

# Gathering Waters District PINWOOD DERBY RULES

\*All cars must pass inspection to qualify for the race. Following are the inspection points:

1. The car weight shall not exceed **5.0 ounces**. The official race scale shall be considered final.
2. The overall length of the car **shall not exceed 7 inches**.
3. The overall width of the car **shall not exceed 2 ¾ inches**.
4. No sticky nose on the front of the car.
5. Clearances:
  - a. The car must have **3/8" clearance underneath the body**.
  - b. The car must clear center guide rails with **1 ¾" clearance between the wheels**.
  - c. Fender flairs with less clearance are acceptable as long as the center rail width clearance is maintained.
  - d. Weights are preferred to be inset in the body or on top of the car to aid in a safe stop at the end of the track.
  - e. No part of the car or attachment to any car, which is metal, pointed, sharp, and/or jagged, may be capable of contacting any part of the track.
6. Wheel base:
  - a. All cars must have a **wheel base no less than 4"**, with the two rear wheels being positioned directly across the body of one another and the two front wheels being positioned directly across the body from one another.
7. The front end:
  - a. Height – Depending upon the track, the front of the car may rest against a short starting pin. Therefore, the front bottom of the car which rests on the pin is no higher than ½" above the track.
  - b. Width – The front end must be **at least ½" wide** in the center of the vehicle to make contact with the starting pin.
  - c. **Absolutely** no part of the car body, wheels, or attachments may protrude in front of the starting pin.
8. The wood provided in the kit must be used. The block may be shaped any way that is desired. Additional woods may be added to the kit if desired, but the overall width and length requirements will still apply.

## 9. Wheels:

- a. Use of ONLY Official BSA Scout wheels is allowed.

All lettering/numbering, both inside and outside, must remain complete and be visible. The fluting and other BSA markings on the outside wheel area must remain visible. Outer wheel surfaces may be sanded shaved, or polished to remove surface imperfections, mold casting burrs, and correct off-center wheel bores. Outer wheel surface must not be reshaped in any way in an attempt to minimize tread contact or alter aerodynamics. Tread surface must be flat and parallel to the wheel bore. Coning the hubs and truing the inside tread edge is allowed. Tread width may not be less than 7.5 mm. You may add material such as glue, fingernail polish, or table, to the inside of the wheel to aid in balancing the wheel; however, **NO MATERIAL MAY BE REMOVED FROM THE INSIDE SURFACES OF THE WHEEL**. Minimum diameter of wheel is 1.16" to maintain the ridges of the outer edge.

- b. Wheel Bore treatment is allowed including polishing and/or tapping. Wheel bores may not be filled and re-drilled to alter bore diameter or to achieve a better fit with the axle. c. The following wheel modifications are PROHIBITED:

- Rounding of tread surface/wheel edges
- Grooving, H-cutting or V-cutting
- Altering of wheel profile
- Narrowing the tread surface, other than truing inside tread edge
- Drilling sidewalls
- Hollowing, sanding, or otherwise removing or modifying material from inside the wheel
- Filling of any wheel surface with any type of material

10. The axles supplied with the kit must be used. They may be polished or lubricated.

11. Approved lubricants include (but are not limited to) **Graphite, Teflon, Nyoil, and Krytox**.

Over-application of lubricant which results in excessive shedding onto the track is not allowed and **no wet** lubricants will be permitted on the car prior or during the race.

12. Wheel bearings, washers or bushings are prohibited.

13. The car must not ride on any type of springs.

14. The car must be freewheeling, with no starting devices.

15. No loose material of any kind, such as lead shot, may be used.

16. The car body may have no moving parts.

### ***Additional Rules and Regulations:***

1. If during a race, a car leaves the track without interfering with its opponent, it shall be considered to have ended its heat at that point.
2. If a car leaves its lane, at the event chair's sole discretion, they may inspect the track and, if a track fault is found which probably caused the initial violation; the race official may order the race to be rerun after the track is repaired.
3. If during a race, no car reaches the finish line on the track, the car which went the farthest in its lane shall be declared as the heat winner.
4. If during a race, a car leaves its lane and, in so doing, interferes with another racer, then the car at fault shall be declared to have lost the race heat.
5. Any car losing wheels or any part that prevents it from running may be repaired after the inspection and weigh in. A race official may authorize repairs when damage is caused by a collision with another vehicle or object or if the vehicle is damaged in transport by a track official. The repair must be performed prior to the next heat and on the premises. Only after the car is repaired will the heat be run again. If the car cannot be repaired before its next race starts, that race will be delayed allowing time (5 minutes) for the repair.
6. Construction of all entries must have begun after last year's races.
7. Only one car may be registered by any person in the pinewood derby.
8. Details such as the steering wheel, driver, decals, painting, and interior detail are permissible as long as these details do not exceed the maximum length, width, and weight specifications.
9. A jig can be used to drill a straight hole up to a  $\frac{1}{4}$  inch away from the axle slot.
10. Display good sportsmanship and HAVE FUN!

