

Get to know the facts about gasoline octane.

What is octane?

Octane is a measure of a gasoline's antiknock performance – it's ability to resist knocking, which is a metallic rattling or pinging sound that results from uncontrolled combustion in the engine's cylinders.

Why is octane important?

It may prevent engine damage. If a gasoline is used with too low of an octane rating than is required by an engine, then engine knock may result. Heavy and prolonged knocking or pinging may cause power loss and may damage the engine.

How is octane rating determined?

Gasoline is subjected to two testing methods to establish its octane rating. The motor method, runs the gasoline through an engine under load. The research method, runs the gasoline in a free running engine. The octane rating you see displayed on the pump is an average rating of the two methods.

How do I know what octane to use for my vehicle?

Check your owner's manual. Regular octane is recommended for most cars. However, some cars with high compression engines, like sports cars, older cars, and certain luxury cars, may need mid-grade or premium gasoline.

How will I know if I'm using the right octane level?

Listen to your car's engine. If it doesn't knock when you use the recommended octane, then you are using the correct grade of gasoline. If your engine runs well and does not knock or ping when using a lower octane gasoline, there will be no advantage in switching to a higher octane.

If your engine does knock, it doesn't necessarily mean that something is wrong with the gasoline. It may be a problem with the car's ignition timing or exhaust re-circulation.

Should I ever switch to a higher octane gasoline?

Sometimes engines may knock or ping, even when using the recommended grade of gasoline. When this occurs, try using the next higher octane for a few fill-ups. Typically the knocking will stop. However, if the knocking or pinging continues, your vehicle may need a tune-up or other repair.

Will my vehicle run better on high octane gasoline?

No, not necessarily. Using a higher octane than is recommended will provide no additional benefit to the engine. You may find that your gas mileage or power increases. In which case, you may get the same result from a tune-up.

Some newer vehicles have electronic knock sensors, which may cause you to notice a slight improvement in performance when using a higher octane gasoline.

Is all premium or regular gasoline equal?

The octane rating for gasoline labeled as "premium" or "regular" is not consistent across the country. To ensure you know what rating you are buying, look at the yellow octane sticker on the gas pump instead of relying on the name.

How much will it cost me to use a higher grade of gasoline?

On average, it costs 5 cents per octane point between regular 87 gasoline and mid-grade 89 octane. It costs about 3 cents per octane point between mid-grade 89 and premium 92 octane gasoline. If you are consistently purchasing a higher octane than you need, this money will add up quickly.

What else influences my car's octane requirements?

Temperature: Hotter air and engine coolant increase your octane requirements.

Altitude: Higher altitudes decrease your octane requirement.

Humidity: Drier air increases your octane requirement.

Engine spark timing: If your engine's spark timing is increased, your octane requirement increases.

Driving method: Rapid acceleration and heavy loading increase your octane requirement.

For More Information:

503-986-4670

Visit our website at www.oregon.gov/ODA/MSD

The facts on high octane gasoline.

Do you buy high octane gasoline for your car because you want to improve its performance? If so, you should note: the recommended gasoline for most cars is regular octane. In most cases, using gasoline with a higher octane than is recommended for your vehicle offers absolutely no benefits.

For a small percentage of vehicles, the engine knocks when using the recommended octane. In these rare cases, it may help to use a higher octane. Sometimes in these cases, however, the vehicle simply needs a tune-up.

Do not spend unnecessary money purchasing higher than recommended octane gasoline for your vehicle. In this brochure you will find valuable information explaining what octane is and how to ensure you are purchasing the correct grade of gasoline.

What if I think a station is selling lower octane gasoline than is advertised?

Who should I contact?

Contact the Measurement Standards Division at the phone number below. Or, fill out a complaint form online at www.oregon.gov/ODA/MSD.



**Measurement Standards Division
Oregon Department of Agriculture**
635 Capitol Street NE
Salem, OR 97301-2532

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Know the facts...

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