Zero Friction Cycling

Worlds most exhaustive independent bicycle chain lubricant and chain testing – over 300,000km of controlled testing to date.

Lubricant On Test : Silca Synergetic

Cost: $53.95 Aud from Zero Friction Cycling and other online stores.

Size – 59ml

Photo :

Manufacturers Description on package;

Up to 50% reduction in friction and 90% reduction in wear. Ultra quiet, ultra fast, ultra long lasting.

Directions on package

For best results thoroughly clean chain before applying. SHAKE WELL! Apply one (1) drop per chain roller and backpedal 12 revolutions to work oil into chain. Wipe chain clean before riding.

Extra information from Manufacturer website

What is it?

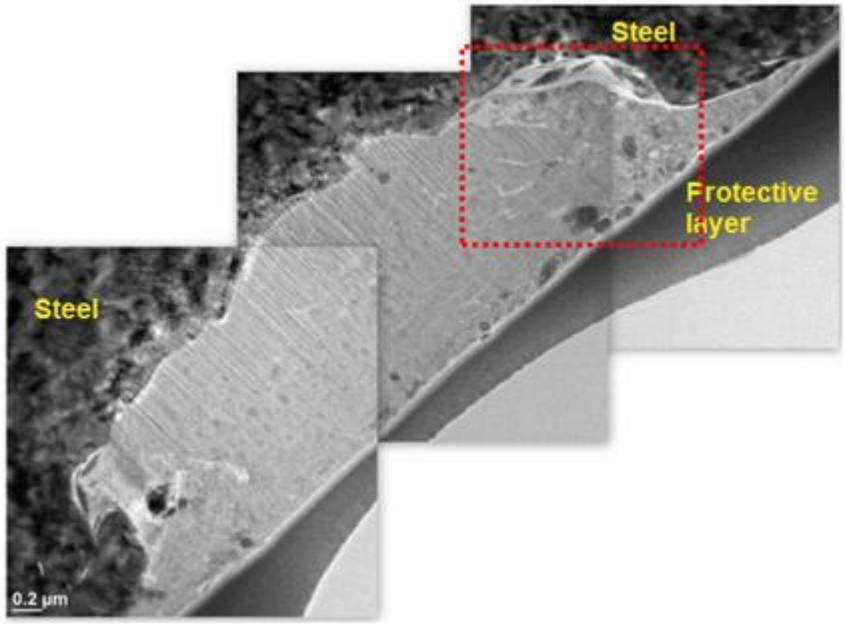
The Ultimate Oil Based Lube SILCA's new oil-based lubricant based on technology originally developed in F1 racing, to reduce friction and nearly eliminate wear in all metal components.

Who's it for?

This lube is for the demanding cyclist who wants to experience the lower friction, increased lifespan, and silence of the most advanced lubrication technologies without the extra work involved with deep cleaning, drying, and waxing their chain.

WHY WE DESIGNED IT:

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 WS2 nano platelets are being held in the tribofilm of ZDDP.



Tribofilm formed in the wear groove of a test pin.

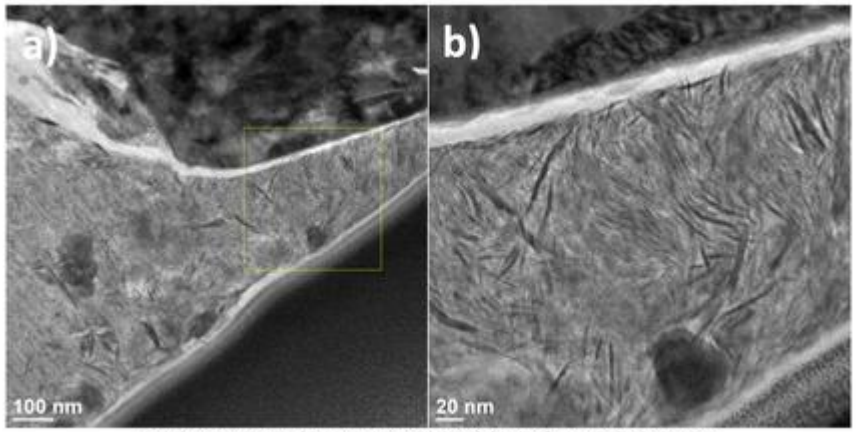


Figure 66. Presence of some nanoparticles and sheets of WS_2 inside the groove

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.

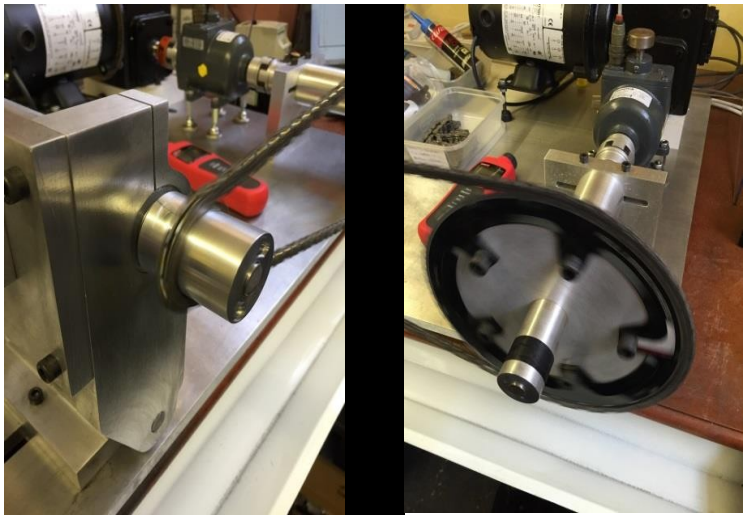
SILCA Synergetic oil has tested internally to be the fastest and quietest oil-based lubricant ever tested, losing only 4.9 watts on 250 input (98.1% efficiency), however, it really begins to shine when focusing on longevity and durability of the chain and mating components. Best of all, because the lubricant 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!

SPECIFICATIONS:

- 2oz Squeeze bottle with 18ga. 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 / 2oz bottle
- Made in USA
- https://silca.cc/products/synergetic-wet-lube

****Website has a further video of information re silca synergetic.**



Official Outright efficiency loss if tested by dependable FTT lab : 3.8w from trusted efficiency test lab

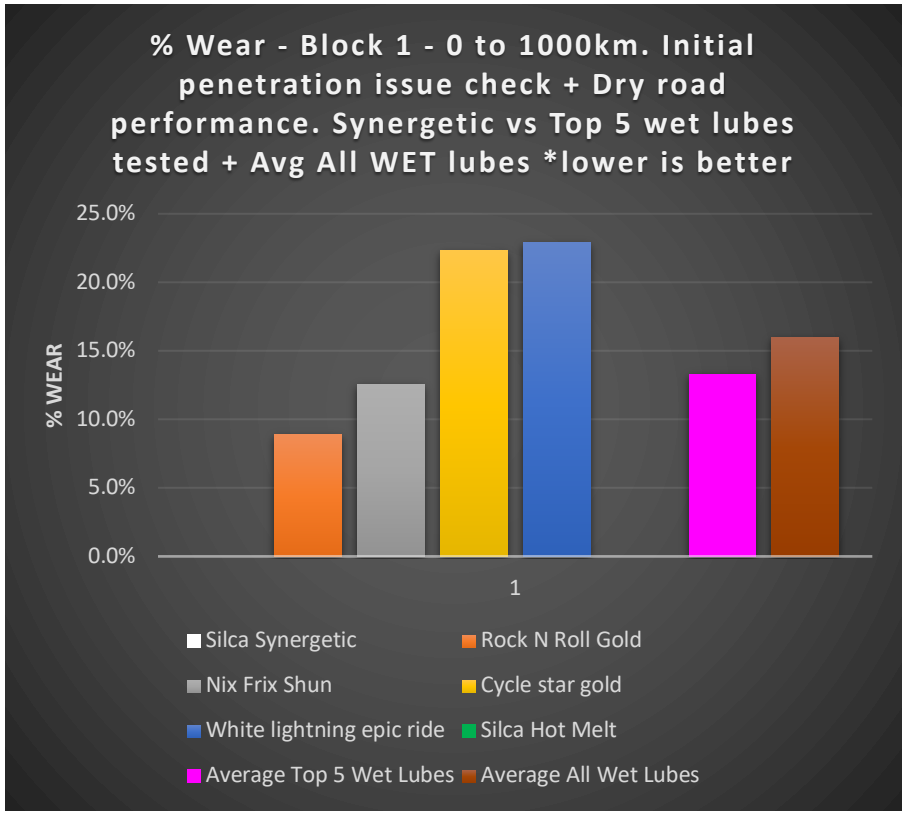
This is an extremely low result for a wet lubricant. Wet lubricants typically struggle to get near the very low friction numbers of the top chain coating lubricants as all wet lubricants inherently have a disadvantage with having a higher level of stiction (it takes some level of friction to get parts moving from static, and in a chain links articulate & stop, reticulate & stop, and each link has 8 separate sliding surface parts to get moving from static each time, leading to typically over 300,000 such events per minute when cycling at 95 cadence in large chain ring, so small differences here really add up when multiplied by 300,000), and also all wet lubricants will have some level of viscous drag that solid chain coating lubricants do not. Again, a small difference multiplied by 300,000 – wet lubricants have typically struggled to get under 5w loss for outright efficiency. The lubricant synergetic set out to beat – Nix Frix Shun, was tested by Friction Facts at 5.5w.

