

# USING OIL ANALYSIS

SINCE 1839  
*Schaeffer's*  
SPECIALIZED  
LUBRICANTS



# Time to embrace oil analysis

Maybe you've tried oil analysis in the past but didn't stick with it or haven't tried it at all. Without oil analysis, it's hard to determine how long the fluid will last in your vehicles or equipment. As firm believers in its benefits, we're here to help you get on board with oil analysis.

Changes in equipment designs over the years have placed more stress on lubricants. Contaminants, higher temperatures and operating conditions are factors that can affect a fluid's service life. Oil samples pulled from your machinery allow you to take the guesswork out of drain intervals.

By implementing oil analysis for your business, you can take control of your lubrication usage and preventive maintenance:

- Extend lubricant life
- Reduce lubricant costs
- Preserve equipment's service life
- Know how the oil is performing
- Reduce unplanned downtime
- Improve preventative maintenance
- Reduce costs associated with engine failure
- Improve vehicle and equipment reliability.

**Oil analysis is recommended to safely go longer between oil changes and to know how the oil is performing.**



## Pinpoint mechanical issues early on

The costliest failures are usually those that catch us by surprise. Oil analysis can help you spot a worn part so you can do a scheduled minor repair instead of getting stuck with a failure.



## Maximize oil drain intervals

If you go longer between oil changes, you're reducing the amount of lubricants you use. The key is to do that safely to preserve equipment durability. Oil analysis provides you the data you need to make those decisions. Longer drain intervals lead to less downtime and less money spent on lubricants.



## Extend equipment life

Oil analysis serves as an early detection system for your equipment. For example, determining metal content in the lube sample can alert you to the type and severity of wear occurring in the unit. This proactive approach helps protect equipment's service life and helps you have full use of your fleet or equipment.



## Avoiding common pitfalls

Oil analysis can transform how you operate and lubricate your equipment—but it starts with you!

Waiting until you suspect there's a problem isn't the best time to start oil analysis. Your equipment gives subtle warning signs in the hours or miles leading up to a failure. Regular oil analysis detects those signs much sooner. If you skip a sample here and then, it makes it harder to determine if a warning sign is occurring consistently.

Another mistake that some make is relying on one report to adjust their lubricants or equipment. One sample only gives you a snapshot of that interval and doesn't allow you to see the big picture of what's going on with your equipment. The first oil sample helps you set a benchmark you can use to compare the following samples against.

It's also tempting to focus in on one area of the oil analysis report. A good oil analysis program examines multiple check points with your fluid. That information tells you how all the parts of your lubricant are working with your equipment.

Finally, be sure to provide complete information about the equipment and fluid with the sample. Knowing the age of the oil and equipment and the equipment's operating conditions can affect the accuracy of the results.

### Determining drain intervals

- Results need to be trended, not based on one sample
- Identifying lubricant time in hours and miles
- List operating and maintenance conditions
- Follow OEM used oil analysis warning limit and drain limit recommendations.

# Understanding lubricants

Engine oils are made up of three components: base oils, performance additives and viscosity modifier. The base oils provide the lubricant film between moving parts to reduce friction and wear. They also carry away contaminants and remove heat generated by the equipment.

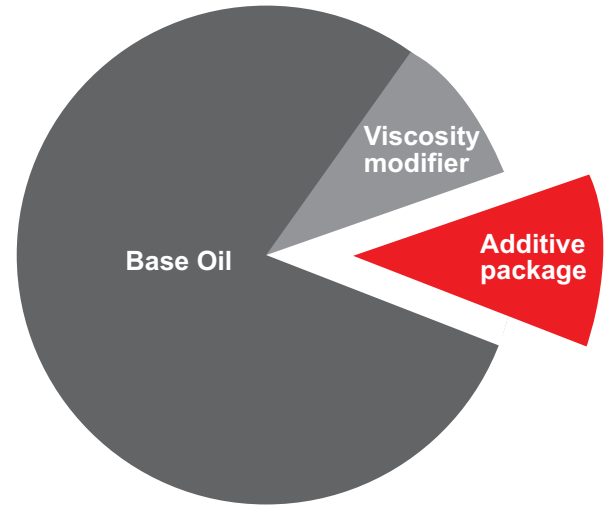
Additives provide oxidation stability, wear protection and corrosion protection. Once the additives are used up, there's a rapid rise in oxidation, known as breaking. Oxidation disrupts the oil's ability to function properly.

The oil starts to thicken, deposits build up because they can't stay suspended and the possibility of wear increases. To prevent these issues from occurring, the lubricant should be changed before high levels of oxidation emerge.

From a cost perspective, extending oil drains is a highly desirable goal. However, that benefit has to be managed against what's safe for the engine's service life. Oil analysis helps determine the breaking point of lubricants; your optimal drain interval is set below this point.

