

# LO206 Fuel Octane

Typically tracks will run with a spec fuel. In that scenario it will be a requirement to run whatever octane fuel is provided for in the rules.

If you have a choice, 206-Insider recommends running **Premium 93 octane fuel**. It is often stated that lower 87 octane is better given it has a lower detonation. However, all gasoline engines require a certain octane rating based on their compression ratio. 87 octane fuel will run effectively, but is below the optimal required octane rating.

Gasoline engines rely on ignition of air and fuel compressed together as a mixture, which is ignited at the end of the compression stroke using spark plugs. Octane rating is a measure of the performance of an engine fuel. The higher the octane number, the more compression the fuel can withstand before detonating. Fuels with higher octane ratings are used in high performance engines that require higher compression. Fuels with lower octane numbers do not compress the fuel, but rather compress only air and then inject fuel into the air which was heated by compression. Running with too low of an octane rating in comparison to the compression will cause the engine to knock and lose performance.

The chart below shows the optimal octane rating when compared with the compression ratio of the engine. The **Briggs LO206 compression ratio is 8.5 to 1**. Gas stations typically offer 91 and 93 premium gas. Running **93 octane fuel should be a good match for the Briggs LO206**.

Compression ratio	Octane
5:1	72
6:1	81
7:1	87
8:1	92
9:1	96
10:1	100
11:1	104
12:1	108

Note that often pump gas will contain ethanol. Ethanol produces an increase in power over gasoline. Ethanol allows extremely high compression ratios to be used to produce more power. In addition, with methanol the engine can cram more energy into the cylinder for three reasons:

1. The large amount of fuel being consumed.
2. The cooling effect when methanol evaporates raises the density of the mixture, ie. even greater energy content of the mixture.
3. Methanol contains oxygen within its chemical structure, which acts like a chemical supercharger.

However, to setup a LO206 to obtain optimal performance with gasoline with high amounts of ethanol, like E85, the jets would need to be changed, which is not allowed in LO206

**Methanol does have a negative effect**, it damages the cylinder wall. Engine performance will reduce over time. With a bigger jet size the Briggs Animals often run on alcohol in other race classes. WKA Gold Cup used to run all Briggs Animals that way. You will often see it in dirt

racing. **Racing on alcohol typically requires frequent rebuilds,** which is not something you can have done to a sealed 206.

Some racers run on ethanol free 87. This preserves engine life and is not a bad idea for people that want to extend the life of their engine. However, 93 octane should provide better performance and is less expensive and more available. The small amounts of ethanol in the summer is not a big problem.

**Running some practice sessions adding a fuel micro lubricant like ZMax** is a good idea. It will clean out the cylinder and improve the overall performance. Note, it would not be legal to run a race with this in the fuel.