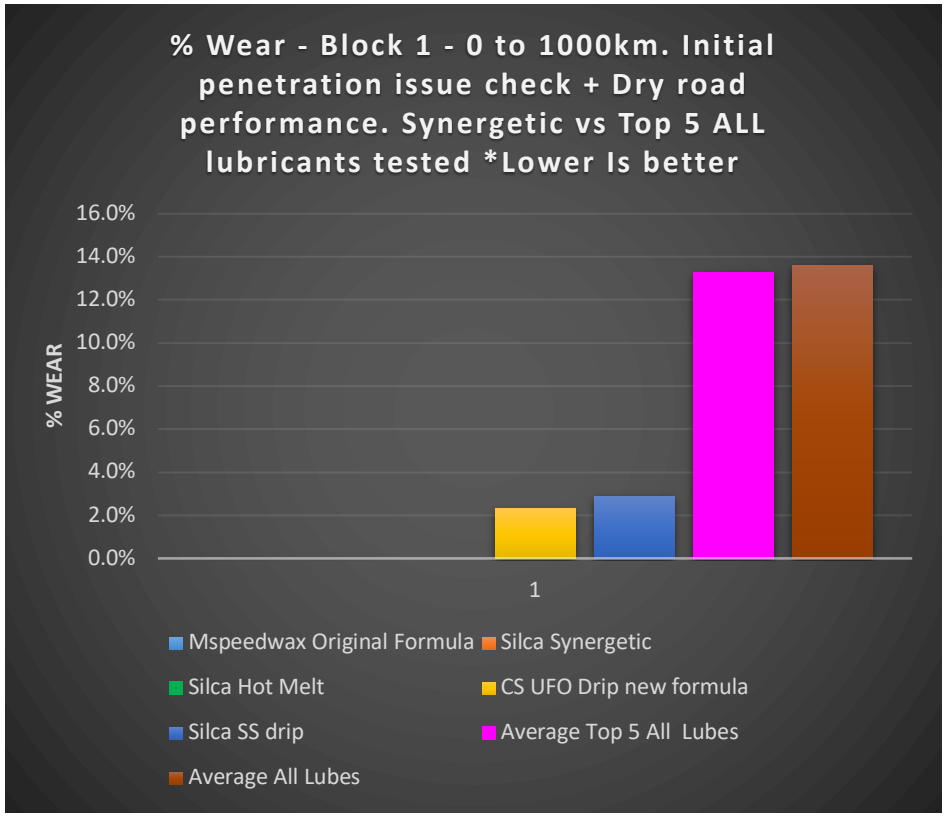
So, 3.8w for a wet lubricant – EXTREMELY LOW, and extremely impressive.

Silca Synergetic Test results

BLOCK 1 – No Contamination – Performance assessment for dry road riding from new prepped chain.

Test stops when net chain wear reaches 0.5mm+





Welcome to an updated format for the block by block results vs the old dated table, which should help you decide if the lubricant is right for you based on the type of riding and conditions you personally ride in.

****NOTE re test graphs - Double application means that for that block the lubricant was re applied / re-waxed at double the rate of the standard test protocol. For tru-tension tungsten race this was done as the treatment lifespan of the lubricant is VERY short and it would not have made standard test intervals, for mspeedwax it was done as an experiment to back up the benefits of frequent re-waxing vs pushing wax treatment lifespans – the figure for MSW at standard test intervals was 12%, however that is with the old formula, their new formula is still to be tested**.**

At the time of writing this report there are no graph updates from new testing that are public tests so i will be using same graphs as used in Silca Hot melt review.

We can see that I have split graphs into wet lubricants and wet lubricants vs chain coating type lubricants as it has become important to highlight the difference between lubricant types for road / off road riding.

Alrighty, here we go, this is genuine case of nothing to see here!! Literally.

Zero measurable wear for the block 1, which is by far a first for a wet lubricant. Wet lubricants always record the lowest wear rate for a test block in the ZFC test in clean block 1, as once contamination starts to be added, as wet lubricants absorb contamination, the wear rates just increase notably from block 2 onwards.

Previous to synergetic the lowest wear rate for a wet lubricant in block 1 was Rock N roll gold at 8.9%. The main competitor synergetic was aiming for being Nix Frix Shun which has long been believed by many to be the ultimate overall wet lubricant, did come in with a much higher than expected wear rate in block 1, there may have been some penetration issues as NFS

has a very low viscosity, or it may simply achieve that rate at its best. I have seen a good number of local customers & riders using NFS and checking chain wear rates vs km's I would say the results are typically clearly better than average for a wet lubricant (ie typically over 6000km to 0.5%, better than normal 3000 to 5000km), however still well short of top know chain coating lubricants and immersive waxes.

Synergetic coming in with 0.0% is VERY SIGNIFICANT. As we will see when move to block 2 that it is affected by dust contamination, and ZFC is still very much of the opinion that gravel / mtb riders should typically avoid wet lubricants as dust simply sticks on contact, if you are a road rider and you like wet lubricant – then obviously ZFC cannot recommend Synergetic highly enough vs any other wet lubricant tested to date.

Why does one prefer a wet lubricant vs a chain coating type lubricant or wax if those lubricants tend to deliver unbeatable low friction / wear/ cleanliness?

Most common reasons are treatment lifespans for a number of those lubricants can be on the shorter side vs a long last wet lubricant, and some can move into feeling distinctly dry after a fairly short number of kms (say circa 200km for some), and so this frequency of application and the less damped feel of a dry lubricant vs a wet lubricant is simply not to some riders liking.

A top wet lubricant can have chain feeling very silky smooth and very quiet for long stints, and so whilst they do come with a penalty re contamination absorption and some regular maintenance is a must to keep chain & drivetrain from being coated in a black mess – the silky smooth feel and long treatment lifespans of some of the top known wet lubricants simply suit a lot of cyclists. They are also an easy application, don't require set time etc.

What tends to separate a top wet lubricant vs a meh or poor is a) How long does a treatment last, b) how fast does it become a black mess, c) how fast does your chain wear.

On all of these fronts Synergetic is simply an A+. It comes with a clever needle applicator to help you not over apply the lubricant, and the secret with a lubricant like Synergetic is that **SO LITTLE LUBRICANT** is needed to deliver a very long treatment lifespan of silky smooth goodness, that it will stay much cleaner for much longer vs other wet lubricants on the market, and that little bottle will literally last you around 15,000 to 20,000km unless you are over applying.

All you need to do after application and work in is to WIPE CHAIN THOROUGHLY before every ride with a microfibre cloth – this should be done for every wet lube – so that as little lubricant as possible is on the outside of the chain where it will attract contamination, it is inside the chain where you need it.

Not over applying (ie applying too frequently) and wiping before each ride and synergetic will remain very clean for a wet lubricant.

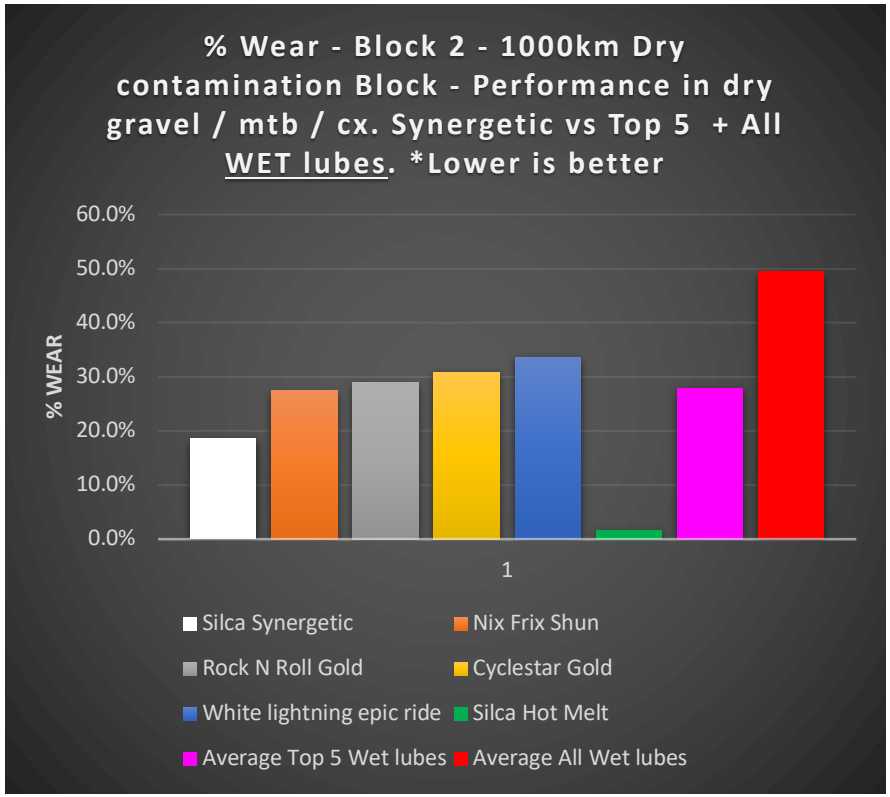
The wear rates of course will not stay at 0%. In real world riding – outside has more contamination than my clean test environment. There are a lot more particles of dust in the air you cant see even in road riding than you would expect (get a very bright torch or bike light and shine it into the air at night and watch all the particles floating through the beam of light – you will go “huh – that’s why my wet lube goes black so fast…”