# 10 Tips and Tricks to a Fast and Cool-Looking Pinewood Derby Car

There are stacks of books and loads of articles on how to build the fastest Pinewood Derby car out there, so we wanted to compile a few of our favorite tips.

1. **Bake your block.** This helps to remove the moisture so that you have more wiggle room to add extra weight at the end. Remember, every little bit of weight in the right place makes a difference! Bake it in the oven at 250° for about 2 hours.
2. **Max out your weight at the regulation 5 ounces.** Yes, it may take more time and effort, but those extra couple of ounces have proven time and time again that they make a difference. Place all of the weight you can about an inch in front of the rear axle. The closer the weight to the back, the faster your car will roll (but you don't want it too far back or else your car will be popping a wheelie). For a more aerodynamic build, have a drill and a spade drill bit on-hand to put your weight up and into the bottom of your car. There are a variety of weight-types available, and I have also seen pennies used!
3. **Use all of the graphite** (dry lubricant is usually allowed). Coat it everywhere – all over the axles, where the wheels touch the axles, on the car itself where the wheel can touch the car... everywhere.
4. **Sand and polish your wheels and axles.** You can use a mini file to remove any major ridges on the axles, because we all know that the less friction, the faster the car! For best results, mount your wheels onto an electric drill so that you can polish at a higher speed and reduce the likelihood of adding accidental imperfections. You can also grab [this sanding kit](#), which includes three types of sandpaper designed for use on your Pinewood Derby wheels and axles.
5. **Check alignment.** If you want to get in-depth with this, and it is not against your Pack's rules, make the adjustments to your car to allow it to ride a rail – this is actually better than your car bumping back and forth between bumpers. Another way to pick up speed is to ensure that your car has true straight alignment. Level one, just run your car down a level surface and make sure it doesn't pull one way or another. Level two, use an [Axle Press Tool](#) to ensure straight axles. You can also glue your axles into place to ensure there is no wiggling out of place – just make sure not to get glue anywhere near where your wheels will be!
6. **Spend time on sanding.** The smoother your car is, the more friction is reduced and the faster your car can slice through the air. Start with a coarse grit, move to a medium grit, and finish with a fine grit. It is helpful to wrap the sanding paper around another block of wood for better grip and to help prevent the addition of unwanted dips in your car. You can also up the ante by wet sanding the car after the first coat of paint (so primer, then paint, then wet sand). We have used 1000 grit ultrafine carbide sandpaper. After this, proceed on with painting the rest of your coats!
7. **Use a high-quality paint.** I have found the most amazing paints. The [Testors Enamel Paint Set](#) has AMAZING coverage, plus a great shine. The [Testors Glow-In-The-Dark Paint Set](#) and the [Testors Fluorescent Paint Set](#) are also awesome options. The KEY to the best coverage and results: START WITH A GOOD PRIMER! Especially if you are using the Glow-in-the-Dark or Fluorescent paints. The next tip on painting is to use a wide sponge to paint. It creates a much smoother surface.
8. **Add decals!** Use a credit card to press out all of the air bubbles, and then seal everything in with a clear gloss paint. Be sure to check to make sure it won't curl your decals first! You can test it off to the side by sticking a decal to a piece of plastic and spraying with the gloss paint.
9. **Mount headlights, taillights, and running lights!** With black lights and glow in the dark races being the next big thing for Pinewood Derby races, adding headlights, taillights and undermounted glow lights will look so cool!

10. **Use floor wax and shine to a high-shine finish.** You do need to make sure that your coats of paint are completely dry before you do this (think about a week). This final coat will make your car extra glossy and even more aerodynamic!

Most importantly, give yourself the gift of TIME! We all know Pinewood Derby season starts soon, and so there is no harm in getting a head start in building! Allow yourself and your Cub Scouts the space to make mistakes and start again if necessary – plus, it is a great lesson in time management for them (and let's be honest, for adults too!)

Happy racing, you speed demons!

<https://www.scoutshop.org/blog/10-tips-and-tricks-to-a-fast-and-cool-looking-pinewood-derby-car.html>