DISPERSANTS and TBN

Dispersants are usually ashless and used in combination with a detergent. The dispersant helps keep solid contamination in suspension. Some of the typical solids suspended are soot, dirt, water, and wear byproducts. The suspension of these will prevent sludge, varnish deposits and wear on engine parts.

Typical functions of a dispersant include:

Suspend soot (carbon particles)
Inhibit and disperse sludge
Reduce formation of deposits
Keep engine clean (collect “trash” and dispose in sump)

By suspending a contaminant, the dispersant prevents it from continuing to conglomerate, thereby preventing oil thickening caused by growing chains of contaminants.

Total Base Number (TBN) is a measure of the oil’s reserve alkalinity, which aids in the control of acids formed during the combustion process. The measurement of TBN can be performed by different methods. The two most common methods are D2896 and D4739. The D2896 method is able to dissolve more of the alkaline materials in the fluid and will therefore have a higher TBN (typically 20% higher) than the D4739 method. Field test kits are also available which simulate the titration methods. The D5984 test kits are currently used by ULI and conform to the D2896 method in regards to result values.

There has been a recent push to lower TBN and the associated metal detergents that contribute to TBN and the corresponding amount of sulfated ash (SASH). With the advent of ULSD, containing <15ppm sulfur, there are fewer components that produce the acids that TBN counteracts so the need for higher TBN has diminished. In fact, API now requires that the SASH be 1% or less for all CJ-4 licensed oils.

With the new oils, dispersancy and the ability to handle soot are the critical issues. With dispersants being typically ashless, they don’t contribute to TBN and SASH, but still improve the quality of the finished oil.

For more information, please contact your Sales Representative or our Technical Services Department at 800-444-OILS.

Technical Services
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