

Devices and Additives to Improve Fuel Economy and Reduce Pollution - Do They Really Work?

This document provides information for consumers interested in purchasing products that are marketed to improve automotive fuel economy and/or reduce automotive pollution. This document also includes simple tips for improving fuel economy and reducing automotive emissions.

Watch Out!

Consumers are looking for simple and inexpensive means to lower the cost of driving. The market has responded with a plethora of devices and fuel additive products which purport to improve fuel economy and/or reduce emissions. Have you seen advertisements that claim to “Double Your Fuel Economy,” or that promote a device that “Cleans-up Your Car’s Tailpipe Exhaust”? Be careful when purchasing these products; don’t be fooled by erroneous claims. Thoroughly research any aftermarket part or additive before you add it to your vehicle and don’t forget the old adage, “If it sounds too good to be true, it probably is.”

Please visit the following Federal Trade Commission links: FTC Consumer Alert at www.ftc.gov/bcp/edu/pubs/consumer/alerts/alt095.shtm and Fact Sheet for Consumers on Gas Saving Products at www.ftc.gov/bcp/edu/pubs/consumer/autos/aut10.pdf.

Fuel Additives

Many fuel additives are advertised to improve fuel economy, reduce exhaust emissions, or both. Some advertisements claim these products have been endorsed or approved by EPA. However, EPA does not endorse, approve, or certify fuel additives.

EPA does require fuel additives to be ‘registered’ but EPA does not test candidate products for engine efficiency, emissions benefits, or safety as part of the registration process. To register an additive, manufacturers must report the chemical composition

along with certain technical, marketing, and health effects information. In some cases the manufacturer may be required to conduct testing or literature research to assess potential emissions health effects. The EPA registration process does not include a check of manufacturer product efficacy claims. In other words, EPA does not determine whether or not the fuel additive works as advertised. **Registration does not represent EPA endorsement of the product.**

The following are links to all registered fuel additives for:

Gasoline: www.epa.gov/otaq/regs/fuels/additive/web-gas.htm

Diesel: www.epa.gov/otaq/regs/fuels/additive/web-dies.htm

Detergents: www.epa.gov/otaq/regs/fuels/additive/detergnt/web-dtrg.htm

Do NOT assume that because a fuel additive has been registered with EPA that this implies anything about the safety, benefits, or claims made by the manufacturer.

Aftermarket Devices to Improve Fuel Economy or Reduce Emissions

Any additions or changes to your car's engine, emission system, fuel system, or exhaust system have the potential to cause one or more of the following problems:

- Increased emissions
- Reduced fuel economy
- Harm to your car
- Void the manufacturer warranty
- Create safety or environmental hazards
- Violate the federal prohibition against tampering (EPA, Office of Enforcement www.epa.gov/compliance/resources/policies/civil/caa/mobile/vehicleengine-penalty-policy.pdf)

If a marketed device has significant benefits, the manufacturer may submit data to the EPA and apply for EPA testing through the Voluntary Aftermarket Retrofit Device Evaluation Program. Very few manufacturers have applied for this program in the past 10 years. Most devices tested in earlier years had a neutral or negative effect on fuel economy and/or exhaust emissions. If the manufacturer has submitted the aftermarket device for testing, you can find the report on the EPA's findings here: www.epa.gov/otaq/consumer/reports.htm. Unless EPA has an Aftermarket Retrofit Device Program report, EPA has no information about the impact of the device or additive on fuel efficiency, the environment, or the safety of adding this device to your vehicle.

Popular Devices and Their Effects on Fuel Economy and Automotive Emissions

- **Devices That Turn Water Into Fuel**

There are many advertisements about using the energy from your car's battery to split water molecules into hydrogen and oxygen gas which is then burned with your fuel. EPA has received no credible and complete data showing a positive fuel economy benefit from these devices.

Installation instructions for some of these devices call for adjustments that EPA would consider to be tampering. The Clean Air Act prohibits tampering with your car's emissions control system. Tampering violations are punishable by significant fines (EPA,

Office of Enforcement www.epa.gov/compliance/resources/policies/civil/caa/mobile/vehicleengine-penalty-policy.pdf). Any instructions that request you adjust the air/fuel ratio on your vehicle, or adjust a knob and listen for the engine to misfire, referred to as feeling vibrations or stuttering, are in violation of the prohibition against tampering.

- **Fuel Line Devices**

You may see advertisements for devices that heat, magnetize, ionize, irradiate, or add metals to your vehicle's fuel lines and purport to increase your vehicle's fuel economy and reduce exhaust emissions. EPA testing and engineering analysis of such devices to date has shown no substantive effect on fuel economy or exhaust emissions. Installation of devices that retard timing or adjust the air-fuel ratio of the vehicle may be considered tampering.

