Wyres & Tyres

Special Corona-Virus Issue

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Membership Meetings

Coletta's Italian Restaurant, 2850 Appling Rd.

3rd Monday of each month
6:00 p.m. if you wish dinner;
7:00 p.m. for our program

Mark your calendar
April 20th, 2020 ????
May 18th, 2020
June 15th, 2020
July 20th, 2020

Buddy, Have a Drank?

There was a time when"corn squeezings" had nothing to do with automobiles, at least not where the hills of Alabama lap over into Tennessee where I grew up

Not anymore!

Now days corn-derived alcohol goes into our car's gas tanks. The gasoline that fuels your car is actually 10 percent ethyl alcohol, or ethanol.

Is that a good thing? A bad thing? Or, what?

Taken from an energy content or gas mileage perspective, it isn't particularly good - a gallon of ethanol delivers only two-thirds as much energy as a gallon of pure petroleum-based gasoline. As a result, we're paying about twice as much for that ethanol, per unit of energy, compared to completely petroleum-derived gasoline. Gas mileage is thus

decreased by about 3% with the addition of ethanol.

And, there are corrosive effects of ethanol to consider, too. Ethanol acts as a solvent in older engines and can dissolve old gum and varnish deposits from the gas tank and fuel lines. These deposits can then clog the small orifices in the carburetor or fuel injectors. Additionally, alcohol (ethanol) is a drying agent and long-term contact can damage the inside of fuel lines along with the gaskets and rubber bits in carburetors and injectors.

The reason you don't have trouble with ethanol in most cars is because you tend to get new gasoline on a regular basis as you drive your car each day or every other day. However, it can be a different story with that British classic sitting out in the garage.

Ethanol-containing gasoline can deteriorate - go through 'phase separation' in just 30 days. Hence shelf life of gasoline containing ethanol is about one month. Compare that to the three or four months with all-petroleum based gasoline. That means we shouldn't store it in that little red container more than around a month, nor in the gas tanks of our British classics, either - especially not over the winter or summer months.

In short, don't leave it in the tank for long periods of time.

There are some additives, such as Sta-Bil that **may** promote safer long-term storage.

When E10 gasoline (a mixture of 90% gasoline and 10% ethanol) comes into contact with water, the ethanol will allow fuel to absorb some or all of that

water. This is actually somewhat beneficial, but fuel can reach a saturation point. In that case, the water can phase separate to form a distinct layer in the bottom of the tank. The upper "gasoline" layer will be depleted of ethanol and have a lower octane level. The octane may be so low that your car will be difficult, or impossible to start. Meanwhile, the bottom "phase separation" layer will be a corrosive mix of water and ethanol. No chemical agent or fuel additive can be added to E10 gasoline, in a reasonable quantity, that will fully prevent phase separation or recombine a phase-separated layer.

Let's take a deeper dive into ethanol.

The Renewable Fuel Standard (RFS), (1963 - Clean Air Act as amended in 1970, 1977, 1990 (42 USC 7401 et seq.)) has required gasoline manufacturers to purchase, until this year, ever-growing amounts of ethanol, which they then blend into the nation's fuel supply.

As ethanol use increased over the past several years, dozens of giant distilleries — known, more respectably, as ethanol plants — appeared in the country's corn belt. Feeding those distilleries is now

a full-time job for roughly 35 million acres, or 55,000 square miles, of corn fields.

So we can trace our ethanol addiction back to a regulation signed into force by George Bush in 2007, and without the force of law, gas companies wouldn't be imposing a burden on the motoring public, nor would massive amounts of our grain stock be diverted from food to fuel.

Well, maybe that isn't true.

Experts who've examined this question in great detail: Paul Niznik, an analyst at Stratas Advisors, an energy consulting business in Houston, and Scott Irwin, an economist who teaches at the University of Illinois say otherwise. Their bottom line: If the law changed tomorrow and gasoline companies were free to ignore ethanol, **they'd almost certainly keep right on blending ethanol into their fuel**.