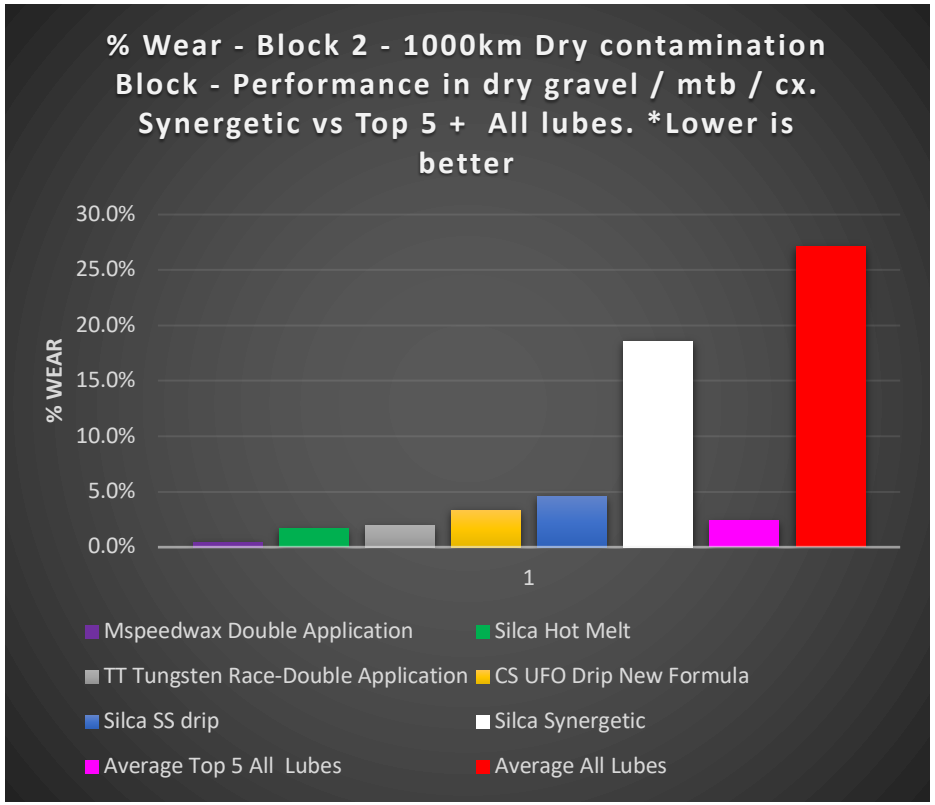
However synergetic starts at 0%. That’s better than starting at 9% or 12%. And following the above guidelines the rate of increase in friction and wear for road riders will be slow. Simple periodic maintenance to reset contamination, and I am

expecting to see over time a lot of new records with real world customer data for Synergetic, as well as happiness re cleaner and lower maintenance levels vs other wet lubes.

It is also of course a top choice for dedicated ergo bikes where you want something that is easy to apply, not going to leave wax flaxes, not going to spray off the chain all over your ergo, floor and bike frame, and last a very long stint of ergo sessions before you need to re-apply. You will have much less dust adhere inside on an ergo as your chain is not moving through as much air, so it will be contaminated more slowly again.

BLOCK 2 – Dry Contamination – Performance assessment for dry gravel / Mtb / Cx riding.





Ok so if you hadn't read the detail review for Silca Hot melt where I waxed lyrical in depth re the difference between chain coating type lubricants / immersive waxing vs wet lubricants – I will do mini re cap here – as mini as I can as I have to really start shortening these reviews where detail is already covered! (and the put the content in its own doc…)

So – we can tell from block 1 with perfect score of 0.0% wear, Synergetic is really something. I cannot obviously outright call it as the best wet lubricant on the market as I have not tested every wet lubricant on the market (not even close re testing all the likely top contenders yet), but I feel very confident that even if I had, Synergetic is going to be right up there – if its not sitting on top, it is likely to be close enough to shake whom ever is on top's hand.

And it has recorded by a clear margin the best dry contamination wear rate for any wet lubricant tested to date in dry contamination block 2, so again if wet lubricants are your thing and your ride off road, then synergetic is still your top known choice at the time of this review.

However when we compare to the top known chain coating type lubricants – we can see that vastly lower wear rates can be attained with those lubricants / immersive waxes.

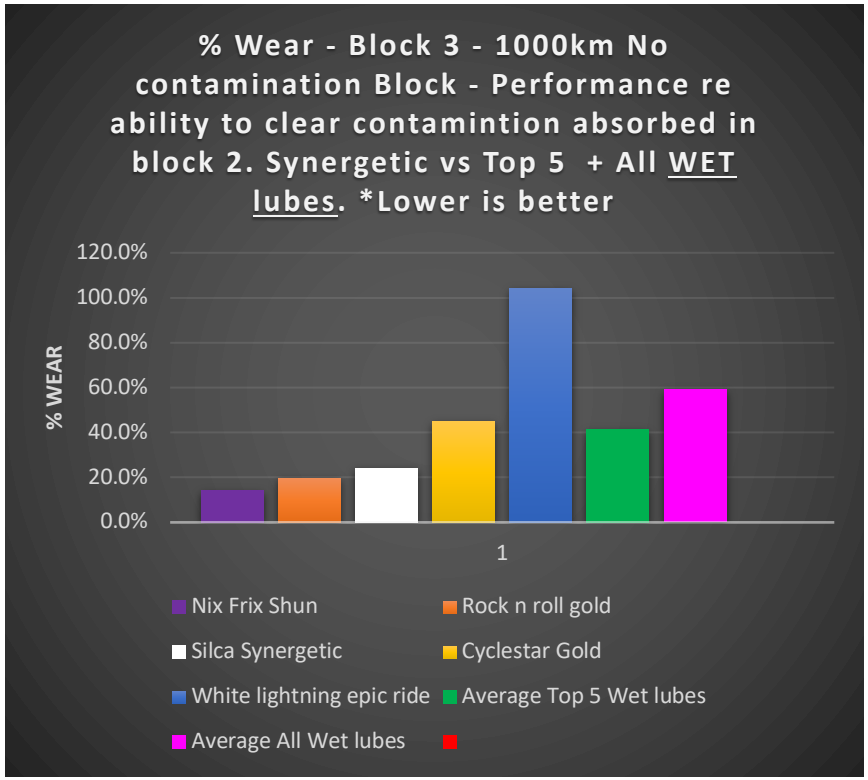
And again, this matches what intuitive logic. Taking a chain where all parts are coated in a SOLID lubricant into the world of dust is going to have less of a contamination issue vs taking a wet lubricant chain where every particle of dust WILL STICK ON CONTACT. You can do a dry vs wet contamination test of your own pretty easy – get a round bit of metal or put a metal plate on an angle and drizzle some sand down it whilst its dry. Do same with it after you make the surface wet. Notice the difference.

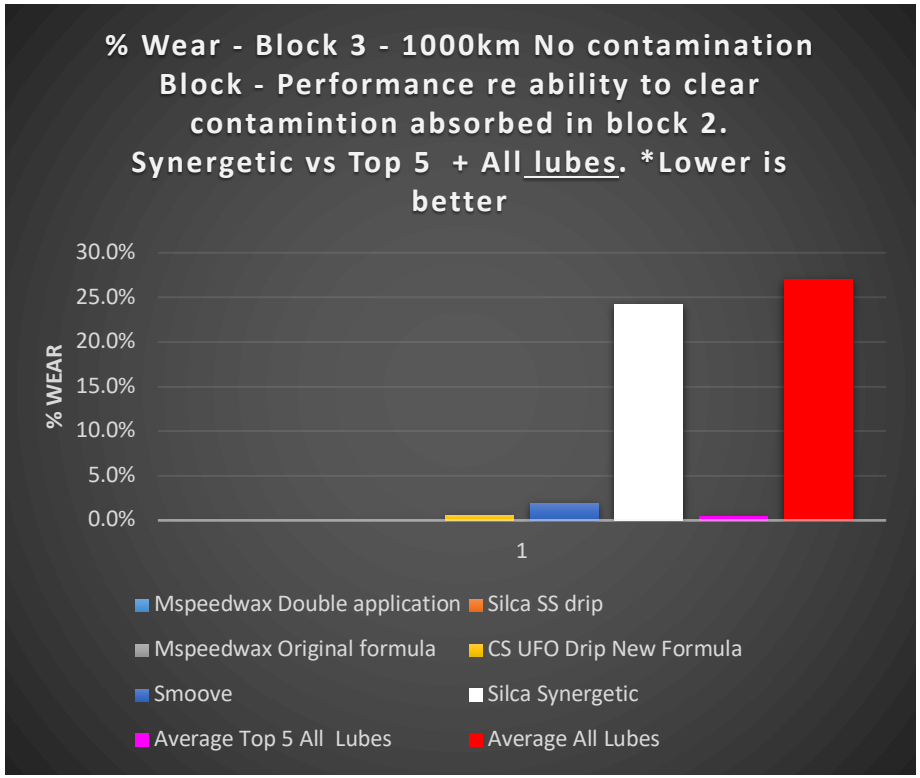
I also covered in the hot melt review the maintenance difference for chain coating type lubricants / top waxes vs wet lubricants – this is also much easier with the top know chain coating lubricants / waxes needing either just a quick wipe with a cloth, or at worst a boiling water rinse and dry, wet lubricants to reset contamination you need to hit it with a lot of rounds of solvent to flush clean and reset. Stay tuned for upcoming you tube video on that – for real, finally almost here, shoot day

yesterday now it just a matter of editing and releasing – hopefully by the time you read this you will be able to go to you tube, search zero friction cycling and find my channel, and look at Episode 3, maintenance level 1.

