

Tech Talk – Cold Weather Operability

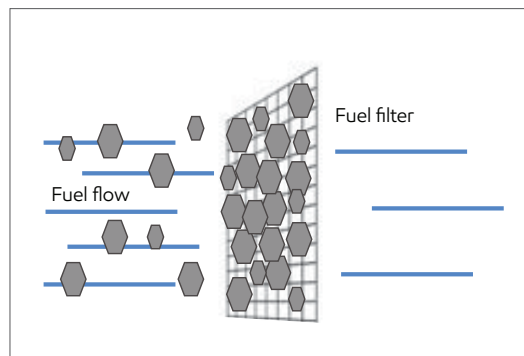


Fully formulated Mobil Diesel Efficient™ fuel with cold-flow improver

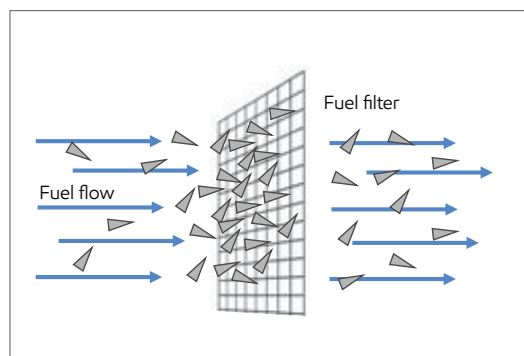
Low-temperature diesel performance is among the top concerns of on-road fleets and off-road vehicles. Diesel fuel is impacted by ambient temperatures, so its performance characteristics need to be managed throughout the year to ensure proper equipment and engine operation – especially in cold environments.

Why is diesel impacted by low temperatures?

Diesel fuel contains paraffins, which means that at low temperatures, the wax precipitates, or separates, from the fuel as wax crystals. As the temperature falls, these crystals grow and cover the fuel filter surface, which can lead to fuel starvation, loss of engine power and eventually stalling. Wax plays an important role in the fuel by enhancing cetane, which improves cold starting.



Wax separates from untreated fuel and creates rhombic wax crystals that rapidly cover the filter.



Cold-flow improver modifies the wax crystals into needle-shaped crystals, allowing some wax and fuel to pass through the filter.

Cold-weather operability

What is a cloud point?

A diesel fuel's "cloud point" is the temperature at which the diesel fuel forms a cloudy appearance – caused by paraffin wax precipitating – as it is cooled. The cloud point is considered to be a conservative estimate of low-temperature vehicle operability.

Does the ASTM D975 include a specification for cloud point?

No single cloud point specification is given since the ambient conditions directly impact diesel fuel performance characteristics. Rather, it states that the fuel shall be designed to provide satisfactory performance at the ambient temperatures indicated by the tenth percentile of historical temperatures for the period (month), as well as the location of the fuel's intended use.

What is a cold-flow improver?

Cold-flow improvers are used to modify the shape of the wax crystals so that fuel keeps flowing through fuel filters at lower temperatures. Since the weather is not always predictable, a cold-flow improver provides an added margin of safety for cold-weather operability. Kerosene blending is another option for cold-weather treatment. However, kerosene is typically more expensive and would need to be blended at significant levels to achieve the same results as the cold-flow improver in Mobil Diesel Efficient fuel.

When can I expect to see a cold-flow improver incorporated into Mobil Diesel Efficient fuel?

Between November and March for most markets with colder climates.