Got that? The ethanol mandate requires gasoline companies to do something that, at the moment, they'd do anyway.

The reason, in a word, is octane.

The industry octane standard for gasoline is 87. But getting gasoline's octane rating up to that standard costs money. It means more refining of the petroleum, or using high-octane compounds in your gasoline formula, such as — you guessed it — ethanol. So gasoline companies aren't using ethanol for its energy — they're buying it for its high octane rating.

There are three general categories of ethanol-gasoline blends: E10, E15, and E85. E10 is gasoline with 10% ethanol content. E15 is gasoline with 15% ethanol content, and E85 is a fuel that may contain up to 85% fuel ethanol.

All gasoline engine vehicles can use E10. Currently, only flex-fuel and light-duty vehicles with a model year of 2001 or newer are approved by the EPA to use E15. Flex-fuel vehicles can use any ethanol-gasoline blends up to E85.

The energy content of ethanol is about 33% less than pure gasoline. The impact of fuel ethanol on vehicle fuel economy varies depending on the amount of denaturant that is added to the ethanol. The energy content of denaturant is about equal to the energy content of pure gasoline. In general, as mentioned earlier, vehicle fuel economy may decrease by about 3% when using E10 relative to gasoline that does't contain fuel ethanol.

The octane rating is a measure of a fuel's ability to avoid knock. Knock occurs when fuel is prematurely ignited in the engine's cylinder. Knock degrades efficiency and can be damaging to the engine. Knock is virtually unknown to modern cars. This is primarily because fuels contain an oxygenate that prevents knock by adding oxygen to the fuel. This oxygenate is commonly referred to as octane.

In the early 20th century, automotive manufacturers were searching for a chemical that would reduce engine knock. In 1921, automotive engineers working for General Motors discovered that tetraethyl lead (better known as lead) provided octane to gasoline, preventing engine knock. While aromatic hydrocarbons (such as benzene) and *alcohols (such as ethanol) were also known octane providers at the time*, lead was the preferred choice due to its lower production cost.

Early in its use as a fuel additive, health concerns were raised regarding the use of lead in gasoline. In 1924, 15 refinery workers in New Jersey and Ohio died of suspected lead poisoning.

Congress passed the Clean Air Act in 1970, setting in motion the formation of the EPA and, ultimately, the removal of lead from gasoline. EPA estimates that between 1927 and 1987, 68 million children were exposed to *toxic* levels of lead from leaded gasoline alone. The phase-out of lead from gasoline subsequently reduced the number of children with toxic levels of lead in their blood by 2 million individuals a year between 1970 and 1987.

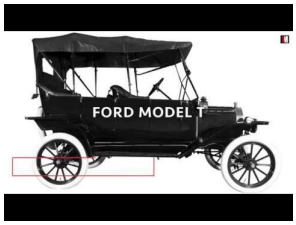
By the late 1990s, a petroleum product, methyl tertiary butyl ether (MTBE), was used in 87 percent of RFG due to its ease of transport and blending.

MTBE was phased out of the gasoline pool due to concerns over its solubility in water, which resulted in the contamination of water resources in numerous states. As of 2005, EPA reported that MTBE was not being used in significant quantities in the United States.

The BTEX complex, a hydrocarbon mixture of benzene, toluene, xylene and ethyl-benzene. Commonly referred to as gasoline aromatics, these compounds are refined from low-octane petroleum products into a high-octane gasoline additive. While some volume of BTEX is native to gasoline, it is also added to finished gasoline to boost its octane rating.

A consequence of lead's phase-out was the increase of BTEX in gasoline. When faced with the removal of lead as the primary octane provider in gasoline, refiners had two available alternatives, BTEX and ethanol. Because it was cheaper and because much of the infrastructure was in place, the refining industry invested in additional refining capacity to replace lead with BTEX, a high-octane petroleum refining product. As a result of its substitution for lead, BTEX volume rose from 22 percent to roughly a third of the gasoline pool by 1990. In premium gasoline grades, the BTEX volume content was as high as 50 percent.

