

## What is the best oil for your 6.0 ?

Oil viscosity is the measure of shearing in a HUIE fired injection system and 6.0 Powerstroke creates the most shearing of any engine, thus viscosity is the most important factor when looking at a used oil analysis (UOA) report for the average 6.0 owner. According to bobistheoilguy.com, "Shear stability is a measure of the amount of viscosity an oil may lose during operation. Oil experiences very high stresses in certain areas of the engine such as in the oil pump, cam shaft area , piston rings, and any other areas where two mating surface areas squeeze the oil film out momentarily... Most multigrade engine oils contain special types of additives, called Viscosity Index improvers, which are composed of very large, viscosity-controlling molecules. As the oil passes through the engine, these molecules are permanently sheared or torn apart over time, causing the additive to lose its viscosity." When looking at your UOA anything below 12.49 on a cSt viscosity @ 100\* C scale means your 40 weight oil has turned into 30 weight. <sup>1</sup>

Viscosity at 100°C		Viscosity at 40°C	
Motor oils and hydraulic oils		ISO grade	
SAE grade range (cST)		ISO grade range	
5	3.80–*	32	28.8–35.2
10	4.10–*	46	41.4–50.6
20	5.60–9.29	68	61.2–74.8
30	9.30–12.49	100	90.0–110
40	12.50–16.29	150	135–165
50	16.30–21.89	220	198–242
60	21.90–26.09	320	288–352
80	7.0–11.00	460	414–506
90	13.50–23.99	680	612–748
140	24.00–40.99	1000	900–1100
250	41.00–UP	1500	1350–1650

A 40 weight oil is recommended by Ford for optimal performance and durability. Now the real question is which oil to use:

### Results of UOAs

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<sup>1</sup> <http://www.bobistheoilguy.com/viscosity-charts/>

### **Motorcraft 15W-40<sup>2</sup>**

Motorcraft oil is the Ford Motor Company recommended oil for all their engines and is supposed to perform the best. In appendix A & B there are two UOA using Motorcraft 15W-40 oil with oil change intervals of 5200 and 7410 miles. The cSt viscosity is close to “acceptable” values according to Blackstone at 11.59 and 11.65 respectively but both tests have dropped below a 40 weight.

### **Shell Rotella T6 5W-40<sup>3</sup>**

The next Blackstone Lab report shows three UOAs done using Rotella T6 in the same 6.0 Powerstroke. The oil change mileage interval spans 3600-4250 miles. The cSt viscosity numbers are 11.72, 11.14 and 12.14 (on the 3600 mile oil change). All are well below the 12.49 of a 40 weight oil and the first two are well below what are Blackstone’s acceptable numbers for viscosity. This indicates that Rotella T6 needs to be changed every 3000 miles to maintain a proper viscosity level.

### **Amsoil AME 15W-40<sup>4</sup>**

Amsoil, which is touted as the best synthetic oil, according to their website, performs better in a 6.0 than the Rotella T6 or Motorcraft, especially considering the interval between oil changes. According to Appendix D and E, the oil change interval was 9500 and 11000 miles respectively and the cSt viscosity of the oil was only lowered to 12.7 and 11.8. The 11.8 is barely lower than Blackstone’s suggested viscosity number and the 12.7 is even within the 40 weight range. Possibly running the Amsoil out to 11000 miles is pushing it too far but 9500 miles seems to keep the oil within acceptable viscosity ranges.

### **Valvoline Premium Blue Extreme 5W-40<sup>5</sup>**

The Blue Extreme oil’s cSt viscosity level (12.17) fell within Blackstone’s acceptable range but was still below the 12.49 of a 40 weight oil. The real downfall was the rapidity within which the viscosity level fell. The oil change interval was only 3700 miles. This indicates that the Blue Extreme oil is on par with the Rotella T6; however, there is only one UOA worth of data as compared with the two or three UOAs for the other oils discussed.

### **Schaeffer’s 9000 5W-40<sup>6</sup>**

All Pro Diesel has made no secret that the oil we believe to be the best for a 6.0 is the Schaeffer’s 9000; however, up to this point all the evidence to support our claim has been anecdotal. Appendix F and G are two 6.0 Powerstrokes running Schaeffer’s 9000 with oil change intervals of 4000-5100 miles. The cSt viscosity levels were by far the highest of any of the oils presented here. The cSt viscosity numbers for the Schaeffers were within the range of 12.44-13.51 which means that the oil held its viscosity better than any of the other oils. It stayed not only with in Blackstone’s acceptable range but also above the

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<sup>2</sup> Appendix A & B

<sup>3</sup> Appendix C

<sup>4</sup> Appendix D & E

<sup>5</sup> Appendix G

<sup>6</sup> Appendix F & G

12.49 of the 40 weight oil. We could not find an independent UOA that tested Schaeffer's 9000 out to 10000 miles at this time.

## **Transparency<sup>7</sup>**

When comparing technical data sheets of the most popular oils, Schaeffer's offers the most information about their oil. In fact they list 8 different viscosity test results for their oil. Motorcraft doesn't even bother to post their technical data sheets online. All of these oils start out with the same cSt viscosity numbers from the factory, a range of 13.5-14.5. The drop in viscosity seen in the UOAs can be then directly related to the shearing factor of the 6.0 engine.

## **Anecdotal Evidence**

All Pro Diesel installs a larger number of injectors in 6.0 Powerstrokes than any other diesel engine. Injectors are a well-documented problem for 6.0s. Nine out of ten 6.0s that need injectors replaced in our shop have been running Rotella oil, synthetic or dino oil, for the duration the owner has had the truck. Whether this is correlative or causative would be difficult to prove but the viscosity tests prove that Rotella does have a much lower ability to hold up the shearing factors present in the engine which can lead to stiction issues.

Also from observations, when running Schaeffer's 9000 in a 6.0s the engines run quieter and generally increase fuel mileage and decrease oil consumption as compared with Rotella. We have no anecdotal evidence to compare Schaeffer's 9000 to Amsoil.

## **Conclusion**

After all this research, All Pro Diesel still feels 100% comfortable recommending Schaeffer's 9000 to our customers. The research and the anecdotal evidence supports this stance. What you do with the information is up to you.

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<sup>7</sup> Appendix H