



FLEX FUEL VEHICLES

Flex fuel vehicles can operate on two different fuels from the same tank. In the past we had vehicles that could run on propane & gasoline or natural gas & gasoline but they required two separate tanks. The alternate fuel most commonly used is ethanol with conventional gasoline. We presently have E10 which has 10% ethanol and 90% unleaded gasoline and E85, 85% ethanol and 15% unleaded gasoline.

Ethanol is also known as ethyl alcohol. It is a clean-burning, high-octane motor fuel that is produced from crops such as corn (one acre of corn produces 1250 liters of combustible ethanol), wheat, or barley. Sugarcane, sugar beets or sweet potatoes can also be used. Because it is domestically produced, ethanol helps reduce our dependency on foreign oil. As of January 2007 the government of Ontario has mandated that all gasoline sold in the province must have an average of 5% ethanol. It is important to note that it does not take a special vehicle to run on "ethanol". All vehicles produced since 1980 are "ethanol vehicles" said to be capable of using up to 10% ethanol with no modifications to the engine. Because pure ethanol has an octane rating of 113, adding 10% ethanol to gasoline raises the finished fuel's octane rating by 2 or 3 points. E85 reduces harmful hydrocarbon and greenhouse gas emissions and is the highest performance fuel you can purchase with its octane rating of at least 105 without the use of MTBE (Methyl Tert-Butyl Ether) which is being phased out because of ground water contamination.

E85 is an alternative fuel for use in flexible fuel vehicles (FFVs). There are currently more than 6 million FFVs on North America's roads today, and the automakers are rolling out more each year. Because alcohol fuels are corrosive, FFV engine and fuel systems are specially designed to accept gasoline/alcohol combinations. The fuel mixture is detected by sensors in the system, that in turn signal the engine control unit to adjust the fuel injection rate and spark timing for optimal performance. Modifications for E85, only adds \$200 to \$300 to the cost of the vehicle.

GM's available flex-fuel vehicles include Chevrolet's Monte Carlo, Impala, Avalanche, Silverado, Suburban, Tahoe, Sierra, and Yukon. Chrysler offers a flex-fuel in the Sebring, Stratus, Caravan, Ram pickups and the Durango. Ford has an FFV Crown Victoria, F-150 pickup Grand Marquis, and Lincoln Town Car. Nissan is currently the only foreign auto manufacturer offering a flex-fuel Titan pickup.

E85 may be better for the environment and the farmer, but it has some drawbacks. The first is price. Ethanol is more expensive than gasoline (approx \$1.17 per liter) and you'll only get approximately 70% of the fuel economy you get from conventional gasoline. Second is trying to find E85 pumps. At the time of this writing the only pumps in Ontario are in Guelph, Chatham, and Ottawa. As a result most FFV owners do not even use the alternative fuel option, therefore, defeating the environmental benefit. Thirdly, owners may have hard starting and drivability problems in cold weather. Because alcohol fuels are corrosive, it is not compatible with some of the metals (namely aluminum) used in small engine fuel systems, notable marine engines. Recent studies also have concluded that greenhouse emissions from the energy intensive process of cultivating to refining ethanol counteract the low pollution benefit of using E85 in your vehicle.

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