

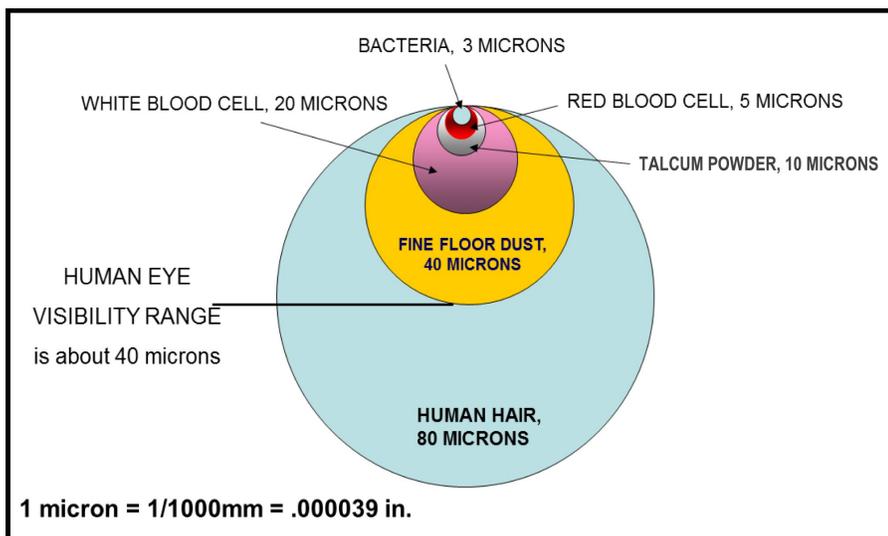
GASSED UP AND READY TO GO Proper Care of Machine Fuel Systems



Bio Fuels and Ultra Low Sulfur Diesel have very high concentration of saturated water due to the manufacturing process. This means that you may see the Water in Fuel Sensor (WIF Sensor) go off even though you do not see water in the fuel bowl. It is not possible to drain the water out like in the past because the water molecules are saturated into the fuel. The only way to get the water out is by changing the water separator.

With the introduction of the tier 3 engines, most manufacturers reached this rating by increasing the injector pressures using a high pressure common rail system. John Deere equipment with a tier 2 engine has an injection pressure at 3,500 PSI. Now, with tier 3 engines and above, the pressures are operating in the 25,000-35,000 PSI. With this in mind, the fuel system needs to be very clean in order to prevent injector failures. The high pressure common rail systems have a 2 micron final filter to remove the fine particles in the fuel systems. That is 20 times smaller than the human eye can see—so **looking** at your fuel does not mean it is clean!

To put this in comparison;



Depending on where fuel is purchased has a direct impact on filter life. Most filters on fuel trucks are 10 micron, which leaves a lot of particles in the fuel to be picked up by the final filter.

Another problem is in the practice of pre-filling fuel filters. When pre-filling a fuel filter, you are putting unfiltered fuel into the system. Unless the filter comes with a special adapter for the sole purpose of prefilling, you should never use the practice of pre-filling the filter. Filters should be installed empty, filled and bled as described in the operator's manual.

Another misconception that mechanics have about the black powder that they find in the final fuel filters is algae growing in the fuel. It is actually a by-product of carbon in the fuel system. What happens when fuel is injected at such high pressures is that the injectors create a lot of heat. This heat burns the carbon out of the fuel and returns it to the fuel tank through the return line. The pickup tube then sucks this carbon back up trapping it in the final filter.

An algae grows in a mucus state in water during warmer temperatures, and only turns into a black powder in the winter after it dies. If you see black powder showing up in your fuel filters during the summer, you need to clean the fuel tank and lines to prevent the filters from getting plugged. There are additives that are available to use to keep the carbon from returning to the fuel system.

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