But – still, despite pretty graphs and data, a lot of riders are still simply going to want to run a wet lubricant, its what they know, are comfortable with, they like the damped silent feel of a wet lubricant vs the more dry feel of a solid lubricant etc etc – so if you do ride offroad, and you must run a wet lubricant, at the time of writing Synergetic is clearly your lubricant of choice. It is lower wear, it is cleaner than any other wet lubricant tested to date, and importantly we know it starts super low friction. By the time it gets a bit contaminated and increasing in friction losses, it will at X point simply reach a loss mark where other lubricants start when perfectly clean in a lab.

BLOCK 3 – No Contamination – Performance assessment re clearing any contamination absorbed in dry contamination block 2.





Ok so we can see that we have a graph where synergetic is not number 1 in wet lubricants!

Block 3 is an interesting result – block 3 goes back to no contamination so assess a lubricants ability to clear contamination gathered during dry contamination block 2. Synergetic recorded a high wear rate result in block 3 with no contamination vs block 2, which is relatively common for wet lubricants. Their block 2 result can be lower by way of initially the wear rate increase is low but increasing across the test block. By the end of the test block the wear rate would be at its greatest.

Then in block 3, we are starting the block with the lubricant at its highest wear rate point at end of block 2, and it needs to try to bring that down across the block as the lubricant does its best to clear any contamination that penetrated and became part of the lubricant.

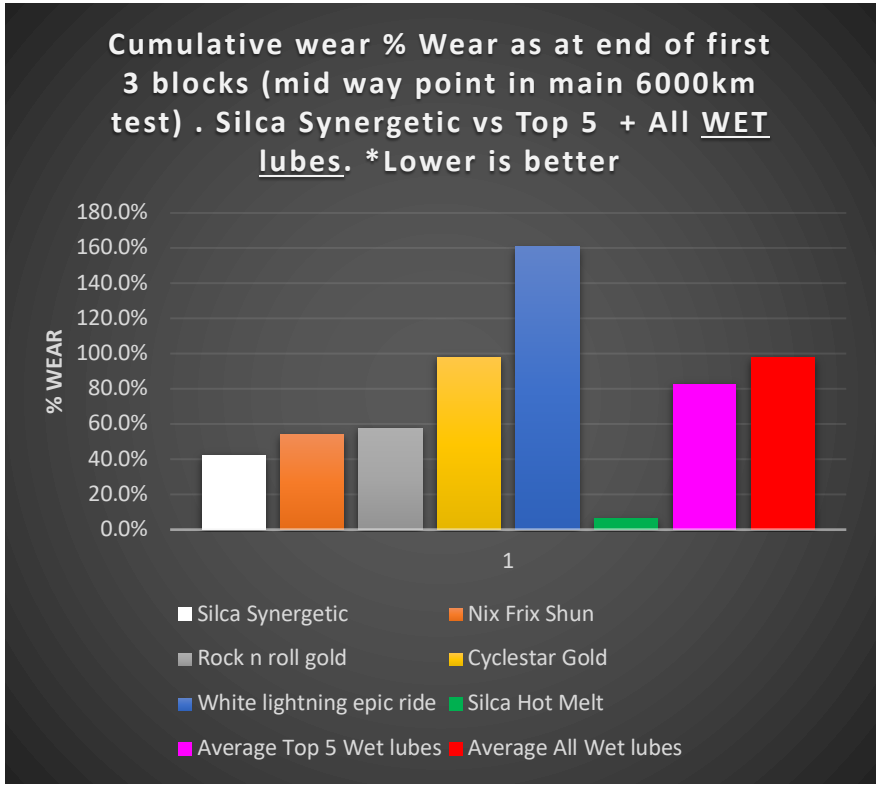
Synergetic may have struggled a little bit here simply due to the extremely low amount of lubricant added per re-lube, there is not really going to be a flush clean at any level like one would see with say rock n roll gold that has a very high application amount per re-lube. It is interesting that its main competitor NFS had a lower result here as NFS also has a very low re-application amount as well. But if we look at graph 2, NFS was next closest to synergetic in the dry contamination block and so with a greater wear rate reduction in block 3, it has moved ahead for wear rate in that block only thus far (still well behind overall cumulative due to Synergetics much lower wear rates in block 1 & 2).

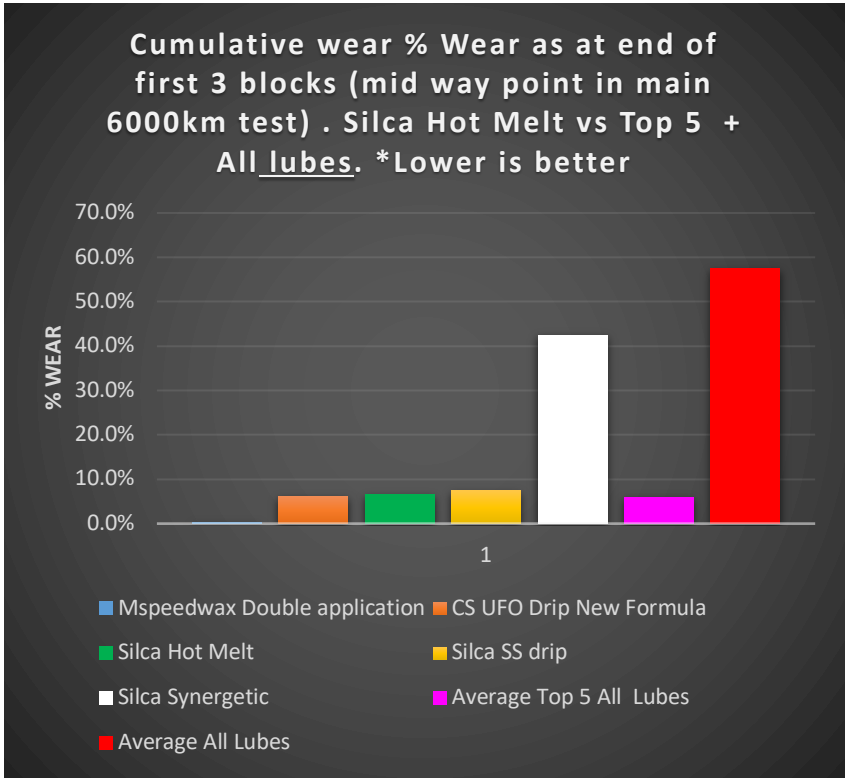
Why NFS reduced wear more vs synergetic in block 3 is a tough one to empirically pin down. Things can get pretty complex with what is happening with lubricant properties, so whether NFS is able to simply “work contamination out” of the chain to a higher degree, or that over time the cumulative amount of NFS from re-lubes is greater vs synergetic – without having an exact ml measure of exactly how much lubricant was applied for one vs the other at this point in the test which I don’t have – I cannot provide a definite answer here. I believe with synergetic needle applicator total application amount by this point in test would be lower, and this small difference is my most likely educated guess re why clearance rate lower – but again there may be more complicated factors involved than a simple volume of lubricant vs contamination ratio.

It is interesting for NFS that the block 3 result is quite close to clean block 1 result (14.3% vs 12.6%). So it was a much higher than expected wear rate in block 1, and impressively low for a wet lubricant in block 3 post dry contamination block. NFS also has a very low application amount, so probably my best theory is simply that by end of block 3, sufficient NFS is now applied. It is not so much a case of NFS having any real flush clean ability which it would not, just that there is sufficient amount of a very good lubricant vs contamination to make a measurable difference. Synergetic appears to have really started block 3 at

the top of the bell curve re wear rate that was occurring at the end of block 2, and with very low application amount, this was not brought down much by way of any flush cleaning – a re lube is probably only adding about 0.01ml per link (a re lube of entire chain likely adds only around 1ml, and you have more than 100 links per chain on your bike).

Where are we at with Cumulative Wear at halfway mark of 6000km main test?



