

**Pinewood Derby Returns to Lynden Canada Day**

**You must Purchase a 2015**  
**Kit to Participate in this**  
**Year's Derby.**

A limited Number of 2015 Pinewood derby kits are on sale now at:

Shearlea Acres.  
3826 Hwy 99  
Lynden, ON  
L0R 1T0

Open daily 10 am - 6 pm year round.

Kit cost \$5.00 each

**Lynden Canada Day Celebration**  
**Annual Pinewood Derby**

**Date:** July 1, 2015  
**Location:** Lynden Community Park, 4070 Governors Road, Lynden, ON L0R 1T0  
**Time:** 1:00 PM

**Categories:**

Children under the age of 6

6-10 year old

11 - 18 year old

Adult

“Outlaw” - Cars that don’t conform to the rules (fun run only, no prizes awarded)

**Official Lynden Canada Day Pinewood Derby Rules:**

Official Class cars must be built new for this season from an official 2015 Lynden Canada Day Pinewood Derby kit Available from Sherlea Acres 3826 Hwy 99 Lynden ON previous years *cars or kits can not be raced*(see section 1a)

Use an official Lynden Canada Day Pinewood Derby kit, not a PineCar or other kit (see section 2a and 2b)

Car must weigh no more than 5.0 ounces or 142 grams or 141.7 grams as weighed on the official scale (see section 4a)

Car must have a wheelbase of between 4" and 4-1/2" (see section 3h)

Wheel treads must NOT be modified in any way (see section 4j)

**1. General**

- a. Each car entered in the race must be newly built for the current year. Cars from previous years are not permitted.
- b. The car should be substantially built by the participant racing the car. Parental supervision and guidance in the construction of the car is encouraged, but the parent **SHOULD NOT BUILD THE CAR FOR THE PARTICIPANT**. Parents and siblings should show off their car building skills by entering the appropriate class (see *Outlaw Class section below*).

## **2. Only Official Lynden Canada Day Pinewood Derby Kits Permitted**

- a. The body of the car must use the block of wood provided in an official 2015 Lynden Canada Day Pinewood Derby kit.
- b. Old style vintage kits with tall skinny wheels are not permitted in "Official Class" races, nor are "PineCar" or other non-official kits. Cars made with other than official 2015 Lynden Canada Day kits will be disqualified.
- c. The axles must be attached directly to the original block of wood (see below for axle slot rules).

## **3. Dimensions and Weight**

- a. The total weight of the car may not exceed 5 ounces or 142 grams (141.7 grams). Be careful about using scales at the store or Post Office, as they are notoriously inaccurate. Most digital scales are fairly accurate, but only the official scale will be used for the official weigh-in.
  - b. The maximum width of the car, including wheels, may not exceed 2-3/4 inches.
  - c. The maximum length of the car may not exceed 7 inches, but there is no minimum except that the wheelbase must be at least 4-1/2".
  - d. The minimum ground clearance from the bottom of the wheels to the bottom of the lowest part of the car other than the wheels must be at least 3/8 of an inch, including weights and accessories.
  - e. Minimum width between wheels is 1-3/4 inches.
  - f. The maximum height of the car is 3-1/2 inches including accessories.
  - g. Other materials such as wood, plastic or metal may be added to the original block of wood from the official kit as long as the car is within the allowed dimensions.
  - h. If an axle slot is not straight, is broken, defective, or otherwise not usable as determined by the car builder, a new slot or hole may be cut or drilled. **The new hole or slots must be spaced apart (or have a wheelbase of) exactly 4-5/16" (4.3125"), but may be between 4" and 4-1/2". Note that too long or too short of a wheelbase is a common cause for car disqualification, so please pay particular attention to this rule.** It is acceptable to true the original slots or cut or drill the new slots or holes. If you drill new holes, you should use a saw to cut a slot so that the entire length of the axles can be inspected.
- I. Cars must be powered by gravity only! This means no engines, rubber bands, wind up motors, springs as used for propulsion, rocket motors, CO<sub>2</sub> cartridges, thermo-nuclear reactors, plasma boosters, rodents on hamster wheels, or any other thrust generation or enhancement devices.

