miserably heavy, because it contains more binders (resin).
- The MDF sold in the big box stores is the cheapest crap that they make the most profit on.
 - MDF is rarely labeled. So even if you go to a quality or specialty lumber yard, you can’t identify what it is.

We have done our research on MDF, and your track will get CNC routed from the best product available!

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Sealing the Edges of the MDF

- Edges of the track sections should be sealed with DAP drywall joint compound. This is kind of a slow, painful process with a putty knife. Getting the “mud” a little wetter than normal helps.
 - You have to be super careful to NOT build-up too much DAP on the edges of the track sections that butt together to form the track joints!
 - Thus, I would be inclined to NOT use DAP on the butted sections of the track, unless you get good at creating an almost zero thickness layer.
 - The uncoated MDF will drink the Zinsser oil based Cover Stain Primer, but that is OK.



DAP applied to edge of MDF test sheet for static inclined “grip” testing.

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Primer Sealer

Roll or spray on 2 coats of an oil based primer.

- Sherwin Williams has an excellent all surface oil based enamel primer, but I could not procure it recently. Generally, it is best to stick with one brand of paint, to ensure that they are compatible.
- I have used Zinsser Cover Stain, white (tintable), product #03501, (in a 1 gallon can) with satisfactory results. An alternate Zinsser product is #03504.
 - **Do NOT use water based paints!**
 - **Before painting, the track sections must be perfectly clean! Vacuum, wipe with a cloth rag soaked with mineral spirits, let dry and then dust once more with a tac cloth before painting.**
 - Use the lowest nap roller that you can find. The particular roller that I used was a 4" x 1/4" nap Purdy, see image. Have a small paint brush ready to spread into the groove. Recommend a Purdy, Black Bristle medium stiff 1.0" wide with angled sash, PN 10PABD, UPC #716341000202.
 - Spray painting is the best for a smooth finish, but will require a lot of cleaning due to the oil based paint.
 - **Track sections must lay flat when drying, otherwise paint in groove will pool.**

Sand primered surface with #400 wet/dry. Want to target as perfectly smooth a finish as possible, and still leave a little "tooth" for the final color coat(s) which will be sprayed or rolled with a foam roller.

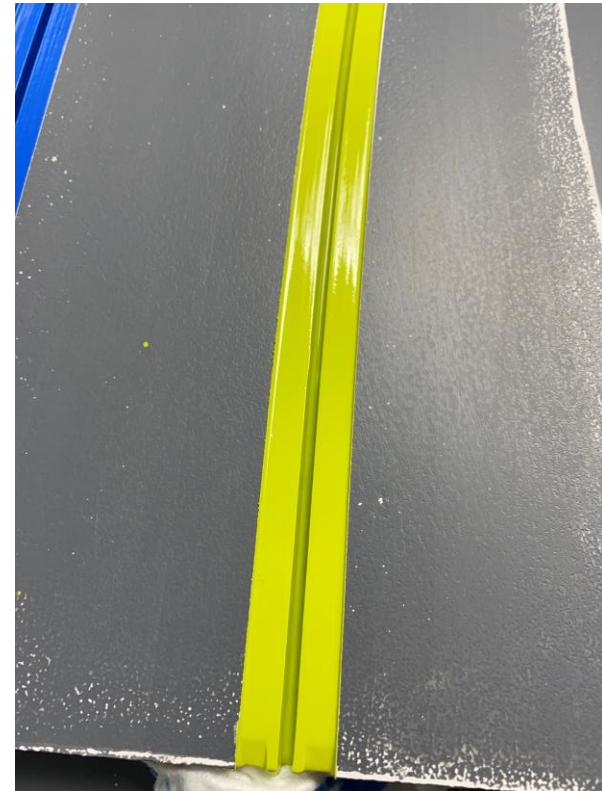
- You will swear that you have no finger prints left before you are done sanding...
- You may want to use a little simple green with your sanding block to keep the dust down.
- If you break thru the primer into the MDF, you will have to roll or spray on another coat.