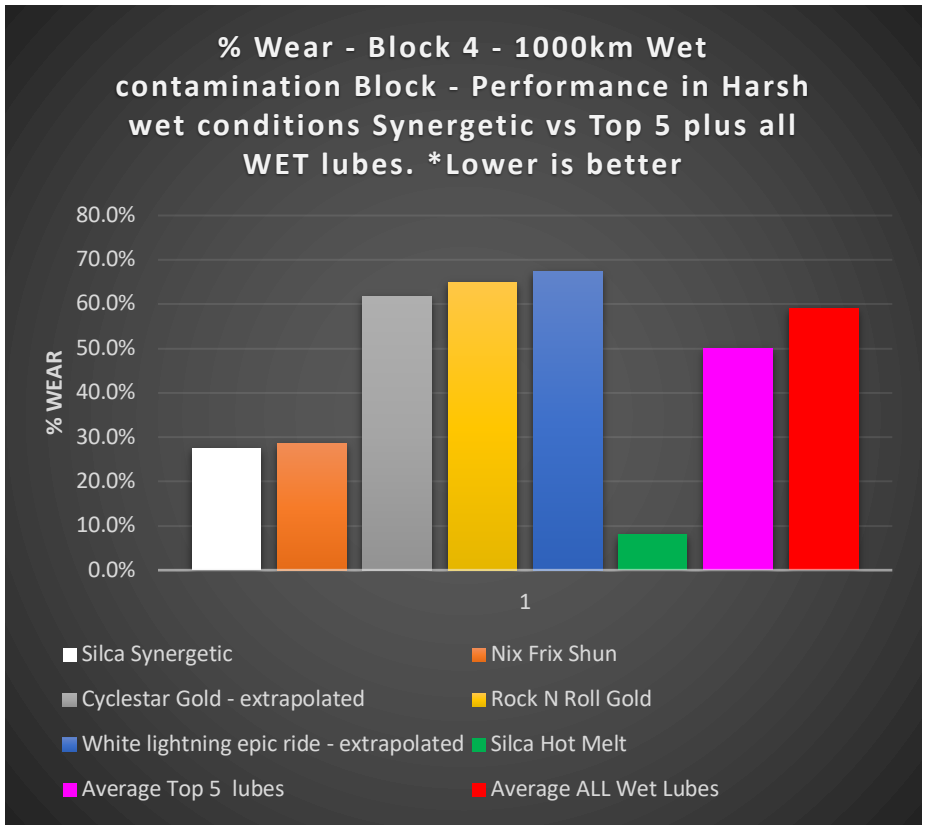


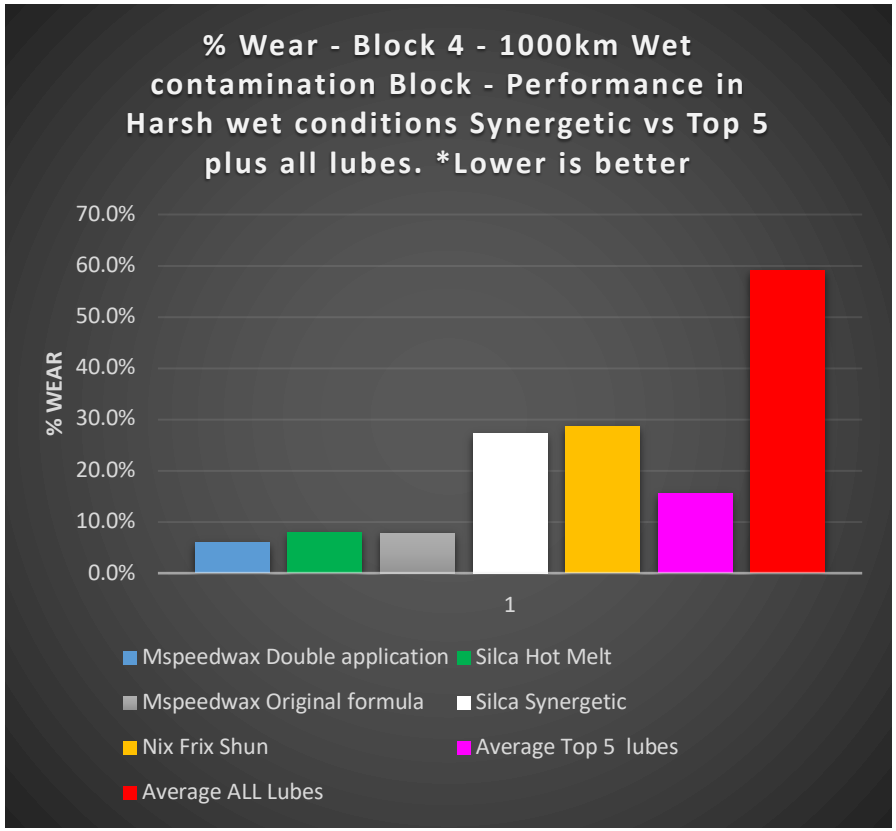
At the halfway mark of test we have had 2 x No Contamination (clean) blocks sandwiching 1 x dry contamination block. The test gets proper tough after this halfway point, and the average numbers will get a bit approximate for the wet lubricants as

many lubricants have simply used up their wear allocation by end of block 3 or at most block 4, and so I start needing to extrapolate data for those lubricants which becomes very ballpark.

We can see synergetic has a handy 12% lead over next nearest competitor being Nix Frix Shun. Again as per hot melt review, now that a bunch of contamination has been introduced, wet lubes vs chain coating type lubricants / waxes – the graph on the right tells the story for offroad riders. Again however, if you do need to use a wet lube, at the time of writing, it is synergetic.

BLOCK 4 – Wet Contamination Block– Performance assessment riding in harsh wet conditions.





To put it bluntly, Block 4 in the test is for many lubricants they are put to the sword somewhat. This test block results are extremely interesting, with two top wet lubricants making an appearance in the top 5 overall, and two top chain coating type lubricants falling out of the top 5 (Silca SS drip and CS UFO Drip).

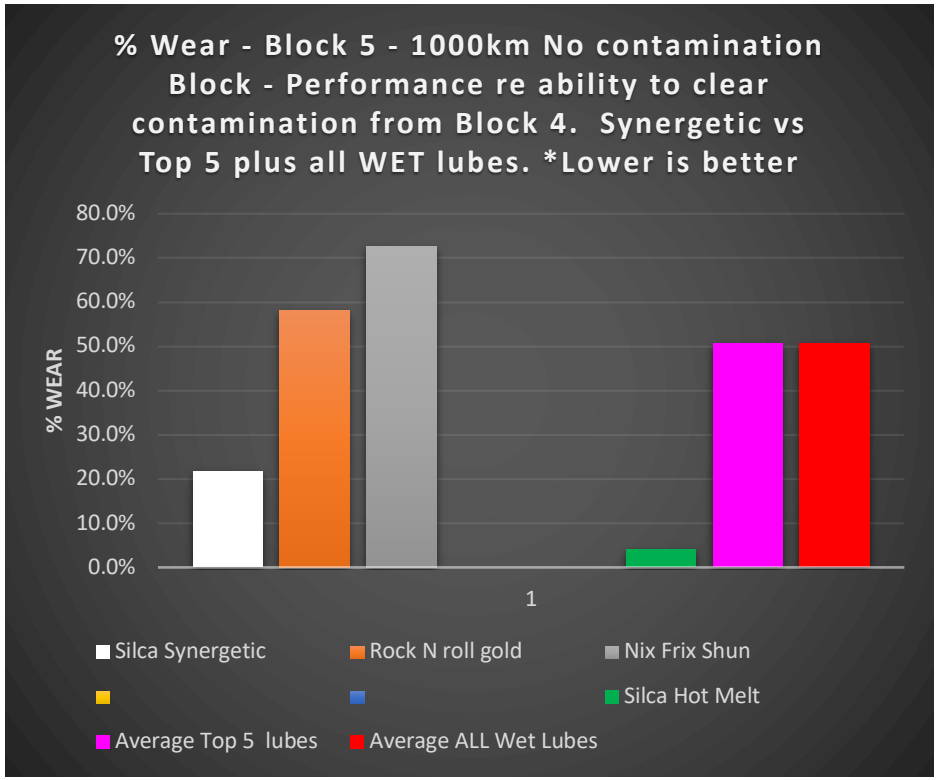
This is tale of two halves still. Whilst the top two wet lubes, with synergetic again taking top wet lube spot – they wont wash off in a hurry in a lot of harsh wet riding – you still have to remember that YOU MUST reset contamination post wet rides as a lot has been brought in by water and become part of the lubricant. I suggest reading silca hot melt review where I go into detail on what is involved in doing this for immersive waxing / chain coating type lubricants vs wet lubricants – alas for wet lubricants it is much easier to reset, but again, if you are in camp wet lube, then synergetic is your baby.

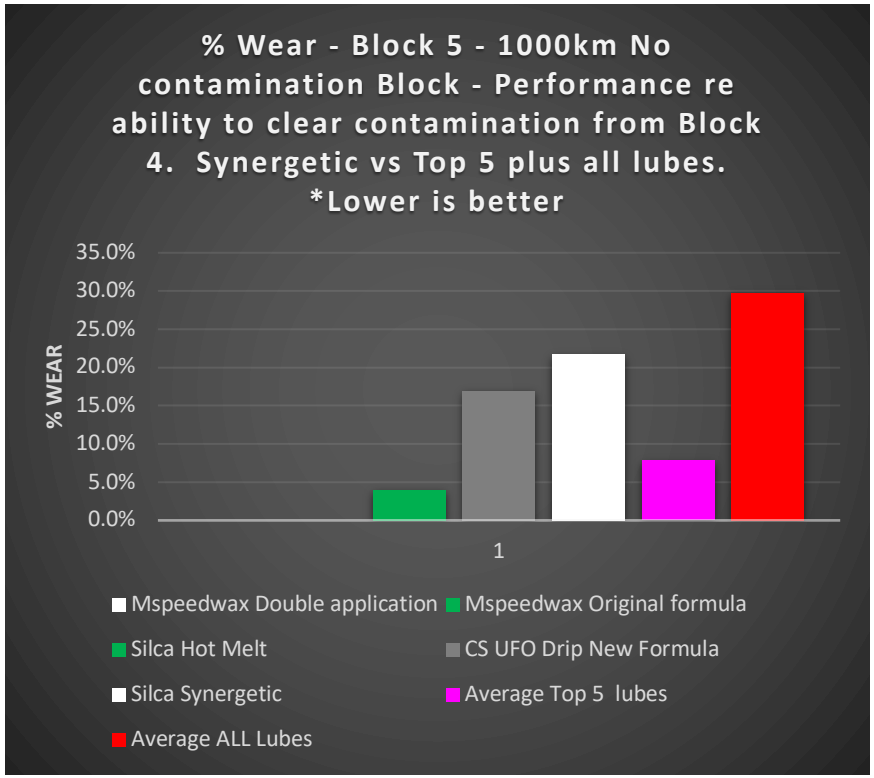
Just take the advise and post wet ride do you best to flush clean chain with an environmentally friendly solvent (ufo clean or others), rinse with methylated spirits, dry, re-lube. This will keep your chain oh so much lower friction and wear vs if you just expect that magically the lubricant is going to remain day in day out low friction and wear whilst being hammered with dirty water with a lot of abrasive particles mixing with your lubricant.