## What causes lubricants to fail?

- Contamination from external sources like dirt and water
- Contamination from internal sources caused by wear
- Oil degradation
- Additive depletion.



Typical engine oil makeup

Oil analysis helps detect any abnormal wear patterns, viscosity changes and contamination that may be present.

## Impacts of increased stress on engine oil

When more stress is placed on the oil, the equipment's performance and ultimately, service life will suffer. Knowing if your oil is still suitable for continued use or if it needs to be changed will help you combat the effects of your working conditions.

Stress on the oil	Impact
• Higher soot contamination.	• Wear and oil thickening.
• Increased fuel dilution potential.	• Thinning oil; bearing wear.
• Increased acid contamination.	• Leads to corrosion.
• Increased oil temperature.	• Increased oxidation, formation of acids.



# How to sample engine oil from the crankcase

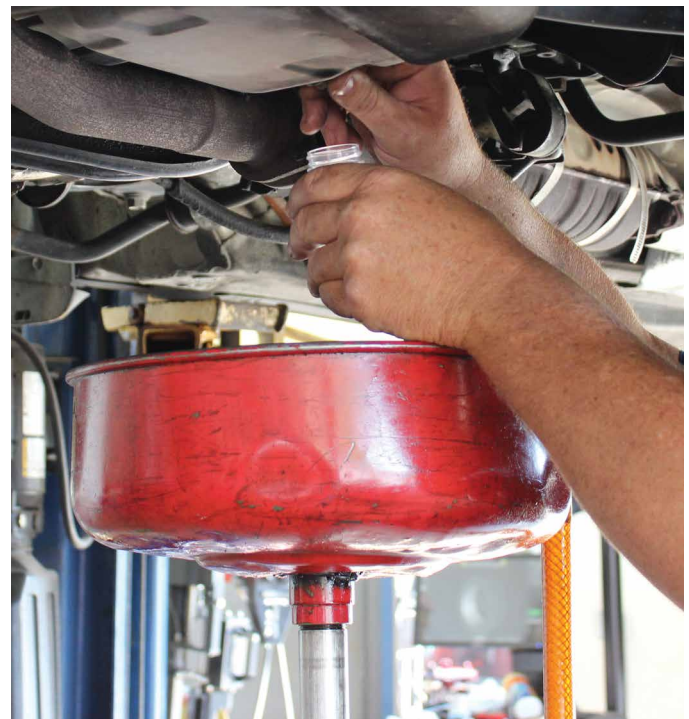
Oil analysis is effective if used properly. To get a valid test result, you must take a representative sample. Put the following guidelines to use.

## Do

- Use a new container.
- Take a sample after adding make-up oil and running the engine.
- Take a sample when the engine is hot and the oil is well-mixed.
- Take a sample from a petcock, installed in-line before the oil filter or from the oil pan using an oil siphon pump and clean tube. Only as a last resort should you take a sample from the drain plug. Deposits accumulate in that area.
- Clean the area around the petcock, filler tube or drain plug to prevent contamination of the oil sample.
- Discard the initial volume of oil from the sampling line to be sure the sample is representative.
- Take samples the same way each time to assure comparable results.
- Follow your sampling schedule carefully.
- Pull enough of a sample for the tests you want performed. Onsite tests require several ounces of oil—fill the bottle.
- Label unit number on the sample container with indelible ink.
- Fill out the form completely with: date sampled, equipment number, equipment year, make and model, compartment make and model, miles or hours on the compartment, oil brand and SAE or ISO grade, miles or hours on the oil and any oil consumption since last sample.
- Securely seal the container for shipment. Send the sample to the lab promptly for analysis.

## Don't

- Don't take samples from open containers that have been sitting around the shop.
- Don't take samples from a cold engine.
- Don't forget to label the container.
- Don't forget to fill out the sample form completely and enclose it with the oil sample.
- Don't hold on to the sample; send it to the lab promptly.





## Your equipment wins with Schaeffer's lubricants and oil analysis

What makes Schaeffer's oil different from other oils is how we combine the better base oils with the additives. It's all the extras we use in our oils—like our proprietary friction modifiers. They reduce wear and friction on bearings, rings, pistons, cylinders and valve-trains. As a result, not as much heat is generated, which takes some of the strain off the base oil, allowing it to last longer. The detergents and dispersants used in our oils provide strong soot handling and contamination control to keep engines cleaner. It's the whole package that allows our oils to last as long as they do.

Want to know how long your vehicles and equipment can perform on Schaeffer's lubricant between oil changes? Oil analysis is the place to start. The recommendations are based on your equipment—not broad-based marketing claims. You get the peace of mind of knowing the lubricant and equipment decisions you make are based on solid data.

Ready to get started? Your Schaeffer rep can help. He or she will work with you to order sample kits and get signed up on our online oil analysis program, WebScope. Once your results are available, he or she can review them with you; together you'll be able to set up regular sample intervals. Ask your Schaeffer rep for more details!



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