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Seek Advice from Paint Professionals

- I used a lot of Rust-oleum products when I was doing the paint finish trials in the Word document titled “Track Surface Matrix Prep Summary”. **Decided I didn’t like them (due to difficulty in getting a consistent finish)**. A guy in our slot car club works for Sherwin Williams (Automotive finishes). He did his research and came up with a very expensive, 2 part epoxy option. The cost was crazy, like over \$400/gallon, which he offered to help pay for, but I decided to just go with more “normal” home based products. After consulting with Sherwin Williams consumer based group, went with:
 - Emerald Urethane Trim Enamel, Satin. Second choice is All Surface Enamel, oil based Satin, it is a second choice because the Emerald levels better. Recommend a Gallon for track surface.
 - I had tinted to 7075 “Web Gray” for the track surface to provide some contrast for black cars.
 - Use a foam roller or spray. Expect 3 finish coats, especially if you plan to “hide” screw heads.
 - I sanded, and sanded, to get it relatively smooth.
 - Wet sanded the tightest corners to get the < 0.3 Ra um finish. I used a Mitutoyo SurfTest/Portable Surface Roughness tester, (which are quite expensive), to measure the finish.
 - Bottom line, is you want the track paint as smooth as possible, especially in tight turns. I attached an image after the first color coat. Expect to do 3 color coats for both groove/gains and top (running) surface.



Expect to sand through some “high” spots and expose primer with first color coat.

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When to Choose Gloss Enamel

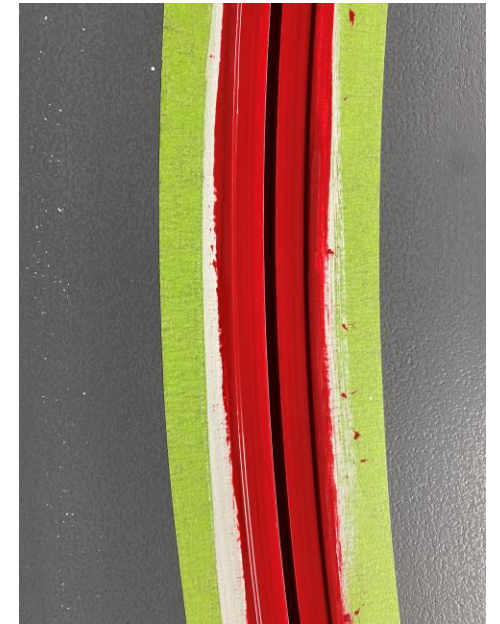
- I used All Surface Enamel, oil based Gloss, ultradeep base PN 6403-25759 (Pint) for the grooves and gains. 3 color coats hand painted after sanding the 2 primer coats relatively smooth.
 - I used bright colors like 7588 “Show Stopper” red, “Hyper Blue” and “Electric Lime” for the lane colors.
 - I was trying to match the colors of the Professor Motor controller handles, see images.
 - I “dressed up” the plastic plates for the controller connections with tape. Same with controller handles. The white plate was especially ugly without a little checker flag tape, see center image at right.
 - Traditional colors for lanes are Red/White/Blue, plus Yellow for 4th lane. I chose Red/White/Blue/Green for mine, because I really like the yellow/green controller handle from Professor Motor. Professor Motor also offers Black/Orange, and even Clear if you want to do your own color. I would decide what you like best and base your lane colors on that.
 - If I were to do a 3 lane I would probably choose black for the center, and green and blue for the outer lanes. Reason being is I like the Red/White FIA curb look and also I use a white border on the edge of the track. Thus it would look “better” if red and white were not also used as lane colors.



