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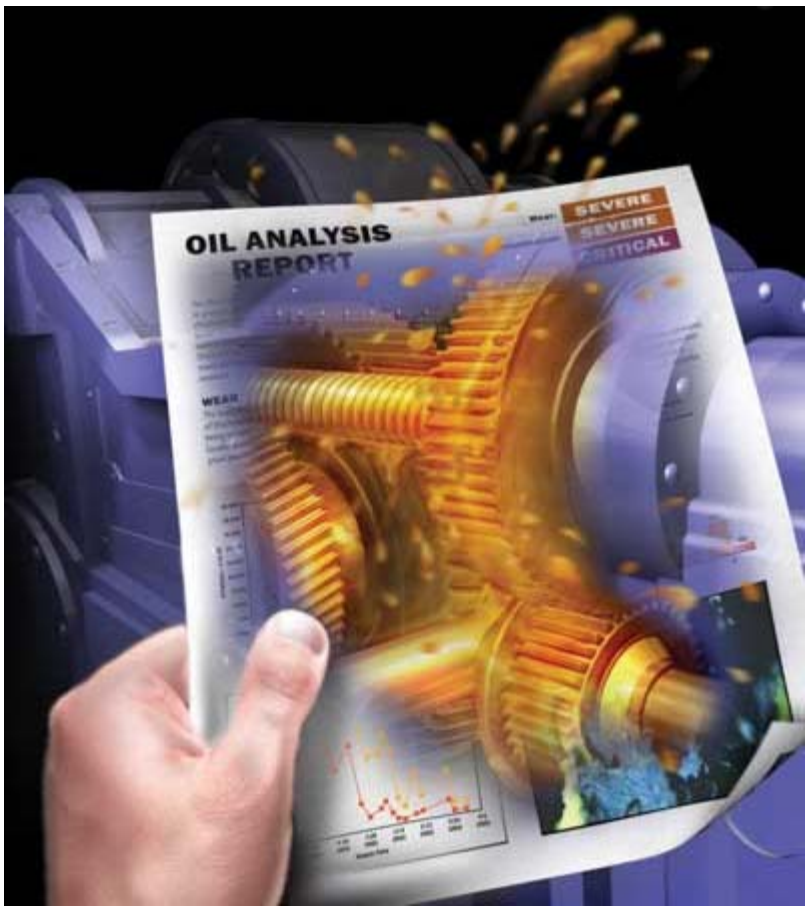
2003

Frequently Asked Questions on Oil



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1) Does oil wear out ?

- Oil does not wear out, many times the question had been asked, the question should be answer in the negative
  - Lubrication Engineering Volume 17
- Oil does not wear out, it only gets dirty
  - U.S. Standard Bulletin No. 86
- Oil is like any mineral and cannot wear out. Oil can become dirty and contaminated but like copper, iron or silver, when they are reprocessed they are as good as new
  - .Theory and Practice Lubrication for Engineers, 2nd Edition P590-591

2) How do I know if I need to change my oil ?

- Many people believe that you have to change oil regularly. The only indicator that would tell you that you need to change your oil is the TAN (Total Acid Number). If your TAN is greater than 2 then you had been shot and your oil needs to be changed. If TAN is under one , then the oil is in excellent condition unless you have an unusual amount of water in the oil. If your oil has a high amount of particulates don't change it if the TAN number is good, filter it.

3) What is the main reason why oil breaks down ?

- Heat and contamination are the main cause of oil degradation or why oil breaks down. Both heat and contamination can be controlled, therefore, if they can be controlled there is no reason to change the oil itself.

4) At what temperature ordinary mineral oil can widstand ?

- According to most engine related studies, oils are designed for optimal protection at 185 degrees Fahrenheit. Above or below that temperature you give up some protection. Most petroleum oils start breaking down at around 325 to 350 degrees F and no amount of fancy additives will directly protect the base oil from degrading

5) Why do we need by-pass filters aside from our current OEM full flow filters ?

- The factory filtration usually installed on capital equipment is put in place as protective filtration, however, most full flow filters are designed to remove particulates in 30 to 40 microns range. This means that particles smaller than 30 microns remain in the oil and are the once causing wear in our system and this can be removed only with a good bypass filtration system

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6) Is there a relationship between contamination and the life of the engine or system it is lubricating ?

- According to Cummins Technical Center indicate that wear can be reduced up to 91% by using a by pass filter in combination with a full flow filter
  Cummins Technical Center
- More than 70% of hydraulic failures can be attributed to contamination
  Based from filter study
- Contamination in lubricant of engines, transmissions and hydraulic systems cause up to 70% of equipment failure by SAE
- A study on contamination confirms that 80% of internal wear is caused by particles in 40 microns , General Motors Corporation

8) How is acid form in the engine ?

- Soot is formed by incomplete combustion of the fuel. Fuels, especially diesel fuel, contains sulfur. The sulfur in soot, when mixed with water and heat, forms sulfuric acid. This acid causes corrosive wear in the engine. While some water will naturally evaporate when oil gets hot, commuters and other short-trip drivers do not travel far enough to heat oil to a level that will prevent acid formation. The only reliable method of removing water is to trap it. Full flow filters made from paper or synthetic media cannot trap water

9) Will additives "As Seen On TV" help eliminate friction ?

- The Federal Trade Center (FTC) conducted a similar test on these additves performed on TV and found that the company claims of increase performance and reduce engine wear were unsubstantiated
- Consumers Report attempted to reproduce the no oil test where oil was drained out of an engine and treated with Prolong, the engine run for 13 seconds and seized. The same test was conducted on Duralube and the engine lasted for a staggering 11 seconds and seized. Blue Corral, manufacturer of Slick 50 had agreed to pay upwards of $20M in damages to affected customers. Motor-up also faces charges of lawsuit on false claims on their products

10) Can moisture be removed from oil ?

- There are several absolute filters than can remove moisture, these filters are made from cellulose and some may even contain cotton to contain the moisture. The use of breathers can help a lot in reducing moisture in our equipments specially in hot and humid places.

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11) How much do you think is lost due to oil leak ?

- This table tells how much is consumed due to oil leak assuming oil at $ 4.00/gal

Leakage Rate	Monthly Rate	Yearly Rate
1 drop/5 sec	6.6 gal = $ 26.40	80 gal = $ 320.00
1 drop/sec	34 gal = $ 136.00	409 gal = $ 1637.00
3 drop/sec	113 gal = $ 452.00	1243 gal = $ 4972.00
Steady Flow	720 gal = $2880.00	8640 gal = $34,560.00

12) How do you compare synthetic and mineral oil ?

- With respect to the molecular structure of mineral-based oil, this compose of small and large molecules while synthetic oil compose of uniformly shaped molecules, when heated small molecules present in mineral oil boils off
- Synthetic oil can withstand much higher temperature than a mineral-based oil Synthetic Oils have higher resistance to heat that mineral based oil. Synthetic oil vaporize at much higher temperature at 600 deg F compared to petroleum oil at 350 deg F. Synthetic oil reduce friction and provide higher film strength, (mineral based has a film strength of 400 psi while synthetics usually exceed 3000 psi)

13) What is the amount of moisture that can damage the oil ?

H20 Concentration in PPM	Status	Action
• 100 - 300	• Alert	• Check seals, breathers, coolers, etc., for ingression sources, watch the trend
• 300 - 800	• Danger	• Aggressively investigate and correct the source of ingression and implement an effective water removal activities
• 800 above	• Extremely Danger	• Immediate action is required to eliminate ingression and effect removal of water to minimize damage to machine and lubricant

Table 14