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TECHNI-GRAM



FROM:

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REPORTING TAN VS. TBN

I recently received an inquiry regarding why some used oil analysis reports show total acid number (TAN) results while others report total base number (TBN). To further explore this, a better understanding of these two terms is necessary.

TBN (Total Base Number): Is a measurement of the reserve alkalinity remaining in engine lubricants and is indicative of the oil's ability to counteract acid formation. Decrease in TBN affects the ability of the lubricant to protect against corrosion of such engine parts as rings and cylinder liners. A low TBN usually means a low dispersion characteristic and a depleted additive package.

TAN (Total Acid Number): Represents all the acidic constituents in a lubricant, including those from certain additives, combustion blow-by and oxy-materials. It indicates acidic contamination of the oil or increased oil oxidation, both of which raise the potential for corrosive wear.

Because the chemistries used to make up TBN can differ in quality and ability to maintain effectiveness over extended drain intervals, the TAN test and results is the most accurate measure of the oils on-going ability to resist degradation from greater level of acidity. This definitely makes the TAN test the preferred test method for used oil analysis...especially in determining extended drain capabilities of a wide variety of oils.

With TBN, industry standards will generally recommend a drain when the TBN has been used up...generally about 1/2 of its original number. For TAN, as the acid level increases to about double of the oil's original TAN, generally a drain will be called for. The original TAN level varies from type of product (i.e. hydraulic oil, transmission fluid, engine oil, etc.) as well as varying from manufacturer to manufacturer. For engine oils, an upper limit of 5.0 is often used as a condemnation limit.

On a global scale, industry standards have determined an oil with a TBN of 9 to 10 is generally all that is necessary to meet the various API and engine manufacturer's specifications. With the introduction of Exhaust Gas Recirculation (EGR) one OEM engine manufacturer, Mack Engines EO-N Premium Plus specification, calls for a slightly higher TBN. SWEPCO's 308 Premium Plus Engine Oil exceeds this requirement with an 11.3 TBN. In a few European countries, where sulfur content in the fuel may be extremely high, a TBN of 11 may be suggested. In these isolated incidents, it is important to keep in mind a high TBN rating of one oil over another is not always an advantage.

A key factor is not necessarily how high the TBN rating is, but what is the quality and retention capabilities of its chemistry...especially over extended drain interval periods. Field experience has shown that SWEPCO 305 and 306 Engine Oil's TBN of 10 has proven to provide much longer drain interval capabilities and superior protection over conventional oils carrying a TBN of 11 or higher. This same extended performance can be counted on when running SWEPCO 308 Premium Plus Engine Oil in the new EGR Mack Engines calling for oils meeting Mack's EO-N Premium Plus specification.



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