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Painting Sequence

- You are going to prime the whole track surface. Top/sides/ends/and bottom with white Zinsser Cover Stain, (or SW All Surface oil based Enamel primer, if you can get it). You may choose to only do 1 coat on the bottom, but will want to do 2 coats everywhere else.
 - To be perfectly clear, you prime after sealing the edges with slightly diluted DAP spackling compound. You want to seal the edges because the MDF contains formaldehyde, and the rough edge of the MDF will drink primer and leave an even rougher edge.
- If you ordered your track with out the gains routed, you can choose to prime before or after routing. It is a bit easier to prime the groove after routing, and use primer that has been thinned with 20% mineral spirits.
 - You also need to file the ends of the gains where the braid rolls over the edge of the track, so it doesn't "bunch-up" and create a speed bump before priming.
- **Do not let excess paint accumulate in the groove! Track sections must be laid perfectly flat while drying.**
- Sand the whole primered track with #400 grit wet/dry sand paper. Vacuum, wipe and tac cloth clean.
 - **Be very careful to NOT let the sander roll the edges of the gain – you want to leave them nice and sharp!**
- Roll a color coat of Sherwin Williams Emerald Urethane Trim Enamel using a foam roller.
 - Sand with #400 grit wet/dry sand paper.
 - This will provide a nice hard surface to mask the gains for painting the lane colors, see image.



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Painting Sequence

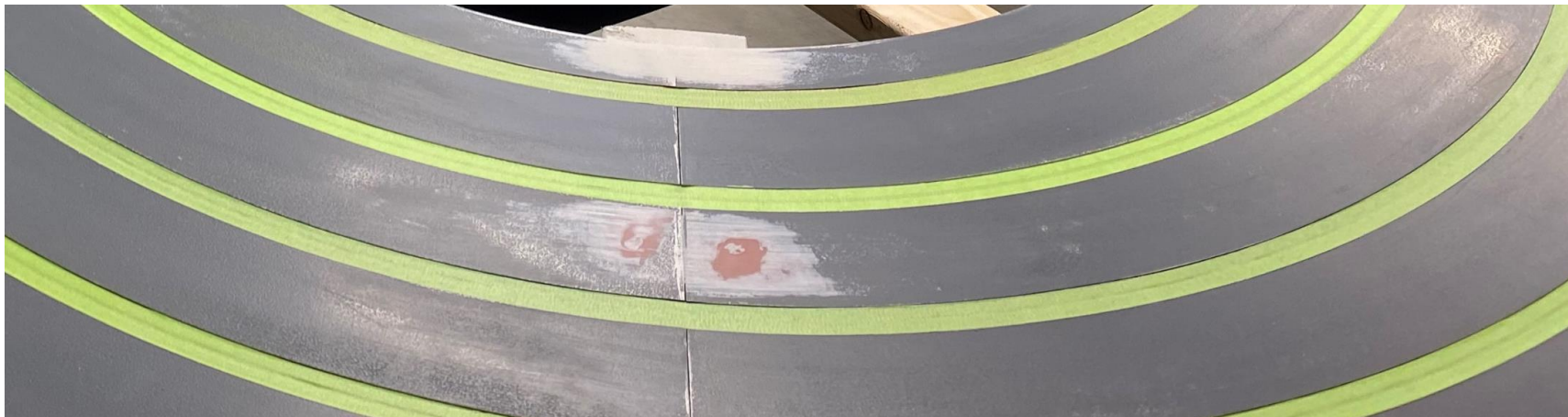
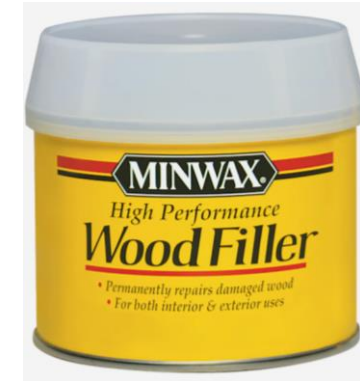
- You can use a “normal” painting tape to mask the edges of the gain, although 3M Automotive painting tape is preferred.
 - The best tape is 3M Automotive green or yellow tape, in 0.75” width, which is easier to bend around curves.
 - You will have to go to a quality Automotive shop to find this.
 - The best “normal” house painting tape is the green “frog tape” in 0.94” width.
 - If you only have 3M blue Painter’s tape, that is OK for the gains only. You will still need to get the good 3M Automotive paint for the final top color coat on the track. See image.
- Lightly dust the gains with #400 grit wet/dry sand paper to remove any high spots in the primer. Fold the sand paper once to fit loosely in the groove and dust the grooves.
- The gains and grooves must be perfectly clean. Use a shop vacuum along with a small paint or chip brush to get any sanding dust out.
- The purpose of using a gloss enamel paint in the grooves and gains is to provide a slick/hard surface for the braid tape to adhere to.
- You will have to hand paint 2 – 3 lane color coats in the grooves/gains, sanding in between. Leave the final coat glossy.
- Before laying down the final color coat(s) on the running surface of the track, you will mask the gains/grooves with 0.75” wide 3M Automotive painting tape.



