Miles per Gallon Go Down in Cold Weather

There are many factors that cause the fuel mileage in cars to go down in cold weather causing your vehicle to get fewer miles per gallon (MPG). As many people using ***Vortex Fuel Savers*** have become accustomed to monitoring their gas consumption, they have noticed decreases in MPG typically starting around the beginning of November. Since the system does not degrade (which is why Vortex has a Lifetime Power Warranty), what is the cause of the lower cold weather MPG? According to Click & Clack, the Tappit Brothers, of the NPR radio program "Car Talk," it is normal to lose about 10% of your gas mileage in cold weather, however, there are many reports of 15% or more lost MPG.

Here are eight reasons for lower winter MPG:

1. Winter Gas. Reformulated Gasoline (RFG), also known as "winter gas" is gasoline with more oxygen and hence, less hydrocarbons. While RFG is required to be sold in many states, typically starting around November 1, gasoline retailers regularly adjust the blend of gasoline sold so that even in states without a RFG requirement, a version of RFG is still sold.

In warm weather, gasoline with too many "light" components evaporates easily and causes vapor lock, an over-rich mixture that causes excessive evaporative emissions, so heavier components are added to gasoline. Conversely, in cold weather, too many heavier components keep the fuel from evaporating, resulting in a lean mixture, hard starts and poor converter light off, consequentially causing excessive hydrogen emissions. The RFG blend of gasoline is made by diluting regular gas by adding oxygen, often using ethanol or butane, which has a lower BTU value than the regular gasoline. It is simple logic to understand that if there is more oxygen and less fuel in a gallon of gasoline, there will be a lower energy content, and hence, fewer MPG. While proponents of RFG regularly state that the mileage reduction is in the 1-3% range, as is seen, many users report far, far worse results.

For owners of ***Vortex Fuel Savers*** who think the reduction in MPG, after getting good results, means that their Vortex stopped operating OR for new users who installed the ***Vortex Fuel Saver*** around the start of November when the change is made to winter gas, Vortex recommends taking the system off to establish a cold weather baseline of MPG. When taking the system off, there will be a de-stabilization period as the MPG continues to go down through a number of tanks of gas as the electromagnetic force that remains in the engine and fuel line steel dissipates. Of course, if your vehicle has some mileage on it, the new baseline will be a little higher than it would have been without ever installing the ***Vortex Fuel Saver***, because the excess carbon and varnish build up will have been reversed. After doing this, you will want to get the system back on to save the winter gas MPG that you are losing.

2. Cold Weather Starting. Vehicles use a lot more fuel to warm up to the proper operating temperature in cold weather; it simply takes more fuel in cold weather to get the engine and system up to temperature before it can run at peak fuel efficiency. In cold weather, a car's computer system measures coolant temperature, engine revolutions per minute (RPM), throttle position, air flow sensor volume and temperature readings to determine the most efficient air to fuel ratio (AFR) for warming up. To compensate for a not quite warm enough engine, the on board computer will keep the mixture rich (excess fuel) to keep the engine from stalling. After warm up, the computer will adjust the AFR for peak performance, but due to the density and temperature of the air, even after the engine reaches operating temperature; it still takes extra fuel (energy) in cold weather to keep it at an efficient operating temperature.

3. Air Density. Cold air is denser than warm air so there is more air in the path of your car creating more resistance for the car to go through. Cold weather is also typically associated with heavier winds – an additional source of resistance. This increase in resistance is an additional load on the car's engine, lowering MPG.

4. Increased engine load. Cold weather drivers typically use more vehicle accessories than warm weather drivers. Accessories such as the heater, defroster, electric seat warmers and windshield wipers put an additional strain on the engine which reduces fuel efficiency. For example, the heater takes heat from the engine, which makes the engine run less efficiently or causes additional running time before the engine reaches its most efficient AFR.

5. Fluid viscosity. Heat reduces viscosity (makes it thinner) and cold increases viscosity (makes it thicker). There are several fluids and lubricants in a car engine, such as oil, that make an engine operate efficiently only when they are warm and can flow easily. Cold weather causes sluggishness of the fluids leading to lower engine efficiency, reducing the MPG until they fully heat up.

6. Tire Pressure. In colder weather, tires lose air pressure, as a rule of thumb, one pound of pressure for every 10 degree (F) drop in temperature. Under-inflated tires increase rolling resistance and decrease fuel economy. At least this problem can be readily fixed by properly inflating your tires.

7. Road Conditions. Driving conditions in winter, such as rain, ice or snow, are worse than the driving conditions in warm weather. The roads are more slippery which often causes wheel spin upon acceleration. Wheel spinning can also occur when trying to get out of snowy or icy parking spots. Wheel spinning without going anywhere reduces the MPG. The ability to grip the road always results in better fuel efficiency. Additionally, the poor road conditions can cause you to drive at less fuel efficient speeds.

8. Human Warm up Time. Humans are like cars and need to warm up as well; so many people start their cars to warm them up before even getting in them. Running a vehicle without going anywhere certainly reduces the MPG. In addition to the start up, many people leave the car running for short stops, or while waiting for someone, in cold weather that would have turned the car off in warmer weather. This is especially true for short trips and people tend to make more short trips in inclement weather – who drives to a neighbor's house in the snow?