



What Is the Right Cetane Number?

Cetane number is sometimes thought of as a measure of fuel quality. While cetane number is a property of fuel and gives some indication of quality, there are many properties and aspects that make up the whole of fuel quality.

To be more accurate, cetane number is a measure of ignition quality. It is a number that relates the time between the start of injection of fuel into the combustion chamber to the start of combustion (ignition) of the fuel. The smaller the number, the longer the time (delay) between injection and combustion. The higher the number, the shorter the time between ignition and combustion.

Excerpt from John Deere JDS-G135: Worldwide Recommendations for Fuels, Coolants, and Lubricants for John Deere Equipment

Cetane number of 40 minimum. Cetane number greater than 47 is preferred, especially for temperatures below -20°C (-4°F) or elevations above 1675 m (5500 ft).

Diesel engines are designed to operate at peak efficiency on fuel of a specific cetane number. Using a fuel with a cetane number too low for the engine delays combustion, causing poor starts, smoke from incomplete combustion, and rough idling. Likewise, fuel with a higher cetane number than needed combusts too quickly before the engine is ready. This can also cause the same problems of poor starts, incomplete combustion, and a rough-running engine. Both situations rob engines of power and efficiency.

Excerpt from Cummins Service Bulletin 3379001

fuels meeting only the required specifications will not give the same level of performance, efficiency, reliability, or maintenance costs as premium fuels.

Table 1: Cummins Inc. Required Diesel Fuel Specifications¹

Viscosity	1.3 to 4.1 centistokes at 40°C [104°F]
Cetane Number	42 minimum above 0°C [32°F]; 45 minimum below 0°C [32°F] ²

Cetane Number

- A cetane number below 42 can cause poor starting, excessive white smoke, and poor idling. A cetane number above 55 can increase smoke at peak torque conditions.

Engine designs continue to evolve. The tolerances and technology of today's modern engines have made all fuel properties more important, including cetane number. Modern engines are designed to run with optimum efficiency on fuel with a cetane number of 45 to 47 even though

typical North American ultra-low-sulfur diesel (ULSD) fuel carries a minimum cetane number specification of 40.

It is important to pay attention to what the manufacturer of your equipment recommends and compare this to the cetane number of the fuels available in your area, especially in winter. The problems caused by fuel with a low cetane number can be more severe in colder weather.

FS Deselex® Gold is engineered to target a cetane number that falls within that optimum efficiency range of 45 to 47, providing:

- Improved cold starts
- More complete combustion
- Less engine noise and knocking
- Reduced white smoke and warm-up time
- Fewer misfires
- Lower emissions: nitrogen oxide, hydrocarbon, carbon monoxide, and particulate matter

Contact your local FS Energy Specialist to learn how using a higher-cetane diesel fuel can help you operate more efficiently and improve your bottom line.