- j. Projectiles are not allowed. No part of the car may intentionally detach from the car during the race, come into contact with any other car, or extend outside the allowed dimensions at any time.
- k. Movable or liquid weights that shift the centre of gravity of the car when the car is tipped or rolled are prohibited (but are allowed in the Outlaw Class rules).
- l. Electronics are allowed as long as they do not provide any propulsion. Examples of acceptable electronics include LEDs, phototransistors, microprocessors, batteries, transistors, relays, transmitters to cause lights or effects, etc. Use electronics to enhance performance or just to make your car look cool. However, you may not use the electronics to create any kind of propulsion or inertial force.
- m. Magnets are prohibited.

#### **4. Wheels and Axles**

- a. The original wheel axles (nails) should be placed in the original slots provided in the block of wood in the official kit, if possible (see axle slot rules above under 3h).
- b. The car may not be designed so that the wheels ride upon the centre guide strip of the track.
- c. Loose pieces that are designed to intentionally fall off during a race are not permitted.
- d. If the front of the car is designed to gain an unfair advantage by shortening the distance between the start pin and the finish line sensor, or the car design otherwise interferes with a fair start, race officials reserve the right to require the racer to modify the front of the car to eliminate the advantage, or the car will be disqualified.
- e. The axles of the car must be from an official Lynden Canada Day Pinewood Derby kit.
- f. Axles must be firmly attached to the car and may not pivot in the body.
- g. Axles may be polished, but may not be machined, reduced in diameter more than 1% of their original diameter, or plated or permanently coated with any finish. The heads on the axles may not be modified or reduced except to remove flashing or to polish. Reshaping, tapering, grooving, or otherwise modifying the axles will disqualify the car. No “PineCar” axles will be accepted.
- h. The use of a flexible or sprung suspension system of any type is prohibited.
- I. The wheels must be from the official Lynden Canada Day Pinewood Derby kit
- j. Wheel treads **may not be altered in any way** other than removal of defects and polishing (see illustration below). Injection moulding defects on wheel treads may be removed by sanding VERY lightly. The wheels may be VERY LIGHTLY sanded, polished, or finished with graphite to enhance smoothness, but they may not reshaped or reformed or rounded off in any way. If excessive sanding or finishing including lathe turning is detected by **the presence of turning marks or the slightest rounded-off corners or removal of the tiny bumps at the outside corner of the tread** or any other alteration from the appearance of the stock official Lynden Canada Day wheels, the car will be disqualified, no ifs, ands or buts. **This is the largest cause of car disqualification**, even when caused by a so-called over-eager participants who just wanted to sand the wheels and there is no intent to reshape the wheels. Please be warned: DO NOT RESHAPE THE TREAD OF THE WHEELS IN ANY WAY OR YOUR CAR WILL BE DISQUALIFIED REGARDLESS OF INTENT. Below are acceptable and unacceptable wheel profiles:
- k. If commercial after market wheels or axles that have been professionally polished, rounded,

- grooved, lightened, lathed, machined, trimmed, or shaved are detected, the car will be disqualified. You are expected to prepare the wheels and axles yourself.
- l. The bore of the wheels may be reamed, coned, and polished, but not otherwise altered. No cars will be accepted into the race where bearings, washers, spacers, or any materials other than dry lubricant or paint are placed between the axle/body assembly and the wheel or are used as part of the wheel assembly.
  - n. Hubcaps or coverings that conceal the axle end and/or contain a reservoir of lubricant are prohibited.

## **5. Lubrication**

- a. Only dry lubricant including graphite powder, Teflon powder, or others, may be used to lubricate wheels. Non-dry lubricants including those with a petroleum, solvent, or non-dry base may attack the plastic wheels and keep them from turning freely, or can damage or contaminate the track, and are not permitted under any circumstances. Do not use oil or grease as a lubricant.
- b. Wheels and axles should be lubricated if desired before being inspected and checked in. Race organizers may or may not provide graphite powder lubricant at the race or at check-in or registration dates.
- c. Once the car is impounded after the inspection and weigh-in, it may NOT be re-lubricated except when the wheel is damaged or becomes dislodged during a race (see below). This includes on race day when the cars are impounded – you will NOT have a chance to put more dry lubricant on your car's wheels on race day.
- d. Dry lubricant must be applied over a trash can or rag, and spills must be completely cleaned up.
- e. Lubricant reservoirs that are built into the car are prohibited.

