



Diesel Analysis and Specifications

(Revised 01/11/2021)

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Flash Point

ASTM D56: Standard Test Method for Flash Point by Tag Closed Tester

[Click here for further information on this standard.](#)

Flash point determines the maximum temperature at which the fuel can be stored and handled without serious fire hazard.

- #1 Diesel, minimum: 100.4° F
- #2 Diesel, minimum: 125.6° F

There is a flash point waiver to 100.4° F if a cloud point of -12° C (10.4° F) or below is specified during the coldest months (November through March).



Flash Point Testing

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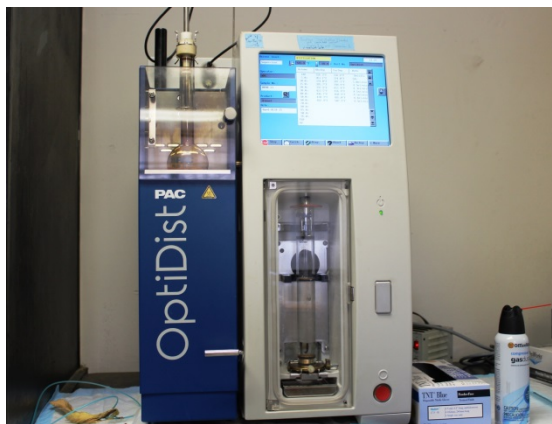
Distillation

[Click here for further information on this standard.](#)

The distillation characteristics affect starting, drivability, dilution of the engine oil, and fuel economy. These temperatures are used to characterize whether the distillation meets the ASTM specifications.

Specification for the temperature when 90% of the distillation is complete = T90.

- #1 Diesel maximum: 550.4° F
- #2 Diesel minimum: 539.6° F
- #2 Diesel maximum: 640.4° F



Automated Distillation Instrument

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Sulfur

ASTM D7212: Low Sulfur in Automotive Fuels by Energy-Dispersive X-ray Fluorescence Spectrometry Using Low-Background Proportional Counter

[Click here for further information on this standard.](#)

Sulfur affects the amount of particulate emissions emitted into the environment, cylinder wear, and deposits in internal combustion engines.

- #1 Ultra Low Sulfur Diesel: maximum 0.0015% mass (15 ppm)
- #2 Ultra Low Sulfur Diesel: maximum 0.0015% mass (15 ppm)



Automated XRF Sulfur Instrument

Cloud Point

ASTM D2500: Standard Test Method for Cloud Point of Petroleum Products and Liquid Fuels

[Click here for further information on this standard.](#)

The cloud point of a fuel is a guide to the temperature at which it may clog filter systems and restrict flow. At very low temperatures wax crystals may precipitate out of the diesel fuel, blocking the fuel system lines and filters causing malfunctioning or stalling of the engine. In Colorado, the requirements for cloud point start in October and continue through March, with the temperature requirements becoming lower through January and gradually rising into March. The requirements for Eastern Colorado are less restrictive than for Western Colorado, due to differences in mean elevation and temperature.



Cloud Point Analysis and two cloud point vials showing cloud point on the right.

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Calculated Cetane Index

ASTM D4737: Standard Test Method for Calculated Cetane Index by Four Variable Equation.

[Click here for further information on this standard.](#)

The Cetane Number measures the ignition quality of diesel fuel based on ignition delay in an engine. The higher the cetane number is, the shorter the ignition delay and the better the ignition quality of the fuel.

- #1 Diesel (low sulfur) minimum: 40
- #2 Diesel (low sulfur) minimum: 40