

OIL CONTAMINATION IDENTIFICATION

A List of the Top Offenders

Although lubricants are a relatively small part of a company's operating and maintenance costs, they can have a significant impact on the trend or direction of equipment reliability, longevity, and the overall maintenance budget. Oil analysis can help you to identify many types of contaminants before they negatively impact your equipment and bottom line.

Read on to learn more about the most common contamination issues and what testing will identify them.

Abrasives

Detection

Abrasive contamination is commonly detected by **ICP (inductively-coupled plasma)** spectroscopy which identifies **ELEMENTAL METALS PRESENT IN THE OIL** and measures their concentration.

If there is **ADVANCED SILICON CONTAMINATION**, increased Iron and Aluminum may also be seen in sample reports.

Cause

Abrasive contaminants are often the **MOST DAMAGING**.

Common abrasives are **DUST AND DIRT**.

These can be introduced into the system through **CRANKCASE VENTILATION SYSTEMS** or leaks in the intake system.

Undetected, they can cause **EXTENSIVE WEAR IN ENGINES** and other components.

Detection

WATER CONTAMINATION can be detected by visual inspection.

The presence of water can also be detected by **HOT PLATE OR CRACKLE**. An additional test, Water by Karl Fisher, can more accurately determine the percent of water present.

Water

Cause

Water is the second most **DAMAGING OIL** contaminant.

Water contamination can be caused by **CONDENSATION** in engines and other components.

This can lead to metal-corroding acids that can **DAMAGE INTERNAL COMPONENTS**.

Coolant

Detection

One of the first signs of coolant contamination is the presence of **SODIUM OR POTASSIUM** in some combination, which is dependent on the specific coolant.

Cause

COOLANT can get into engine oil through blown head gaskets, cracked cylinder heads, EGR coolers, and liner seals.

This can cause damage to **BEARINGS, PISTONS, RINGS AND LINERS**.

Detection

As testing for fuel dilution is the measurement of one petroleum product within another, it is most accurately **IDENTIFIED BY GAS CHROMATOGRAPHY** (GC is an optional test)

GC separates the mixture by vaporizing the sample and then measuring each component released.

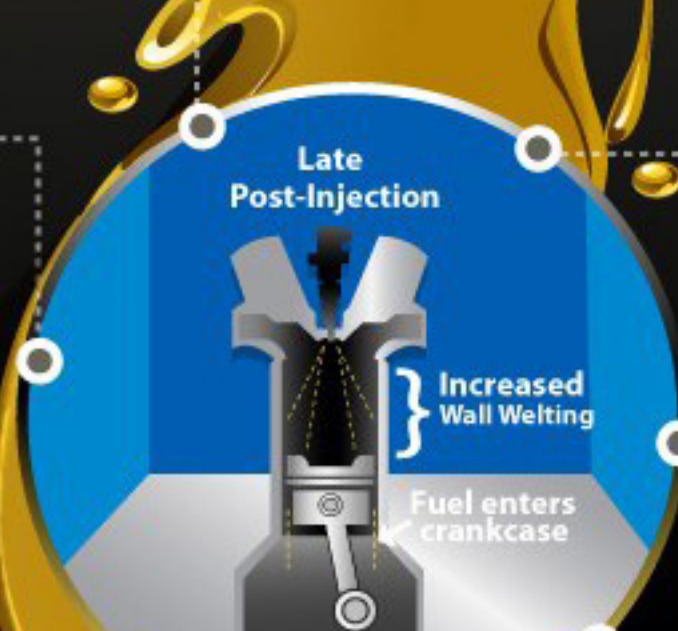
Fuel

Cause

Fuel contamination, or fuel dilution, occurs when **UNBURNED DIESEL FUEL** gets into the engine oil in the crankcase of an engine.

Even at **VERY LOW LEVELS**, fuel dilution can decrease engine oil's viscosity and lubricity, increase wear and endanger bearing life.

Dilution by more than 8% can result in a crankcase explosion.



OIL TESTING and ANALYSIS is an important part of managing fleet operating costs, reducing engine failure and keeping your fleet up and running. Identifying contamination can help you identify potential problems early on, saving you time and money by reducing both downtime and costs to repair and replace equipment.

Brought to you by the oil sampling experts at Castrol Labcheck