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Painting Sequence

- If you choose to cover the screw heads which attach the track sections...
 - The screw heads must be countersunk below the track surface.
 - Cover with MinWax High Performance Wood Filler, see image.
 - Use a foam brush to cover the MinWax High Performance Wood Filler with primer.
 - Sand with #400 grit wet/dry sandpaper, until surface is smooth.
 - If any small imperfections remain, fill with glazing & spot putty, see image.



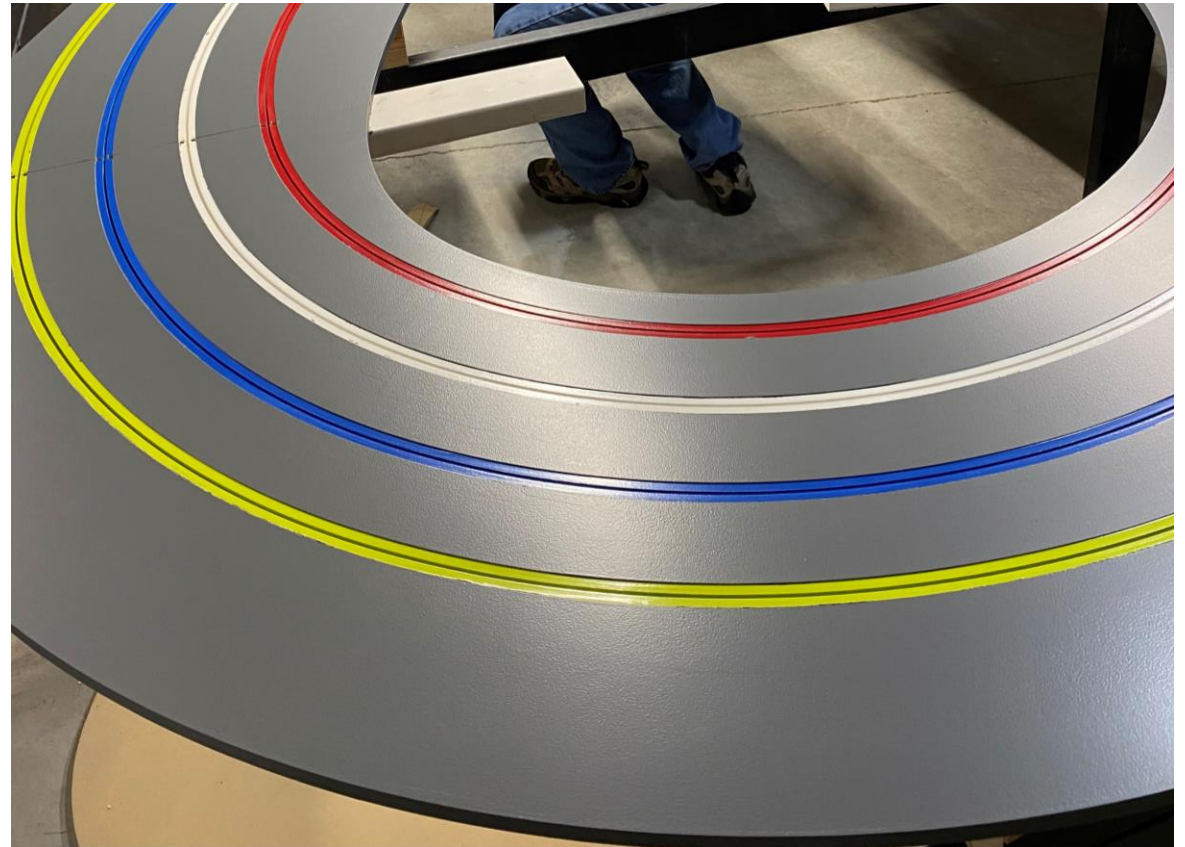
Track surface in process before final color coats. Screw heads covered with MinWax High Performance Wood Filler, then covered with primer using a foam brush. Any remaining divots or imperfections should be filled with glazing & spot putty.