Again wet weather riding is an EXTREME lubrication challenge for your chain, and your chain just does so much work and has so many moving parts, a little bit of abrasive contamination in the lube adds up to a very tangible difference in end of chain lifespan vs if you keep it clean. Good maintenance post wet rides is simply a must and it will pay you back in spades re friction and parts lifespan. The top wet lubricants might be amazing lubricants in their own right, but they are not magical. The grit that is trucked in by water cant magically disappear to another dimension. Unless you remove it, its staying as part of what is running on your chain.

Again with synergetic being such a low application amount, the task at hand to clean and reset is much easier and much less cleaning agent / solvent required vs higher volume application lubricants, and so if wet lubes are you, and you ride in the wet, the lower consumption amount of cleaning agent will also add up to a tidy sum over time which counts, and this means you are more likely to do it if it is easier and less costly to do, which in turn will deliver lower wear rates and drivetrain running costs. Tis what one may call a positive spiral.

BLOCK 5 – No Contamination – Performance assessment re clearing any contamination absorbed in Wet contamination block 4.





Again this is super interesting when looking at Synergetic vs NFS, where in block 3 post dry contamination block NFS had a lower wear result, yet in block 5 post wet contamination block, Synergetic is miles ahead re clearance – in fact its clearance post wet contamination block was slightly lower than its clearance measure post dry contamination block, whereas NFS clearance post wet contamination was very poor.

So as per previous, there will be a bunch of complex stuff going one behind one result vs another – at first blush I would say simply that NFS washes off at a measurably higher rate, leading to less lubricant left at the end, and a worse lubricant to contamination ratio, whereas Synergetic is not washing off period, and that by block 5 it has built up sufficient lubricant that its clearance was slightly better than block 3.

Again this points to if you must use wet lubricants and your get caught in the wet, and you and maintenance are distant neighbours, clearly synergetic is your choice of current known lubricants tested. I can say I have been heavily involved in testing some other lubricants for some other manufacturers at time of writing this section of the review, and a couple of them have had some very impressive test results, but not a match for synergetic post wet block so whilst I have more wet lubricants tested than I can currently display data for, I can say that none have matched synergetic wear rates during or post wet contamination test block.

But of course, im going to keep hammering it home, wet rides are hell for your chain and its lube, and a wet lube isn't going to have that contamination be absorbed in 500ml of wax in a wax pot like immersive waxing, if you don't remove it, it aint going anywhere. Yes over time you will improve the ratio of lubricant to contamination vs what happened when hit with wet riding, yes the grit that gets in will be ground down a bit finer over time and less abrasive, but you are using up your chain metal to achieve this, which in turn is going to use up some of your cassette and chain rings. Look after your chain and its lubricant, and it will pay you back in spades. Have I mentioned it is by far the hardest working part on your bike (BY FAR!!) and it is completely exposed and as such is an extreme lubrication challenge? I have?! Ok good. Now go look after your chain. (after you finish reading this review 😊)

BLOCK 6 – Extreme Contamination Block– Performance assessment riding in extreme conditions – very wet and harsh contamination ie events containing lots of mud..

Synergetic was not tested in block 6 as it has used all if its 0.5% wear allowance by the end of block 5. As a ballpark guide I would double block 4 wear rate – that's what I use to extrapolate block 6 results when I have to.

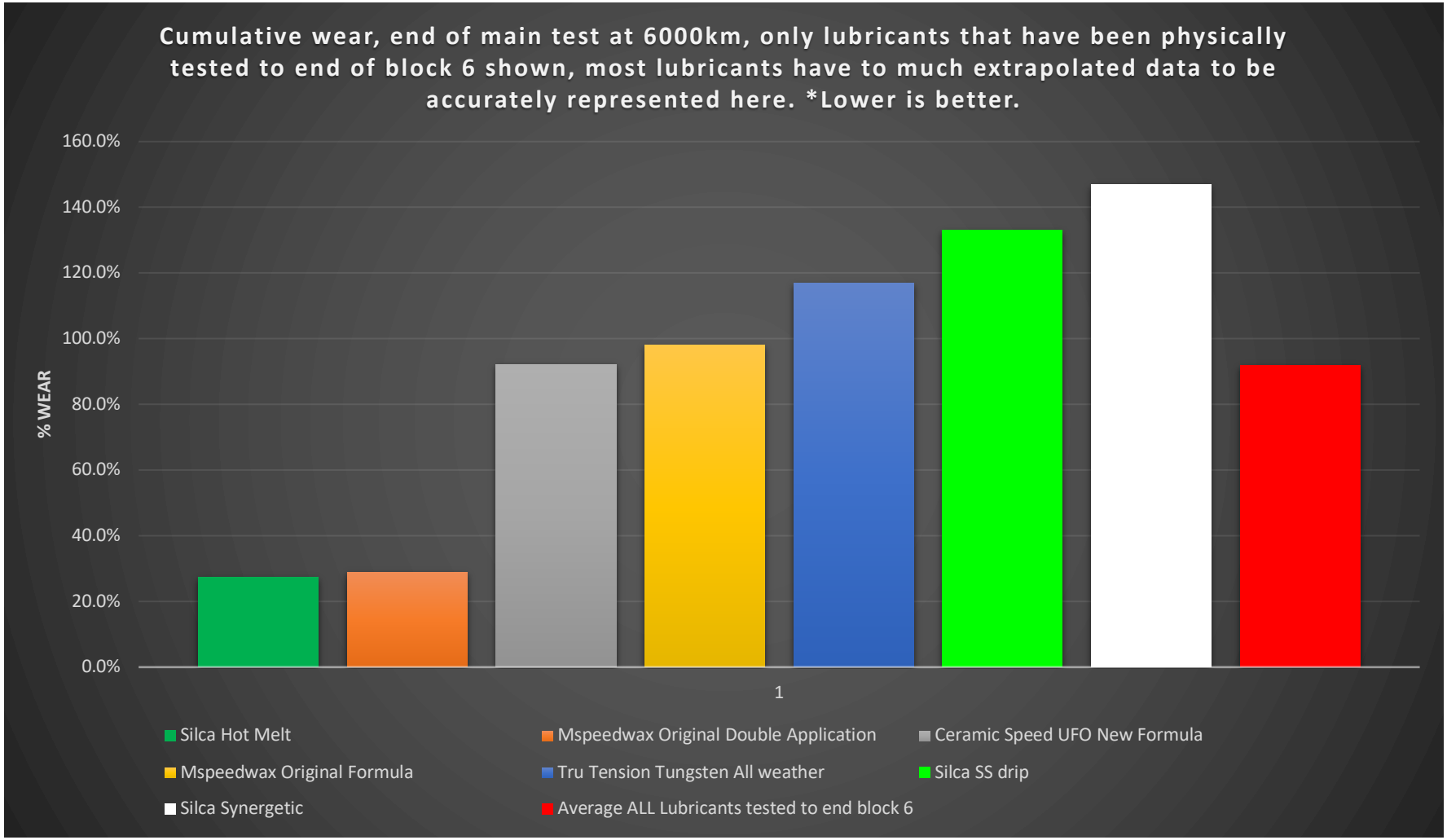
Depending on the length of a harsh conditions event, Synergetic could be a great choice. If you have been following ZFC, you will know my very strong preference for chain lubricants is the top immersive waxes/ chain coating type lubricants for their highest possible contamination resistance and ease of resetting contamination post harsh conditions rides, however many of them can suffer from a fairly short lifespan so the length of the even does need to be taken into account.

It does need to be very long to exceed the treatment lifespan of Silca Hot melt or Mspeedwax as they are 100% lubricant, the drip on coating types have a lower lifespan (Ufo drip, silca ss drip etc) as about half the volume is carrier. Other lubricants can be a great choice too like squirt, Smoove etc however they really do have significant initial penetration issues so if you have an important long event you REALLY SHOULD APPLY SUCH LUBRICANTS IMMERSIVE. THIS JUST IN SAME FOR NEWLY RELEASED GRAX, SAME INITIAL PENETRATION ISSUES.

So for some, Synergetic, very easy to apply, very long treatment lifespan, and doesn't wash off, and starts very very low friction – that may be the right choice for some events where you need a long lasting lubricant.

It is also a great choice for a lubricant to "top off" if one needs with the caveat that the needle applicator makes it a bit tough to get much out in a hurry in a race event, I will talk to josh about a small top off specific bottle with an easier to get a bunch of synergetic out type for such occasions, because if one is running a wax / chain coating and it doesn't last, then dashing some synergetic on to get to line would be a brilliant way to go – just the current needle applicator bottle makes this a bit hard to do in a hurry.

