What is ESP Armor?
ESP Armor is a revolutionary new surface finishing process developed exclusively by Eagle Specialty Products, Inc. The exact process is a closely guarded secret, but you can know that it does not use any chemicals or electrolysis-type processes. It is also not a coating.

Most people when they see a crankshaft that has undergone the ESP Armor finishing process will mistake it for a chrome process. It is not chrome! The material you see is the same material on the surface that you have always seen - just finished to perfection. Well, maybe nothing is *perfect*, but this finish is closer than anyone has ever gotten.

The finish is truly amazing. It literally is a mirror finish. Looking at the journal is like looking at your reflection in the mirror! Pictures just don't do it justice (have you ever tried to photograph a mirror?). You have to see it first-hand to really appreciate it.

Now, you may ask, "well all that is good, but what about functionality? What does it do for me?". In theory, the near-perfect finish will let oil slip on the surface more effectively. Think of it like a tire hydroplaning on a patch of water. A treaded tire (like a typical crank surface finish with small imperfections) will not glide across the water - it will "dig in".

While this is what you want a tire to do, on a crank journal you want the crank surface to glide easily on the oil film. A "slick" tire will hydroplane much more easily just like a more perfect surface on the crankshaft journal will glide on the oil film more easily.

You may think, "well, my journal is micropolished with the best equipment, it can't be that much better, can it?". Keep in mind, the oil film that is present between the crank and the bearing surface may be as thin as .0005". that is **8 TIMES** thinner than a sheet of paper! We are talking about microscopic differences here! While this is, by far, the main advantage ESP Armor has to offer, there are also other benefits as well. The better surface reduces the "handles" for any fluid to hang on to - including moisture. For that reason, corrosion resistance is greatly improved. This also reduces stress risers, which are convenient places for cracks to start.

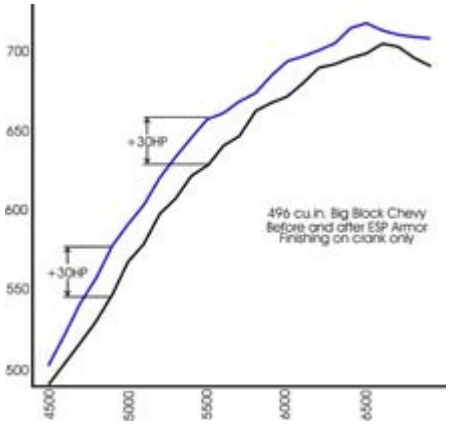
The Proof
Ok, we all know theory is great, but if it doesn't show up on the dyno - nobody cares. As of February, 2009 we have conducted two tests on our own and had several of our customers

independently conduct their own tests. We'll focus on the tests we performed. Each engine was built locally by an engine builder not affiliated with us. We have used them in the past with other tests and we trust their attention to detail and experience. We used a dyno shop with O.E. testing experience that knows how to conduct true, back-to-back testing without skewing the results.

The first engine was a 383 cubic inch small block Chevy built with typical components a streetable, naturally-aspirated performace engine would have - nothing weird. It was first dynoed with one of our standard crankshafts and produced 440 peak horsepower.

The crankshaft was then removed, cleaned, put through the ESP Armor process, and then re-installed. Same bearings, same everything - the only thing changed was the crank underwent ESP Armor. An important thing to note is that this process does not remove any metal - the journal size (as well as the clearances) were exactly the same. The result was a peak gain of 16.5 horsepower at 5200 rpm and moderate gains across the working rpm range. That's almost a **4% peak gain in power!** We did not tell the dyno shop what we had done to the engine only that we wanted to make sure and duplicate the conditions under which the first test was done. One interesting thing the dyno operator noticed was that the second run took a lot longer to heat the oil up to temperature. It had to be run 10-12 minutes longer to bring the oil up to the same temperature as the first test. Immediately, we knew we would see good results. Heat is almost a direct result of wasted energy due to friction and inefficiency. The new surface resulted in less heat in the oil, so we knew the efficiency was improved, and more power would be made.

The second test we performed was even more impressive. We used the same people we used before, but this time we tested a 496 cubic inch big block Chevy. This engine was a typical alcohol-burning drag race setup. The baseline peak power was 705 horsepower at 6600 rpm. Same procedures as before, with the same oil temperature indicators as before.



This engine, however, gained a whopping **30 horsepower** at 4900 *and* 5500 rpm! the gains were across the board with a minimum of 6 horsepower gained at 6700 rpm and an average of **19.7 horsepower gain** from 4500 rpm to 6900 rpm. That's even more than we expected! In retrospect, the heavier parts and higher loads inherent to a big block making that much power *should* show a greater increase because so much more is usually lost due to friction. Another benefit realized by ESP Armor is mileage. Usually, racers are not too concerned with mileage, but this process does not require the engine to burn more fuel to make more power - it simply

improves the efficiency of the engine so that more of the power already made is transmitted to the driveshaft.

Future Tests

Our next tests will include a forced induction V8 and a high-reving, turbocharged, import. Both of these engines produce very high power-per-displacement and have very high bearing loads and therefore should show big gains from ESP Armor.

Our Customers' tests

We have also had some customers who did their own testing of our ESP Armor process. Nothing can replace doing a test for yourself! One of which, was World Products who reported a 25 hp gain on each of two big block engines that were built for a twin-engine marine application. We are not in a position to go into details of their experiences. So if you want to know specifics, please give them a call at 631-737-0372.

It Just Keeps Getting Better

So, now you've seen the numbers. You should feel confident in the gains associated with ESP Armor. What more can there be? Well, we are also so confident in the strengthening qualities of this process (which is difficult to test) that we will stand behind any standard-weight forged 4340 crankshaft or set of connecting rods finished with ESP Armor with a **ONE-YEAR LIMITED WARRANTY** against breakage. Now, if you forget to put oil in it, hydro-lock it, forget to tighten the bolts, or something like that we won't cover your mistake. But built and assembled properly - we will stand behind it! That's right - a warranty! What other crank and rod manufacturer will do that? Talk is cheap, we have shown you the results, we stand behind it with a warranty, and for a price of only $225 for a crankshaft or $100 for a set of eight rods - there is no reason why every crankshaft and connecting rod set you use shouldn't take advantage of ESP Armor!

Just say you want ESP Armor when ordering!