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Painting Sequence

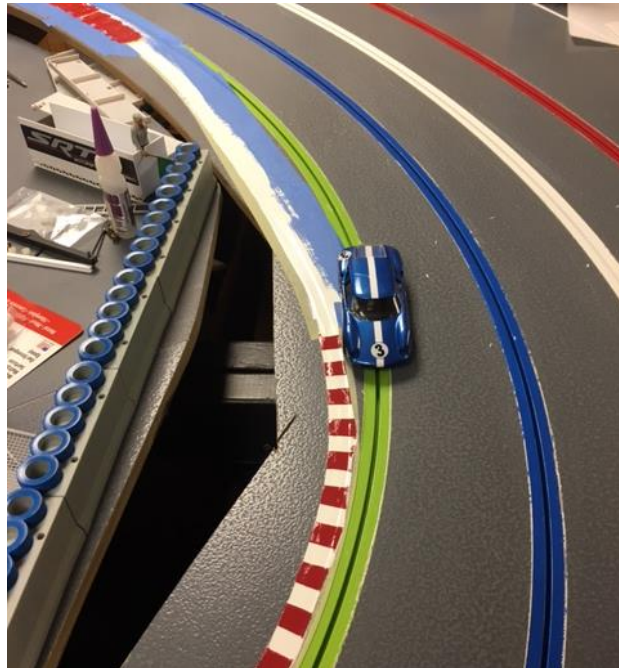
- A very smooth, high grip surface finish can be achieved with foam rollers. However, it will only be as smooth as your sanding and cleaning efforts.
 - Suggest a Wooster Pro Lint-Free Foam roller, see image.
 - Far less mess and clean-up than using a sprayer.



Pinstriping the Edge of the Layout

- I used All Surface Enamel, oil based Gloss, ultradeep base PN 6403-25759 (Pint) for the border, although in hind sight I should have used Flat white paint.
- I used a mix of painter's tape and 3M pinstriping tape in a variety of widths, depending on the severity of the bend radii.
 - The 3M pinstriping tape (from an Automotive supply store) is quite expensive.
 - It is easier to create straight lines with wide tape that does not bend easily.
 - I gapped the tape 0.250" wide, but went with 0.5" wide to create the FIA red/white striped curbing.
 - I Painted thick layers of red over the white to make a rumble strip texture, that you can hear.

Lanes look much better after braid is laid...



Pinstriping Racing Lines

- Pick a scale track width, and lay out your pinstripe edge to give the illusion of the cars taking a “Racing Line”.
 - Apex to apex from corner to corner.
 - Note the line can “fall off” the edge of the track here and there, especially if you had to trim an edge to improve line-of-sight from the Driver’s stations.
- A CNC Track Design typically has 4” aprons on either edge of the track, so you have some room to let the Racing Line drift from side-to-side of the layout.
 - Let me know during the design process if you want larger run off areas, like shown here.
 - Leaves more room for crashed cars/scenery.
 - A track that is bordered with walls on each side of the track becomes a bit like a “Bowling Alley”, containing crashed cars so they can be destroyed by oncoming traffic.