Total Cumulative wear end of test at 6000km with 3 x 1000km harsh to extreme contamination blocks;



Okey dokey here we are – Cumulative wear results for all test blocks through to the end of 6000km torture testing. As stated in graph title, only lubricants that were actually physically tested through to the end of block 6 are shown here **(in the case of synergetic an extrapolated result for extreme contamination block 6 has been added to wear rate at end of block 5)** – so not many lubricants have made it through. If a lubricant is not shown here it either passed its wear rate allowance by the end of block 5, or earlier, or in some cases tests needed to be stopped part way through a particular block (often block 4) as chain suck becomes too worrisome – I have had a derailleur hanger break once due to pushing through with testing when a lubricant was really not travelling well and chain suck was quite exciting.

Also, for some lubricants by the end of block 6 we have extrapolations on top of extrapolations. Ie for the two worst lubricants ever tested, Muc-Off Hydrodynamic and Muc-Off Nano – they had reached a cumulative wear rate of 126.6% and 145.4% respectively by the end of Dry Contamination Block 2!! So only 2000km into test! Their block 4 results are an extrapolation on block 2, and their block 6 results are an extrapolation of the extrapolated block 4 results – which suffice to say is ball park guesswork for how those lubricants would actually have performed – but since they failed spectacularly so early in the test – I think if anything the extrapolations are being kind to them. I do use that extrapolated data in the cost to run drive train tables for fun.

Back to Synergetic – whilst it isn't competing in this test (which is a pretty exhaustive test covering most real world conditions the lubricant may be used in) a wet lubricant cannot yet come close to matching top chain coating / immersive wax lubricants which simply have a big advantage in contamination resistance and resetting vs wet lubricants – when talking purely in the wet lubricant space – Silca set out to deliver to the market the top wet lubricant as this is huge demographic re lubricant type choice, and at the time of writing, they have delivered on this goal.

I will put a caveat in that the majority of focus thus far for testing has been more skewed towards chain coating type lubricants / immersive waxes as a key goal for ZFC has been to find the top products overall to stock in the retail store, leaving wet lubricants as a lesser focus, and hence I don't have as yet a really top shelf selection for synergetic results to be benchmarked against, I can still say with confidence – especially as I have tested a number of top shelf wet lubricants not yet able to be publicly displayed – that synergetic is going to take some beating in the wet lubricant space.

In fairness to a lot of manufacturers who no doubt have fantastic products that I haven't yet had the time or machine free resources to test at time of writing, I obviously cannot state empirically that Synergetic is the top wet lubricant on the market. What I can say is that I have been focussing as much so far on lubricants that have the best chance of being a top product for ZFC to stock and recommend to save drivetrains from an early death – and that to date Synergetic is clearly the top wet lubricant tested thus far. As I type I am testing some others and one in particular is going very well and is likely to have a detail review and I am looking heavily at possibly stocking – but for the moment if your use case suits a wet lubricant or you simply must run a wet lubricant because that is how you roll, then Synergetic is currently officially the top wet lubricant ZFC has tested, and so the top one ZFC recommends. Even if sometime this year or next year or year after something edges Synergetic out, which will be a tough gig, you simply are still running a phenomenally high performing wet lubricant – so you will be doing your drivetrain a lot of favours.

It is also well worth noting from years of experience in a very narrow focus area that many manufacturer claims re their products performance are just pulled straight from the cliché list, and they have either absolutely zilcho nil nix nada testing to back such claims, will run for hills if you email them and ask them for data to back such claims, or their testing when scrutinised is kinda interesting. 99% of the time if you write to a manufacturer and ask what they have to back up performance claims on the bottle, you will get they have worked with x pro team riders and feedback from team was outstanding, matches our own experience etc etc.

This means nothing. I will be covering mfg claims and testing in depth soon on what will be a belter of a you tube vid, but I can tell you right now that if a company gives X riders a lubricant and tells them it will do all sorts of wonderful things, that is exactly the feedback they get. And of course the employees of the company field testing their own lubricant - their own experience riding their own product is always amazing. Every single time. Obviously they are not going to say someone elses product is better. Hence why we need truly independent testing, hench why zfc is here.

True, tangible, robust test data in its actual use case (riding) is extremely rare. There are probably 300+ wet lubricants on the market, all of them are apparently number one. Out of that we will be lucky if 10% are truly exceptionally high performance lubricants that remain high performance in the real word. There will be about 200 that are meh – they are a lubricant, if they were just used in a clean lab or a sealed

system they might be fine, but not when exposed to contamination, and there will also be a whole bunch that are literally drivetrain eaters and nothing more.

It is safer to go with a proven lubricant. It is safer to go with a manufacturer who repeatedly delivers on marketing claims and can back marketing claims.

This is now 3 lubricants Silca have brought to market, with Hot melt taking out number one spot overall by currently a pretty big margin, Silca ss drip also tested amazing as is neck and neck with ufo drip v2 as top chain coating lubricant, and Synergetic has fairly easily taken top spot overall as top wet lubricant.

Clearly huge resources and genuine focus has gone into what Silca aimed to achieve and deliver when it stepped into the lubricant space, and the market has 3 great options to help save drive trains from an early death by abrasion – something that unfortunately other lubricants can deliver swiftly, a number of them have some of the most powerful marketing behind them making it very difficult for consumers to know.

That's where ZFC comes in – again apologies for the slow rate of detail releases and open tests – it is just smashingly busy on both private testing front and retail front, and the ZFC test covers many thousands of km's with many intervention points – it is a very time resource intensive test to get this lovely full picture review of a lubricants performance across all real world conditions – a test in itself can take 3 months to conduct as it with the new single application longevity test protocol, testing may total 8000km all up, so even with a machine, the sheer amount of run time and intervention stop points for re-lubes / contamination addition – this testing just flat out takes time, and then a full data wrap and review I have to fit in amongst running 3 machines and the retail store. Tis getting interesting! It is at the point I am investigating now splitting off the retail store and testing side of ZFC so that I can concentrate on the testing as the lubricant space is getting hotter and hotter every year. Watch what is about to be launched soon that will require an urgent test!

You will see on the test list that I am MASSIVELY behind on detail reviews – trying to catch up madly each project week but even those are bogged down by much other behind the scenes work – but soon I am hopefully handing over the reigns of retail side to a good person to run, so I can focus hopefully around 90% of my work time on testing, projects, document updates & improvements and ever improving you tube vids (now launched). Stay with me, the next step in ZFC evolution is about to begin as I hand over retail and can really properly catch up in the testing space.

Single application longevity results.

One the most common questions I receive these days is will X lubricant last me for X event. The initial single application longevity test was not sufficient, it was relatively quick test tacked onto the end of the main test as I put all my focus onto ensuring main test protocol properly assessed all the key performance area's needed.

Over time it became clear the initial single application longevity test was not sufficiently well thought out, and also that this area is a key piece of data for many racers or riders participating in a groovy event, I have introduced a new, vastly better Single application protocol.

Alas – this takes a lot longer and multiple chains per test to cover road, dry offroad and extreme conditions, and so I am as I type working my way through re-testing all lubricants worthy of testing, or new tests currently completed (such as Graphene wax).

Note so AB do not sue me, this test was not part of contracted testing, and was recently conducted on a commercially purchased bottle of graphene lube

At the time of writing I can pop in the below data, however again for full information on the test and the results head to the lubricant test page to download the full test results document.

Okey dokey – Dry road conditions;

Lubricant	Real World Km's to Wear allowance
AB Graphene Lube	1085
Silca Synergetic	778
Silca Hot Melt	531
UFO Drip V2	394
AB Graphene Wax	140

Dry offroad conditions;

Lubricant	Real World Km's to Wear allowance
AB Graphene Lube	440
Silca Hot Melt	343
Silca Synergetic	230
Ufo Drip v2	360
AB Graphene Wax	140

Extreme conditions;

Lubricant	Real World Km's to Wear allowance
AB Graphene Lube	270
Silca Synergetic	230
Silca Hot Melt	212
AB Graphene Wax	115
Ufo Drip v2	119

Again apologies for the low amount of data here atm, more will be coming soon as I catch up on completed tests and rebuilding this data from scratch with the much improved protocol.

We can see two things quite obviously here – 1) Synergetic is very long lasting for road conditions – as expected for an extremely high performing lubricant, and 2) you can see the flip vs hot melt in offroad conditions – again reinforcing what happens with wet lubricants and dust vs solid lubricants. Again if you must always run wet lube no matte what you ride, then may as well make it the best known to date one, but still some understanding of what is happening for your maintenance considerations is well worthwhile taking the time to understand and maintain accordingly for the love of your chain and drivetrain. Check ZFC you tube vids, maintenance level 1 vid is out, and further hints and tips will be coming for various lube types.

https://www.youtube.com/watch?v=5O6dEvb4SKQ&t=28s

Total Cost to run over 10,000km.

This is an extremely important metric, and so I have recently spend much of previous project week greatly expanding the cost to run modelling to cover ultegra groupset – road conditions, Dura ace groupset – road conditions, GRX 800 groupset dry offroad, and GRX 800 extreme conditions.

The cheaper the groupset (ie 105, dry road riding) the lesser impact on your wallet for running a meh lube and meh maintenance as cost if you wear out parts fairly quickly is not so bad.

