

LUBE

TECHNI-GRAM



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FUEL DILUTION

The performance of a crankcase oil will be seriously affected by dilution when unburned or partially burned fuel enters the crankcase. In older, carburetor equipped gasoline engines, faulty operation of a choke, poor combustion, bad timing or worn pistons and rings all contribute to this dilution. Faulty injection and worn engine parts can produce the same condition in diesel and today's fuel injected gasoline engines.

Dilution of crankcase oil may occur in any engine and the amount of fuel contamination will vary from a mere trace to as much as 50%. The presence of fuel in excess of 5% gasoline and 7% diesel fuel may lead to rapid engine wear and deterioration of lubricating oil. Fuel contamination of 5% very definitely changes the lubricating qualities of crankcase oil. Adding 8 ounces of fuel to 5 quarts of SAE grade 30 engine oil reduces the viscosity of the lubricant to the equivalent of SAE grade 20.

5 QUARTS SAE 30 + 8 OZ. FUEL = 5 + QUARTS SAE 20

Rapid dilution is likely under conditions of cold weather operation or when the vehicle is operated at low speeds or frequent periods of idling. Under these conditions, the crankcase ventilating system can't effectively remove all vapors from the crankcase. So, they condense on the cool areas of the engine block and continue to dilute the oil.

There are 3 principal causes of fuel dilution:

- 1) Excessive idling
- 2) Over-choking or lugging the engine
- 3) Mechanical faults

Mechanical faults leading to crankcase dilution in older carburetor equipped gasoline engines are numerous and require checking the following:

- 1) Fuel Pump
- 2) Carburetor
- 3) Spark plugs and ignition system
- 4) Timing



... to keep it running

- 5) Valve train
- 6) Piston and rings
- 7) Thermostat
- 8) Air filter
- 9) Breather system
- 10) Crankcase emission system

In diesel and fuel injected gasoline operations, check the following:

- 1) Plugged injector tips
- 2) External or internal fuel leaks
- 3) Loose injector inlet or drain connection
- 4) Wrong injector cups
- 5) Cracked injector body
- 6) Coolant temperature low
- 7) Excessive idling
- 8) Gasket blow-by or leakage
- 9) Breather system

Field experience has shown that many customers' fuel dilution problems can be prevented simply by proper maintenance on the carburetor or injection system of the engine. By being certain that the injector tips are clean and free of carbon or varnish build-up, customers can better assure a full combustion of fuel. **SWEPCO 501 Premium Diesel Fuel Improver** and **SWEPCO 503 Gas & Diesel Fuel Improver** have years of proven performance in providing cost effective and superior performance value of controlling the accumulation of harmful insoluble residues.

The operator also has a great affect on fuel dilution if they lug the engine or do not shift properly. This causes excessive fuel to get into the combustion chamber. It then washes by the rings and gets into the oil, creating dilution. If a customer is encountering fuel dilution and his equipment idles a great deal, some of this can be eliminated by eliminating the idle time. According to various industry studies, good driving techniques can increase fuel economy by up to 30%.