

Not All Zinc Oil Additives Perform The Same

Four Facts You Need To Know

The word is out regarding the reduction of Zinc in today's motor oils, but there is a lot more to the story. Specifically, not all Zinc additives and high Zinc content oils perform the same. Here are four facts related to Zinc.

First, the oil additive generally referred to as Zinc is technically Zinc Dialkyl Dithiophosphate (ZDDP). As stated in the book Lubrication Fundamentals, "In heavily loaded applications, flat tappet cam followers operate on partial oil films at least part of the time. Lubricants with anti-wear additives are necessary if rapid wear and surface distress are to be avoided. The oil additive Zinc Dithiophosphate is to provide anti-wear activity for the camshaft and lifters."¹

Second, Zinc (ZDDP) is not a lubricant until heat and load are applied. Zinc must react with heat and load to create the sacrificial film that allows Zinc to protect flat-tappet camshafts and other highly loaded engine parts. The Society of Automotive Engineers' Automotive Lubricants Reference Book states, "ZDDP is the predominant anti-wear additive used in crankcase oils, although it is a class of additive rather than one particular chemical. The sensitivity of the additive to commence giving anti-wear protection varies inversely with the thermal stability of the additive."²

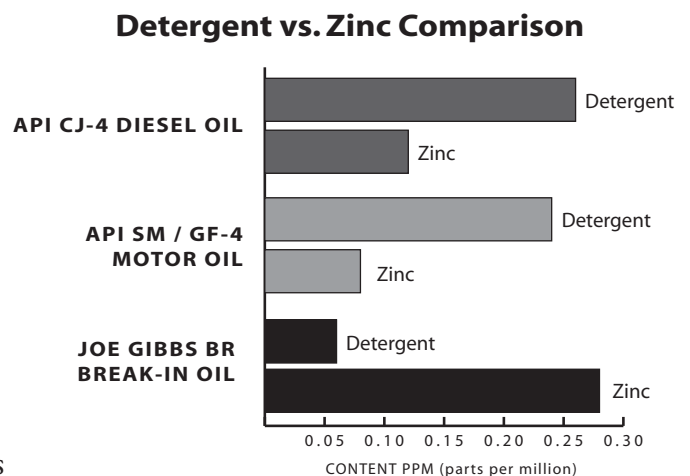
As a result, the third fact is that not all Zinc (ZDDP) additives react under the same level of heat and load. Zinc has different "Burn" rates. Some Zinc additives have slower "burn" rates that require more heat and more load to activate than other Zinc additives. For example, Passenger Car Motor Oils (PCMO's) typically feature a faster burning Zinc than Diesel Engine Oils due to the lower compression ratios found in gasoline engines compared to compression ignition diesel engines.

As a result, not all "High Zinc" oils have the same activation rate. The Joe Gibbs Driven BR Break-In oil uses a "Fast Burn" ZDDP that activates quickly.

Fourth, detergent additives "compete" against Zinc in the engine. Detergents are additives that clean the engine, but detergents don't distinguish between sludge, varnish and Zinc – it cleans all three away. The "old school" theory on engine break-in was to run non-detergent oils, and this allowed for greater activation of the Zinc additive in the oil.

The Joe Gibbs Driven BR Break-In oil features a low detergent formula to allow the "Fast Burn" Zinc additive package to activate faster and to full extent. These characteristics of Zinc and Detergents determine how quickly and to what extent an oil will provide sacrificial boundary film protection for your engine.

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Joe Gibbs Driven Break-In Oil Has More Zinc & Less Detergent