

# Tech Tips - Temperature Effects

## COLD TEMPERATURES AFFECT DIESEL FUEL

Diesel engine power loss is a major concern during winter months. Extreme temperatures affect the blended makeup of diesel fuels.

- Hydrocarbons begin to freeze and solidify (gelling)
- Paraffin Wax begins to thicken
- Fuel Additives do not mix as easily and start to drop out of fuel
- Water becomes “slushy” as ice crystalizes

### Cloud Point - “Cloudy” Looking Wax Crystals

The Cloud Point is the temperature at which fuel becomes cloudy as it begins to thicken and form wax crystals. When the fuel temperature reaches the cloud point, wax crystals coat the filter element and quickly plug the fuel filter and injectors, causing engine power loss due to restricted fuel flow.

### Addressing Cold Temperature Related Issues

- Additives - Provide anti-thickening properties
- Fuel Heaters - Bring temperature of fuel to higher levels
- Fuel Blending - Blends various diesel fuels as temperatures change

## FUEL FILTERS IN COLDER WEATHER

### Filter Media

Filter media consists of multiple layers or overlapping fiber materials. The open areas of the media (pores) allow flow through the media.

- Large (micron) openings allow “thicker fuel” to flow at colder temperatures
- Smaller (micron) openings provide better filtration, but restrict flow of fuel at colder temperatures

### Filtration Solution

- Fuel filters must be replaced - keep a “spare filter” in the vehicle
- Use a more open (micron) size, less restrictive media that still meets OE requirements to protect your fuel system.



**Diesel Fuel**  
(Cloud Point)

**Diesel Fuel**  
(Normal)

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