Research, however, found that even very low-level exposure to the BTEX complex, from gasoline additives and other petroleum products, may contribute to negative developmental in children, reproductive and immunological responses, as well as cardio-pulmonary effects. Ugh! Bad Stuff!



Early automakers expressed interest in plant-based alcohol fuels, such as ethanol. Henry Ford designed the first Model T to run on ethanol. But, at the time, gasoline was a much cheaper fuel. Additionally, Standard Oil was "reluctant … to encourage the manufacture and sale of a competitive fuel produced by an industry in no way related to petroleum."

In addition to having lower lifecycle greenhouse gas emissions than conventional gasoline, ethanol is an excellent octane provider, with neat (pure) ethanol having an octane rating of over 100. Currently, refiners create 'sub-octane gas,' which has a lower octane rating than required. Ethanol, which is generally the cheapest octane provider, is then used to bring the octane rating of the gasoline up to the labeled octane value on the gas pump. For example, 84 octane gasoline is typically blended with 10 percent ethanol to reach the minimum octane requirement of 87 for retail gasoline.

Ethanol opponents trump up mythical ethanol mandate predictions and horrific false stories of ethanol-caused damage to frighten consumers. The boating community is a prime example of an area where false scare tactics have abounded. If boat owners want to hear some truthful comments about ethanol blends they should watch the Vernon Barfield ethanol boating videos on YouTube and listen to the Mercury Marine "Myths of Ethanol and Fuel Care" webinar from August 2011.

The reality is corrosion is endemic in liquids - water, for example. Auto manufacturers have had to develop "specially designed" containers to hold water for automatic window washing. That's right, if they used most metals to hold the water it would rust and/or corrode. Manufacturers had to develop "specially designed" coatings or parts to prevent chassis and fenders and bumpers from water corrosion. Manufacturers had to develop "specially designed" body paint and rubber to prevent solar corrosion. And, over the years auto manufacturers had to develop "specially designed" engine parts, rubber, and body paint that was resistant to the corrosive characteristics of gasoline and diesel.

In other words, if auto manufacturers had to make some alterations to accommodate ethanol, so what? It's not even worth a serious discussion, and it certainly doesn't befit a person like you who is supposed to know something about automobiles and industrial engineering.

There **are** four problems with ethanol:

1.) It is corrosive when in contact with certain materials in fuel storage and delivery systems, including some rubber compounds and the zinc and aluminum alloys used in carburetors.

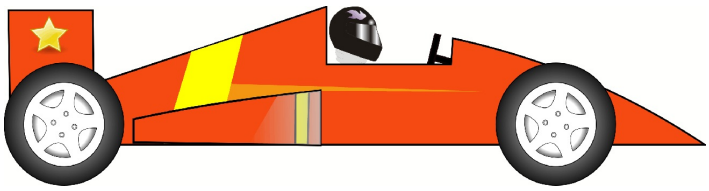
2.) Because it is an alcohol, ethanol dries out the rubber components in a fuel system. This leads to cracking and brittle fuel lines, floats, seals and diaphragms.

3.) Ethanol is hygroscopic – it likes water. Water enters fuel containers when they are filled up. Once in the gasoline, it forms a chemical mix that causes corrosion of internal parts. As the fuel level in a tank or container drops, water condenses on the cool surfaces of the vessel, drops and runs down into the fuel where the ethanol welcomes it.

4.) It acts as a solvent in older engines, dissolving the varnish and other deposits in tanks and lines. These then are carried to the carburetor or injection system where they can clog the small orifices involved.

Because of its love of water, gasoline containing ethanol should not be allowed to sit for any length of time. This is the reason it is not present in giant storage tanks, pipelines or bulk carriers, but added at the refinery just prior to delivery to gas stations.

