

Defining synthetic lubricants

10 years after an historic legal ruling, the importance of matching oil to application hasn't changed.

It's been 10 years since the National Advertising Division of the U.S. Council of Better Business Bureau adjudicated on a dispute between Castrol and Mobil on the use of the word "synthetic" as a description of certain lubricants.

The disagreement was over an advertising claim that began when the U.S. Mobil objected (despite allegedly having marketed hydroisomerised API Group III base oils as synthetic in Europe and elsewhere) that Castrol's hydroprocessed Syntec[®] was not synthetic.

The NAD did not agree, ruling that Castrol's evidence, although not demonstrating its product's superiority, constituted a reasonable basis for the claim that the Castrol product, as then formulated, was a synthetic motor oil.

Much has been opined about the real meaning of synthetic as applied to lubricants. *The Tenth Edition of the Concise Oxford English Dictionary* published in 1999

defines synthesis (when concerned with chemicals) as, "The combination of components to form a connected whole. The production of chemical compounds by reaction from simpler compounds." It also defines synthetic as "made by chemical synthesis, especially to imitate a natural product."

In the April 2000 issue of the *Journal of Synthetic Lubrication*, Stephen Godfree authored a paper titled, "The Meaning of Synthesis." He wrote, "One of the central themes of the Castrol-Mobil dispute was performance. Performance is a concept that has, in a wider context, taken on more importance of late. Certain research and testing establishments are now told to judge products on performance in a possibly ill-informed, if not downright dangerous, attempt to sweep away old methods and open up competition.

"Conversely, in the limited, in terms of performance, popular automotive market, a hydroprocessed oil easily will perform within the specifications of a normal engine oil. In some ways, synthetics in this market are unnecessary as automotive manufacturers have not yet commercialized cars and trucks that are guaranteed to run on the same oil for, say, 500,000 to a million miles (800,000-1.6 m km), that is, in sealed-for-life engines."

Godfree adds, "However, in the extreme conditions imposed by a jet engine or the climate in the Antarctic, for instance, only a

synthetic oil has all the properties required. So here the NAD ruling really falls down. Having concluded from the performance criteria that hydroprocessing produces a synthetic oil, it had to admit that Castrol was

unable to show that their enhanced mineral oil was superior to a synthetic and effectively ignored the fact that specific synthetic oils can always outperform mineral oils.

"Herein lies the second major difference concerning performance. Since true synthetics are chemically designed, their properties can be varied at will—pour points, flash points, VIs, kinematic viscosities, within much greater ranges than enhanced mineral oils—according to their end-purpose. This can be done to a certain extent with hydroprocessed mineral oils by additivation. But is additivation the same as synthesis? Does additivating an oil make it synthetic? Is a vegetable oil that has its properties altered synthetic? The risk is that by extending the term to cover any oil that has had its chemistry tampered with, it loses all meaning."

In my opinion, the performance required of a lubricant depends on the application. Quite clearly, it would not be sensible to use a synthetic oil in an application for which it was not suitable, even if it is a synthetic oil.

For example, trying to use a synthetic two-stroke engine oil in a four-stroke gasoline or diesel engine would be madness. Such a product would be completely unsuitable and severe engine damage would be very likely.

The key point is that an engine, gearbox or compressor does not know how an oil was manufactured, just whether it does its job of lubrication. That is, whether it has the required level of performance, not whether it is synthetic or mineral oil-based.

Using a synthetic oil in an application that does not require a higher level of performance is a waste of money. Using the wrong oil for an application risks equipment damage and significant financial penalties.



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