

Short Track CO2 Car Race

Level of Competition: Middle School

Description of the Competition:

Students design, build, and race CO2 cars. Cars will be designed and built using some of the TSA building rules and specifications outlined below. Students will place in the event purely on race results. A maximum of 7 cars per school. All cars will race for time. Depending on number of entries the winner will be determined by fastest time from first race.

Rules of Competition:

1. Car designs must meet these metric TSA specifications: length, height, eye spacing, and wheelbase. (See page attached)
2. Wood blanks used for cars must be cut from a **balsa, basswood or standard 2"x4"**. **Cars will be organized into separate races.** (Balsa wood is not permitted next year.)
3. All cars must be painted. (Car must be dry prior to inspection)
4. The judges will inspect and impound all cars at the competition.
- 5.. If a wheel falls off the car, it will be disqualified.
6. Standard 8 gram Pitsco CO2 cartridges will be supplied for races.

Added Safety Specs and Restrictions:

If design is a rail style car, the center section must have a cross section diameter of at least 5mm.

1. Power plant housing must be deemed thick enough by judges. (3 mm spec.)
2. Power plant housing depth must meet minimum TSA specs.

Material Requirements:

1. There is no limit to cost of materials.
2. **Pitsco-type wheels must be used without alterations.**
3. Ball bearings can be used.
4. Axles and bushings can be of any type.
5. Paints of any type are acceptable. (It must be dry prior to inspection)

Dragster Specifications

	Min	Max
Axle Diameter	3mm	3mm
Axle Length	42	70
Axles Bearing Diameter	3.5mm	4.5mm
Axle hole Diameter	3.5	4.5mm
Axle hole position above body bottom	3.5mm	9 mm
Axle hole position from either end of body	9mm	100mmq
Brass Spacer bearing diameter	7mm	9mm
Dragster body length	200mm	305mm
Dragster body height at rear with wheels	56mm	75mm
Dragster body mass with wheels	30 grams	200 grams
Dragster body width at axles front and back	35mm	42mm
Power plant depth of hole	51mm	51mm
Power plant housing thickness around entire housing	3mm	
Power plant housing diameter	19mm	20mm
Power plant C/L from body bottom	31mm	35mm
Screw eye-Eyelet inside diameter	3mm	5mm
Screw eyes (2) or C/L of bottom, distance apart	155mm	270mm
Wheels, front diameter	32mm	37mm
Wheels , front(width at greatest diameter)	2mm	5mm
Wheels, rear diameter	30mm	40mm
Wheels, rear (width at greatest diameter)	15mm	18mm
Wheelbase	105mm	270mm

See internet references for assistance and images.