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## Synergetic by SILCA

### – The Ultimate Oil Based Lube

*Following the huge success of SILCA Super Secret Chain Lube and Super Secret Chain Blend, it became clear to us that the vast majority of cyclists are still interested in using oil based wet lubricants for both ease of use and reduced time commitment to get started. While hot melt wax and drip wax may ultimately be slightly more efficient and cleaner running, the requirement of starting with a perfectly clean, dry chain, and the 300-mile re-application intervals are not for everybody.*

So SILCA set out to develop the world's fastest, quietest, longest lasting oil-based chain lube utilizing the nano scale tungsten disulfide to reduce surface wear and friction within the chain. What we did not know when we started this project, was that WS<sub>2</sub> has a unique and not fully understood synergistic effect with a well-established anti-wear additive commonly used in race car engine lubrication known as ZDDP. This truly turns out to be a case of 1+1=10 as each additive showed the ability to reduce wear and friction by 10-15%, but when combined, friction was nearly reduced by half and wear fell by 95%!

The secret is a phenomenon known as a durable tribofilm, which is formed under pressure causing the WS<sub>2</sub> and other additive to form a highly lubricious solid on the surface of the metal which acts not only as a lubricating surface, but also as a wear surface.

The pins below are made from E52100 bearing steel and were subject to wear against a spinning ring per ASTM G77 test protocols. Testing found SILCA NFS (a Type V base oil), the previous best oil-based lubricant according to Zero Friction Cycling testing, to reduced wear 25% compared to an advanced (Type IV-PAO base oil) oil. Further testing of additives showed the ability to reduce wear by an additional 10-15%, however, the combination of WS<sub>2</sub> and ZDDP proved to reduce wear by more than 95% compared to the Type IV base oil.



*Synergetic shows a 95% wear reduction compared to Mobil1 Pure Synthetic Race Oil*

Electron microscopy of this phenomena was first reported by Paula Ussa Aldana at the University of Lyon in France a few years back. She was able to section the test samples to expose the tribofilm, showing exactly how the WS<sub>2</sub> nano platelets are being held in the tribofilm of ZDDP.

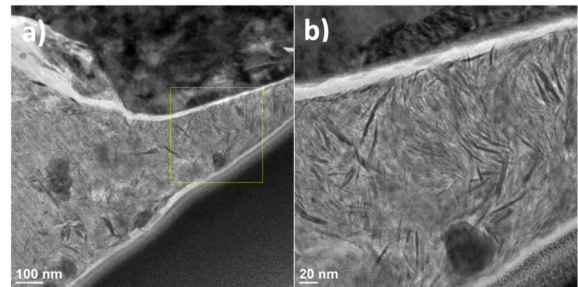
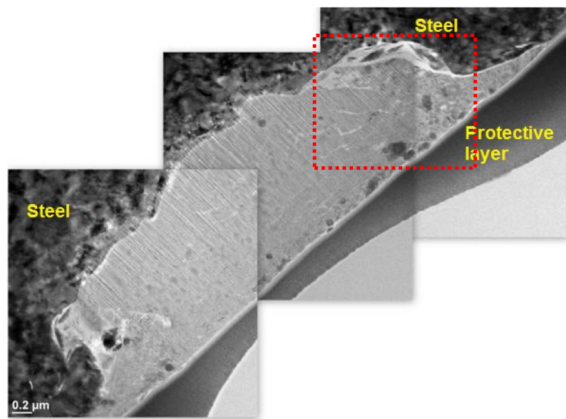


Figure 66. Presence of some nanoparticles and sheets of WS<sub>2</sub> inside the groove

### *Tribofilm formed in the wear groove of a test pin + zoom in*

In SILCA testing, the use of a significantly more advanced base oil than used in the University of Lyon testing has shown further improvements in both wear and friction, while careful balancing of the formulation has allowed us to mass produce the resulting oil at an attainable price despite the exotic cost of some of the ingredients.

SILCA Synergetic oil has tested internally to be the fastest and quietest oil-based lubricant ever tested, losing only 4.9 watts on 250 input (98.1% efficiency), however, it really begins to shine when focusing on longevity and durability of the chain and mating components. Best of all, because the lubricant forms a durable tribofilm at the metal surface, and is strongly attracted to itself, the lube proves to be exceptionally waterproof, remaining inside the chain even in testing under full water submersion, the lubricant is not displaced!

### **Product Details:**

- 60 ml Squeeze bottle with 1 mm Medical Grade Luer Lock Precision Applicator Tip
- 12,000+ miles of lubricant per bottle
- Ultra-high wearing, ultra-quiet, ultra-waterproof wet lube
- For best results apply to clean/dry chain. For good results may apply to new factory lubed chain and will fully displace the factory lube within 4-5 applications
- MSRP: \$25 / £19 / €21/ 6 ml bottle
- <https://silca.cc/products/synergetic-wet-lube>

## About SILCA

SILCA was founded in 1917 by Felice Sacchi just outside of Milan, Italy. SILCA was the first company to put gauges on pumps, the first to produce a true 'high-pressure' frame pump and the first to work with revolutionary lightweight materials developed during WWII, and later the first to bring CO2 to roadside inflation. Today SILCA is located in Indianapolis, IN where they continue to build iconic products that use the best materials and craftsmanship available.

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## ABOUT TWOTONE AMSTERDAM

We are an Amsterdam based sales and PR consulting agency. We pride ourselves on being flexible enough to adapt to any situation and tough enough to ensure things get moving. We love to drink good coffee, hear your story and learn how we can help you and your brand.

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