## **6. Build Techniques Not Specified**

- a. Other than the prohibitions and limitations described in this document, **it is acceptable** for the car to employ any other "tricks" such as making the car ride on 3 wheels, favouring front, mid or rear weighting, streamlining, or any other techniques that the builder feels will make the car faster.
- b. The race officials may disqualify any car that in their determination is not in compliance with the spirit of these race rules. Honesty is up to you.
- c. In rare circumstances, race officials reserve the right to perform a destructive tear down inspection of wheels, axles, or other systems on any car entered in the Official class. Any such inspections will be performed after all races have been completed, and should a car fail the inspection, the final race results will be adjusted. Race officials will return all parts to the participant, but will not be responsible for restoring the car.

## **OUTLAW CLASS” RACE RULES**

### **7. There are no rules for the Outlaw Class race except the following:**

- a. Each car must follow all dimension requirements listed in the “Official Class Rules”, except for weight and wheelbase.
- b. There is no minimum ground clearance from the bottom of the wheels to the bottom of the lowest part of the car. In the official race rules, this clearance must be at least 3/8 of an inch, including weights and accessories. However, for Outlaw Class cars, there is no minimum, but **you are responsible for understanding that if your car rubs or touches on the track because of insufficient ground clearance**. It is recommended that you adhere to the 3/8” clearance rule unless you are absolutely sure that the bottom of your car will not touch the track.
- c. There are no minimum or maximum wheelbase requirements on Outlaw Class cars.
- d. Cars must be powered by gravity only! This means no engines, rubber bands, wind up motors, springs as used for propulsion, rocket motors, CO<sub>2</sub> cartridges, thermo-nuclear reactors, plasma boosters, rodents on hamster wheels, or any other thrust generation or enhancement devices.
- e. No projectiles are allowed, and no part of the car may intentionally detach from the car during the race or come into contact with any other car.
- f. Other than these rules, anything goes! Think outside the box. Use exotic materials, wheels, axles, bearings, or advanced engineering. Use exotic tools and equipment such as milling machines, lathes, laser cutters, 3D printers, or anything else you can think of to make your car. Put rolling weights inside the body (as long as it does not create an exposure or spill hazard) or elsewhere to shift the center of gravity or reduce friction. Use a tiny computer and sensors to steer the car and keep it centred on the track so it never touches the center guide rail in order to reduce friction. Think of ways to make the axle bearing surfaces more efficient or even friction-free with magnetic bearings or jewel bearings. Springs can be used for suspension purposes only, but not to aid in driving the wheels or producing thrust in any manner. **The whole point of the “Outlaw Class” Race is to encourage parents to KEEP THEIR MITTS OFF THEIR CHILDREN’S CAR and let their kids build their OWN cars with the parent's help.** The parents and siblings should use the Outlaw Class to show off their technical knowledge and skills and compete directly with other parents and siblings instead of competing vicariously through their child’s car. Let your child build their own car with your guidance, and then you can build your own Outlaw car.

## **OPERATIONAL RULES FOR ALL CLASSES**

- a. All spectators must stay back from the track and not crowd the barricades. Spectators must **NEVER STEP OVER THE TRACK** for any reason...WALK AROUND THE TRACK instead!
- b. Spectators must keep all food and beverages far away from the track.
- c. Race officials will establish and announce the registration deadline time for the race. No registrations will be accepted after the deadline. Participants in line for registration before the deadline will be accepted. Any participant who shows up after registration has closed will NOT BE ABLE TO RACE. If you have a scheduling conflict, every effort will be made to accommodate you so you and your child can participate in the race.

