

ROYAL PURPLE IMPROVES MPG 10.7% IN TEST

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MOTOR OIL AND FILTER

Several weeks ago we broadcast a video we made of our test on Long Island Sound comparing Royal Purple synthetic oil with standard motor oil. It was one of the highest rated videos that week for viewership and our testing methodology also generated numerous comments from cynics. The irony is that several months ago when Royal Purple first asked us to test their oil, we, too, were a doubting Thomas. So we understand the sentiment. But the test speaks for itself: the twin 5.0L engines when being lubricated with Royal Purple actually averaged a 10.7% improvement in fuel economy over the rpm range measured.

The engines we tested had 115 hours on them and new, standard oil had been in them for just one engine hour before we tested. 10W30 weight was used in both oils. Reciprocal runs were made in the sound, speed was taken from a gps and fuel flow was measured by BoatTEST equipment which was hooked up to the starboard engine. Sound readings were taken at idle at the dock only of the starboard engine. In the table below conventional oil is noted as "CO" and Royal Purple as "RP." The results of the test are as follows—

RPM	MILES / HOUR		MILES / GALLON		% DIFFERENCE IN MPG
	Conventional Oil (CO)	Royal Purple (RP)	CO	RP	
2000	9.1	9.5	2.65	3.06	+15.5%
2500	12.5	12.9	2.02	2.32	+14.9%
3000	18.8	18.8	2.22	2.41	+ 8.6%
3500	27.2	27.2	2.80	3.07	+ 9.6%
4000	31.1	30.5	2.53	2.89	+14.2%
4500	37.6	38.3	2.15	2.28	+ 6.0%
WOT					
4750	39.8	—	2.04	—	—
4850	—	41.5	—	2.17	—

scale: 1 - 10, 10 is excellent

SIGNIFICANT IMPROVEMENT IN FUEL ECONOMY

As you can see, the Chaparral 290 Signature, which was powered by twin 270-hp engines, was able to turn 100 more rpms at WOT when lubricated with the Royal Purple. And it was only at WOT that the relative speeds of the boat were significantly different, which was due in part to the increased rpms.

The average improvement in miles per gallon when the engines were lubricated with Royal Purple was +10.7%. We believe that is a significant and noteworthy improvement in fuel economy. Drop off the highest and lowest measurements and the average remains the same.

SPEED DIFFERENCES

Several of our readers wonder why the boat didn't go the same speed at the same rpm settings. The reason is because we were running the boat on Long Island Sound in choppy conditions that were constantly changing, and not in a laboratory with perfectly still water and no wind. The higher the wind and chop, the harder it is for the engines to push the boat and the more prop slippage there is. Even so the differences in average speeds was only .35 mph or 1.6% of the average speed measured from 2000 to 4500 rpms.

SOUND DIFFERENCES

We measured sound levels at the dock at idle. We recorded 89 db(A) for the starboard engine with conventional oil and 86 db(A) when Royal Purple was in the starboard engine. While this is only 3 db(A) less, in fact the engine was a lot quieter because sound readings are not linear. Db is a logarithmic unit, meaning you cannot add and subtract it. An increase of 3 db is in fact a doubling of the strength of the sound. Again, we believe this is a significant difference and one that is actually measurable with the human ear without a meter.



BoatTEST recently compared Royal Purple and a standard motor oil in two 5.0L Volvo Penta gas engines with 115 hours on them.

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OIL PRESSURE AND TEMPERATURE

Oil pressure appeared to be about the same for both oils during our test, however oil temperature was different. We measured 160 degrees for the conventional oil after the test run and 155 degrees for Royal Purple after the test.

READER QUESTIONS

Following are answers to a number of questions and comments from our readers—

- Q:** Did we fuel up again after the first test run with the standard oil?
- A:** No. The weight difference was de minimis. We used less than 10 gallons of fuel on the first test, representing about 61 lbs., or less than .007% of the boat's displacement.
- Q:** What was the difference in noise levels at full throttle and at best cruise?
- A:** We did not measure sound underway because wind and wave noise would make the readings meaningless for our test purposes.
- Q:** Was the test paid for and unbiased?
- A:** Yes, the test was paid for and it was also unbiased. Tests of this nature usually become the property of the company paying for the test and releasing the findings is typically up to that party. In this case, after the test we informed Royal Purple of the results and told them we would publish them.
- Q:** Did Royal Purple supply the boat and driver?
- A:** No. BoatTEST.com arranged for the test boat on its own and supplied the mechanic and driver. In fact, we purchased the Royal Purple oil at Pep Boys from their stock and no Royal Purple personnel were on site during the test nor were they involved with the test in any way.
- Q:** How could the speeds be different if they were both measured at 4700 rpm WOT?
- A:** Because of the wind and waves they could have been different. However, there was a transcribing error on the data shown in the video saying the WOT for both tests at 4700. In fact, the WOT for the test with standard oil was not 4700, but 4750 rpm. The rpm for WOT with Royal Purple was actually 4850. That mistake is being corrected on the video.
- Q:** How did you measure RPM?
- A:** We used Chaparral's onboard tach for both tests.

In conclusion, we have discovered, after all of these years, why millions of people are willing to pay more for synthetic oil — it simply improves performance, or at least Royal Purple does.

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