This fuel has certain advantageous attributes that make it a popular fuel for performance and racing. Currently NASCAR uses a race gasoline mixed with 15-percent ethanol, and the Indycar Series racers that initially switched from methanol E85 in 2012.



Ethanol by itself is not corrosive. E98 will likely contain an average of 0.5-percent water. This is because it is extremely expensive to remove that last bit of water. When ethanol is mixed with sufficient amounts of water, this can cause corrosion, but <u>the effects can be minimized with easy steps such as keeping the fuel tank full when the vehicle is stored.</u> Oddly, ethanol is also an excellent cleaner and will remove deposits often left by "bad gas."

While ethanol has taken the blame for much of the "damage" that has occurred from reformulated gasoline (RFG), it's important to point out that 25-percent of US fuel contains aromatics that are also detrimental to fuel systems. Over time, it has been shown that it is these aromatics, and not necessarily the ethanol, that can cause fuel system damage.

Remember - Give a man a duck and you'll feed him for a day. But, teach a man to duck and he'll never run into a bar again.

Tail Lights In The Age Of Corvid-19

Modern cars seem to all look alike. Did you ever spot a car on the street and mistake a Hyundai for a Rolls? Or a Chevy for a BMW? Easy to do because there's little to set them apart, appearance-wise.

It wasn't always this way. Car design, not so long ago made it far easier to distinguish one model from another. Manufacturers and designers aimed to make their product stand out and weren't afraid to bd different from their competitor.

Our friend Jack Reynolds is sporting a new Mini Cooper S these days. One look at the tail lights shows Mini remains unafraid to be distinctive. They, under Alex Issigonis' leadership were the first to package a small engine and transmission to drive the front wheels of a tiny car. From it's launch in 1959, the Mini has continued to hear a different drum, even though under new ownership.

To illustrate how cars have lost their difference, let's see how many car models you can identify just from their tail light. Nearly all of these are tail lights from fairly common cars, ones that you've seen many times.

Just write the correct number in the appropriate slot below:

A-Austin Healey _____

B-39 Rolls Royce _____

C-59 Chevy _____

D-57 Ford _____

E-A H Sprite _____

F-TR250 _____

G-59 Cadillac _____

H-85 Rolls Royce _____

I-Volkswagen _____

J-MGB _____

K-Sunbeam Alpine _____

L-Mini Cooper _____

M-Aston Martin DB4 _____

N-56 Chevy _____

O- E-Type Jaguar _____

What the British say	What the British mean	What others understand
I hear what you say	I disagree and do not want to discuss it further	He accepts my point of view
With the greatest respect…	I think you are an idiot	He is listening to me
That's not bad	That's good	That's poor
That is a very brave proposal	You are insane	He thinks I have courage
Quite good	A bit disappointing	Quite good
I would suggest…	Do it or be prepared to justify yourself	Think about the idea, but do what you like

Grille Badges

The BSCC is in the process of acquiring new badges, in the form of the club logo to adorn member cars. Initial cost constrained our purchase to 40 badges, and so we sent email to BSCC members to that effect.

Those 40 badges were so quickly subscribed that a few members were left disappointed. Since a handful of members bought more than one badge, maybe a trade could be effected once the badges are in hand.

New Members

John & Jan Forrester, 1976 MGB
Steve Fleming, 2003 Jaguar
Kevin & Linda Childers, 1977 MGB
Carlos Rivera & Marta Torres, 2018 & 2016 Minis
Steve & Terry Harvey, 1972 MGB

Answers to the Tail Light Puzzle:

A - #7
B - #1
C - #6
D - #3
E - #9
F - #15
G - #4
H - #5
I - #14
J - #13
K - #8
L - #12
M - #10
N - # 2
O - #11

How'd you do? Get them all right? Try that with the next few cars you see on the street (or out in your driveway), isn't so easy today, right?

We leave this special edition of *Wyres & Tyres* with this message:
Stay safe, wash your hands, keep your distance,
and especially don't hoard toilet tissue!