- d. After the participant has registered, his car will be weighed, measured, and inspected to ensure compliance with the official rules.
- e. Only an officially designated scale will be used to weigh cars. Cars will not be accepted if their weight exceeds five (5) ounces or 142 grams by even the smallest resolution of the balance. Scales vary widely, especially the scales at the Post Office, so be prepared to adjust weight of your car up or down at the time of inspection. Race officials will have an official regulation 5 ounce or 142 grams reference weight on hand to calibrate and verify the official scale.
- f. A participant whose car fails any part of the inspection will be given the opportunity to make adjustments to the car. Cars will be re-weighed, measured, and inspected until they comply or until the scheduled race starting time. If you are unable to make your car comply with the inspection requirements before the start of the race, your car will not be allowed to run. You will be allowed to run in the outlaw category
- g. After the car has passed inspection, it will be impounded and taken by a race official to the staging area to await the race. Cars may not be handled by the owner after inspection until after all racing has been completed.
- h. Cars will be handled only by the race officials (and the car owner only if the owner is making an emergency repair).
- I. No additional lubrication may be applied to the car after passing inspection or during the race, so be sure to apply lubrication to your wheels and axles before submitting your car for inspection.
- j. Bye runs may be used when there is no opponent because of an uneven number of participants. A bye run is defined as a race with no opponent. Bye runs will be kept to a minimum as calculated by the race management software.
- k. Each heat will begin with a race official positioning the cars on the track.
- l. Each car will run in one of the four lanes in a random schedule. If you don't see your car running for a while, rest assured it will eventually run.
- m. Race officials will return the cars from the finish line to the staging area between races. Spectators should not touch the cars at any time during the race.
- n. In the event of a breakdown of a car during the race, the participant will be allowed to repair the car. Only the damaged portion of the car may be modified. The participant must do the work with assistance from his parent or guardian. Race officials shall re-inspect any car that is serviced during the race. The Race officials may choose to continue with other race heats in order to avoid long delays in the race. The damaged car must be raced before the race proceeds to the next level of elimination.
- o. In the event of a breakdown of the track, electronic finishing or ordering system, or race management software, or in the event of an error in set up of the cars (car jumps from the lane, car positioned in wrong lane, car positioned backwards in the lane, etc.), the heat affected by the breakdown may be re-run and the original result, if any, will not be factored into the final results.
- s. Each car will run one time in each of the four lanes. Each car's time from each heat is added together by the race software, and the car with the lowest combined time is the winning car. All cars are ranked for standings by their combined times.
- t. There are no elimination rounds or heats. Every car runs once in each lane.
- u. If a participant needs to leave the race before all heats have been completed, the participant must leave the car in the care of the race officials. The car will be returned to the participant after the race or by arrangement.

## **Guidelines/Tips**

- 1) Make sure to read the official rules for Cars.
- 2) No liquid lubricant can be used on the vehicles since it gums up the track.
- 3) A dry lubricant called Powdered Graphite (usually available at Canadian Tire) can be used to lubricate the wheels of the cars/trucks to reduce friction.
- 4) Make sure not to put decorations on the car that increase the width/height/length beyond allowed dimensions e.g. no headlights that stick out of the front of the car, exhaust pipes out the side of the car etc... This can only be done if the decorations are within the dimensions prescribed in the official rules for Cars.
- 5) Alignment of the wheels is very important to the speed of the car. Use the wheel slots pre-cut into the car so the car will not scrape the track but care should be taken to keep the wheels straight. To test the car, place it on a slight incline and roll it. The car should roll smoothly and run straight.
- 6) Make sure not to attach anything to the bottom of the cars since the cars ride OVER rails, not between them - anything on the bottom of the car will cause it to rub on the track, look at a sample of the style of track by doing a Google search of Pinewood Derby Track(not the actual PEI track but a similar, official, design). There are official Pinewood Derby weight kits meant to be embedded in the cars. These are available at any Scout Shop or through many on-line retailers, just search for "Pit Kit Kub Car". The kit comes with two weights and three extra wheels/pins. The weights are meant to be put into a recessed area on the bottom of the car e.g. a spot that has been routered out of the bottom etc... This gives the car its additional weight but keeps it aerodynamic. Cars can also be drilled and weights inserted into the car, just be sure you can easily get the weights out if the car is overweight when it arrives at the rally.
- 7) Reduce friction as much as possible. Air friction, track friction and wheel friction will all slow down your car. Try to reduce friction between wheels and axles, between wheels and the car body and between wheels and the guide rail. Friction can be reduced by sanding or polishing wheels and axles and making sure the car runs straight.
- 8) Paint the car early and paint often. This will improve looks of the car but is also good for speed. If paint is not well dried before the wheels are put on the paint will still be tacky and stick to the wheels, causing more friction.
- 9) Choose an aerodynamic car design.
- 10) There are plenty of websites out there with good ideas for design and tips and tricks for speed. Most of them refer to Pinewood Derby races - these are the USA equivalent of the Canadian Kub Car Races. Use these site for ideas etc... but make sure to follow the Lynden Canada Day rules above all!!

(End)