- **Mixture Enhancers**

Several heavily marketed devices claim to increase your vehicle's fuel efficiency by creating aerodynamic properties or turbulence that improves the air-fuel mix prior to combustion. EPA has received no credible and complete data showing positive fuel economy benefits from these devices.

Aftermarket Alternative Fuel Conversions

Like fuel additives and aftermarket devices, aftermarket alternative fuel conversions are sometimes touted as a way for consumers to save money, improve fuel economy, and reduce pollution. But once again, consumers need to be wary of such claims. Conversions may make sense in some cases, but it is very difficult to re-engineer a vehicle to operate properly on a different fuel than the one for which it was originally designed. It is especially difficult to ensure that the vehicle will meet emission standards on the new fuel over the vehicle's full useful life. Therefore it is important to educate yourself thoroughly before altering your car to run on an alternative fuel. Here are some factors to be aware of if you are considering a conversion:

- Some fuels have a reputation of being inherently "clean" but in today's vehicles it is not the fuel alone but rather the sophisticated integration of engine, fueling, exhaust and evaporative emission control system designs that determine how clean a vehicle will be. Vehicle conversion systems must retain a similarly integrated design logic and functionality in order for emissions to remain low.
- Gaseous and alcohol fuels are less energy dense than conventional fuels, so you cannot travel as many miles between re-fueling, and your fuel efficiency per gallon of fuel will decrease compared to gasoline or diesel. It is also difficult to re-optimize an engine for fuel efficiency on a new fuel, so an alternative fuel conversion may be less efficient than an engine that was designed to run an alternative fuel in its original design. Understanding these issues is critical to accurately compare the costs of running your car on its original fuel and the costs of running your car on a new fuel with an aftermarket fuel conversion.
- Be sure to check whether your vehicle's manufacturer will continue to honor the warranty after conversion.

In order to ensure that your vehicle will meet the same emission standards that the original vehicle was required to meet, EPA has established regulations that must be followed to avoid violating the federal prohibition against tampering (EPA, Office of Enforcement www.epa.gov/compliance/resources/policies/civil/caa/mobile/vehicleengine-penalty-policy.pdf). If the conversion manufacturer has not followed EPA regulations and guidelines, you may be violating the tampering prohibition, which carries a significant fine, and you may be increasing the release of harmful exhaust and evaporative emissions into the environment.

So, What Can I Do to Improve my Fuel Economy and/or Reduce Automotive Emissions?

There are several things you can do obtain the best possible fuel economy and produce the lowest possible emissions.

- Avoid idling. Idling the engine wastes fuel and produces unnecessary pollution. Shut off the engine while waiting in traffic delays or while conducting drive-up transactions. Modern cars do not benefit from idling to warm up in cold weather.
- Check tire pressure regularly. Keep your tires inflated to their recommended pressure.
- Take action if your check engine light comes on. If the check engine light is illuminated, take your vehicle to a mechanic that has check engine (OBD) code reading capabilities and repair any malfunctioning parts.
- Drive sensibly and observe speed limits. Driving fast and/or aggressively (rapid acceleration and hard braking) can significantly reduce your fuel economy. Cruise control is a good way to regulate your highway speeds.
- Perform regular vehicle maintenance. Follow the manufacturer's recommended maintenance schedule.
- Plan your trips. Get all of your errands done at once. Your engine is more efficient when it is warmed up, so one long trip is better for your car's efficiency than many short trips. Don't forget to carpool when possible.
- Minimize vehicle weight and maximize aerodynamics. Think before you put something big on top of your car or something heavy in, on, or towed-behind your car. For example, a car roof-top carrier will increase the vehicle's frontal surface area and drag coefficients which will reduce your fuel economy. Adding mass to your car will also decrease fuel economy, so if you don't need it, don't carry it in or on your car.
- If you are shopping for a new or used car, use EPA's Green Vehicle Guide www.epa.gov/greenvehicles to compare 2000 through present model year vehicles for fuel economy.

The following websites offer additional advice about how to improve your fuel economy and reduce your automotive emissions.

www.fueleconomy.gov/feg/drive.shtml

www.epa.gov/otaq/consumer/17-tips.htm

www.epa.gov/fueleconomy/whatyoucando.htm

www.epa.gov/otaq/consumer/18-youdo.htm

www.eere.energy.gov/afdc/vehicles/fuel_economy_light.html

www.eere.energy.gov/afdc/vehicles/fuel_economy_heavy.html

For More Information

Federal Trade Commission Consumer Alert

www.ftc.gov/bcp/edu/pubs/consumer/alerts/alt095.shtm

Federal Trade Commission Fact Sheet: “Gas Saving” Products

www.ftc.gov/bcp/edu/pubs/consumer/autos/aut10.pdf

EPA Office of Transportation Air Quality Compliance Information Hotline

Phone Number: 734-214-4343

Email: Complianceinfo@epa.gov