

## Does the presence of silicon in an oil analysis mean I have dirty oil?

While a motor oil analysis report that is flagged for an abnormal amount of silicon can indicate the presence of dirt in the oil, that isn't always the case. Labs usually flag silicon once it reaches 20 ppm or more, which often suggests abrasives are the source and the oil should be changed. While this is possibly the case, silicon is the second-most abundant element in the earth's crust and can come from a variety of non-abrasive sources.

First, silicon can be found in motor oil as an anti-foam additive, usually at levels of 10 ppm or less.

*Silicone* will also show up as silicon in an analysis, which can mean silicone is leaching into the oil from fresh gaskets or silicone sealant. This is often seen in the first oil sample following engine repairs and is not detrimental to the oil.

Silicon can also come from a coolant leak if the coolant has silicates in its formula. Other tests will confirm whether coolant is the source.

That leaves common dirt. Dirt can be identified by the presence of silicon coupled with aluminum at a 3:1 or 4:1 ratio. That would indicate the aluminum is not from wear metal, rather, it is from dirt (aluminum is the third-most common element in the earth's crust). Speaking of wear metals, if your oil does contain dirt, you will see an increase in iron levels and possibly other metals as well.

If oil analysis confirms the presence of dirt and wear metals, change the oil and filter. If the amount of contamination is flagged as severe, you might want to flush the engine as well. Finally, find and repair the area allowing dirt into your engine (usually a gap in the air intake system) to prevent more damage.



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