

Teck Tips



Kicking the carbon out!

What is Carbon Build Up?

Why has carbon build-up become more of a problem in recent years?

■ *First of all, people are keeping their cars longer than ever before. In 2008, the average age of the family car is nearly 9 years. It was less than 7-1/2 years in 1993, 15 years ago. It goes without saying that an older car will have more internal engine deposits. These deposits are the result of combustion. When the fuel mixture burns, one of the byproducts is carbon. Don't forget that an older engine will exhibit more wear (increased piston skirt-to-cylinder wall clearance) that allows more oil to leak past the rings. This oil is burned, leaving more deposits in the combustion chamber.*

■ *The second reason, and a more likely one, is gasoline. There has been a significant change in the amount of cleaning additives that are blended into gasoline. In 1995, the EPA established the lowest additive concentration required in gasoline. In other words, this mandate stated that all gasoline had to have a minimum amount of additives that would control deposits in the fuel system and combustion chamber. At that time, many brands of gasoline were blended with additives. Over the last 13 years, the content of deposit control additives in gasoline, has decreased significantly (by almost 50%). As a result, deposits and carbon build up in the engine and fuel system of all vehicles has increased. And don't forget that today's engines are more sensitive to carbon build up due to tighter manufacturing tolerances than those used in the past.*

Signs of Carbon Build Up?

- Engine pinging
- Hesitation
- Poor acceleration
- Spark knock
- Lack of power
- Carbon coated spark plug
- Repeated stalling in cold weather
- Thick, bluish exhaust
- Engine ping or a hammering sound

Effects of Carbon Build Up?

In general, carbon deposits can cause a drastic drop in both fuel economy and performance. Because so many automobiles on the road rely on computers and sensors for optimal engine performance, it is easy to see how carbon deposits can play havoc with modern engines. For example, most automobiles rely on an onboard computer to adjust the air/fuel ratio in accordance to the O₂ readings for optimal performance. Because oxygen sensors are exposed to engine exhaust, it is easy to see how susceptible they are to contamination from carbon-deposits. Incorrect oxygen sensor readings causes the computer to make performance adjustments based on incorrect data.

Particularly thick deposits also tends to increase engine compression simply because the carbon deposits take up more space inside the combustion chamber. Abnormally high compression may result in spark knock, particularly when driving under load or accelerating. In more extreme conditions, if carbon deposits are thick enough, the top of the piston may actually come into contact with the carbon-coated cylinder head or valves. When this happens, the sound resembles a hammer noise or like a rod bearing gone bad.

Carbon build-up can also result in excessive auto emissions. Here's how: An excessively rich fuel mixture or burned oil can create a heavy carbon residue that coats the inside of the catalytic converter. If left unchecked, excessive carbon deposits can make the catalytic converter ineffective at burning residual fuel vapors (hydrocarbons). A sufficiently compromised catalytic converter will need to be replaced. In addition, if your state requires annual auto emissions testing, you may fail simply because your catalytic converter is unable to reduce your vehicle's auto emissions.

Solution to Carbon Build Up?

An engine tear-down is not necessary. But you should take it to a reputable mechanic and have them clean it thoroughly with a cleaner specific to de-carbonizing.

Secondly, keep your vehicle on it's maintenance schedule and be sure to change the spark plugs at the recommended intervals, as well as the air filter.