The higher tier groupset with very expensive parts, then the performance of the lubricant is critical, and so far all of the proven top lubricants – it does not matter at all what it costs per bottle if the wear rates delivered are extremely low, as the cost of components far outweigh lubricant cost.

Also in case of a lubricant like synergetic, whilst a cost per small bottle is high, you use so little of it vs say rock n roll gold, that even just in pure lubricant cost terms, it works out a lot cheaper per 10,000km – and that's before we factor in the vastly lower wear rates.

So this modelling is pretty detailed factoring in cost of lubricant, amount of lubricant used, component wear rate, and cost of those components, all adding up to total cost to run per 10,000km for that specific groupset in those riding conditions.

Now your cost to run may obviously differ as your power may be higher or lower, your contamination may be worse or not as bad etc etc – no controlled test can perfectly model real world testing – neither can real world riding for rider Y will vary greatly vs rider X. However the value in

very controlled testing over thousands of km's with specific clean and contamination blocks enables a clear cost to run comparison for using lube X or lube y for your type of riding.

The modelling is too detailed to stick in here, you really need to read the full modelling notes and see the full tables – which you can do so by going to lubricant test page on zfc website, and downloading the full data document (the test page has some main wear graphs on it, but full data including cost to run is obtained by downloading that document via the link).

Summary for Synergetic though is that due to combination of very low usage amount and very low wear rates, it is at time of this review the lowest cost to run wet lubricant tested to date, and by a pretty decent margins over other top wet lubricants tested, and by a veritable chasm vs meh to poor wet lubricants tested.

Honestly, as always, the literal cost to run difference per year for many riders doing any decent mileage between choosing a proven top lubricant and random choice lubricant can be many hundreds of $, even over a thousand $ in some cases, or more. Covet that new cycling kit, or new helmet and glasses, or that cycling holiday, or new set of hoops – you can either cover or make a good dent into covering these items literally by making a good choice re your lubricant, and that's a lot more fun way to spend your hard earned $$ vs spending it on burning through drive train components. There is a reason why so many major players have recently stepped into the lubricant space, and why ZFC has far more work than I can currently manage – your chain and its lubricant is simply a MASSIVE deal, not just for saving some watts on race day, but for your wallet and drivetrain lifespan. I just cannot hammer home that latter point enough. Your chain is by orders of magnitude your hardest working component, and it is operation completely exposed. It is an EXTREME lubrication challenge despite cyclists relatively low power loads vs industry – the amount of contamination it is exposed to and so many moving parts (typically over 300,000 pieces of sliding surface friction per minute) simply make this the big, huge low hanging fruit of easy watts savings, and those watts you save were previously literally going into eating through your drivetrain components faster every pedal stroke.

Hence the rather ridiculous depth of my testing and reviews – I'm giving it the focus it deserves vs a quick few paragraphs on an online publication review. From the block by block wear rates to the cost to run modelling – all the information is there from ZFC for you to make the right choices, all it takes a cuppa or two of time investment, and you can start making properly informed decisions vs sponsored content / marketing claims leading down a path that may end expensively, and wastefully.

Final Test observations and review

Alrighty not too much left to cover off now as most covered in the above 35 pages – but final notes really are simply that similar to NFS, the key with Synergetic aside from having outstanding performance as an actual lubricant, is that so little of it is needed to lubricate for a very long span per treatment, that although it is a wet lubricant it will remain much cleaner for much longer vs the huge majority of other wet lubricants, and also this means less solvent is needed to do a flush reset on periodic maintenance intervals.

For those who only ride mostly dry road conditions or dedicated ergo bike, synergetic will be a brilliant lubricant choice. If you have read the above properly you will know that I clearly still recommended the top chain coating type lubricants for dusty conditions, and also even for frequent wet conditions riding due to the ease and lack of solvents needed to reset chain coating lubricants post harsh conditions riding, but if you are team wet lube all the way, then you may as well choose best known to date.

If you believe you know of a viable competitor (there will be some, im testing one now), and I simply havent been able to get to testing anywhere near as many possible top performing wet lubricants as I would have liked – the zfc testing just flat out takes huge time resources and machine time – YOU CAN do a decent job of assessing you lube of choice if you believe it is a contender.

Get a very accurate chain wear checker (every cyclist should have one anyway) such as the shimano TL-CN-42 . This is a very easy to use drop in checker, and as each tool is laser cut, every one is the same so it is a dependable 0.5%. Don't get hung up on what tools do or do not count roller wear vs just elongation wear – honestly all that's just over thinking it – we just need a tool that tells us quickly and easily when we should

replace chain, and one where each tool can be depended on to be the same as all the others. Many chain check tools are cast and finished vs laser cut and so can have a lot of variance from one tool to another. When I get customer wear rates from the shimano tool, I can depend on them.

If you ride road and you get at least 8,000km to a genuine 0.5% wear, then you have a contender. If you get over 10,000km, definitely I want to know about it so I can put it on my long list to try to test. So if you are on Rex, Revolubes, Dumonde tech, and many other highly reputable lubricant brands and getting genuine impressive component lifespan – let me know. If you are getting chains to 0.5% in under 8,000km – you can do better with a better lubricant choice.

Offroad is extremely difficult to give a guideline due to massive variances in contamination amount, type as well as huge differences in many 12spd chain longevity (ie xo1 lasts about 10 times as long as GX) – but as a very rough guide if you are running x01 / xx1 – you should be getting at least 5000km. I train hard in all conditions and my latest groupset upgrade xx1 chain is at 0.0 after 2000km field testing msw / hot melt / silca ss and ufo – so, zero wear. Most riders on x01 / xx1 / xtr12 and a top known chain coating type lubricant, taking care of re-wax / relube / contamination reset intervals properly vs pushing treatment lifespans – it is likely you will sell bike before even remotely needing to worry about replacing chain & cassette, im going to get at least 10,000km out of my xx1 chain and cassette. At least. So somewhere 5000km + minimum, wet lubes will be a lot less, if you get circa 5000km on a wet lube pls let me know.

ZFC Overall Performance Ratings

Race Day Lubricant Road – 9/10

A year ago it would have been 10/10, but with UFO, silca's own hot melt and ss drip, and likely latest formula of msw (on test now, going exceptionally well) – the bar is super high. Fastest wet lubricant known, super clean, super low wear – if you are team wet lube, Synergetic at the time of writing this review.

Race Day Lubricant - MTB / CX – 8.5/10 XCO / 7 to 8 for XCM

Whilst it is a brilliant lubricant, as per detail above, ALL wet lubricants will struggle vs chain coating type lubricants in high contamination conditions. The wear rate difference in block 2, and block 4, and block 6 vs chain coating types simply cannot be ignored, and wear = friction. In shorter events as synergetic will be not very wet (assuming cleaned chain, applied, worked in, excess THOROUGHLY wiped as per instructions) you are not going to suffer a large friction drop from start of event to the end, but there will be some, where the top known chain coating lubricants are likely to be pretty much exactly where they started the event. Longer events, the losses will grow as more abrasive contamination becomes part of what is lubricating your extremely hard working component.

Everyday Lubricant – 7/10 to 10/10

Again this is going to very much depend on if you are riding offroad, wet, or on road in dry conditions / ergo. If it's the latter two, its simply magnificent. Silky smooth running for very long intervals per application, very clean due to extremely low application amount, and so very easy to keep clean. If it isn't easy to keep clean, you are over applying (amount and or frequency). Offroad, again for a wet lubricant it is as good as you can get as far as known at time of writing, but all wet lubricants flat out take contamination resets = full flush cleans. How often and how much solvent / cleaning agent you want to use, on bike / off bike – that's up to you – but the level of reset will be commensurate with your effort, as will the overall wear rates & lifespan of your components depending on the above, the contamination type and amount in your

particular riding etc etc. It WILL have a longer treatment lifespan vs drip on chain coating type lubricants, but – if you do not need such long treatment lifespan – then weigh up what is the right choice.

Harsh Conditions Lubricant – 7/10 to 10/10

As above. Synergetic will not wash off, and so again solid treatment lifespan vs some chain coating type options, but again – weigh up what happens after harsh conditions ride to reset chain back to low friction to help guide your lubricant choice. In my opinion, it is a miss conception that waxing / chain coating type lubricants are not suitable for those who frequently ride in the wet. With my msw / hot melt/ silca ss chain – can get back from a full mudder and reset chain back by flushing with hot water and re-wax and its mint, cost me nothing in solvents, and took bugger all time. With a wet lubricant, its flat out multiple solvent flush cleaning rounds (sometimes a lot) to reset back to clean – there is just not getting around that. So all I have to be mindful off is treatment lifespan. Will my wax treatment last = yes – wax or chain coating lube. If its no – that's when and only when in my personal view it should be a top wet lube due to maintenance needs to get back to low friction post ride. Hence the mis conception overall re immersive waxing and wet riding. I can ABSOLUTELY GUARANTEE my immersive wax chains hitting the mud are way outlasting ANY wet lube chain, and all I have to do is boiling water rinse, blow dry and re wax. Not hard. Costs faff all. No solvents to dispose of. Anyhoo – team wet lube – go synergetic and get the best you can from a wet lube.

Single Application for Long event – 9/10

Im going to keep it more simple here vs trying to cover off if its road or Leadville 100 – you already know from above wet vs chain coating for offroad – so use that info in conjunction with the fact that synergetic is very long lasting per application. Remember a wet lube can also be topped off easily if needed in a very long event, or you can use to top off

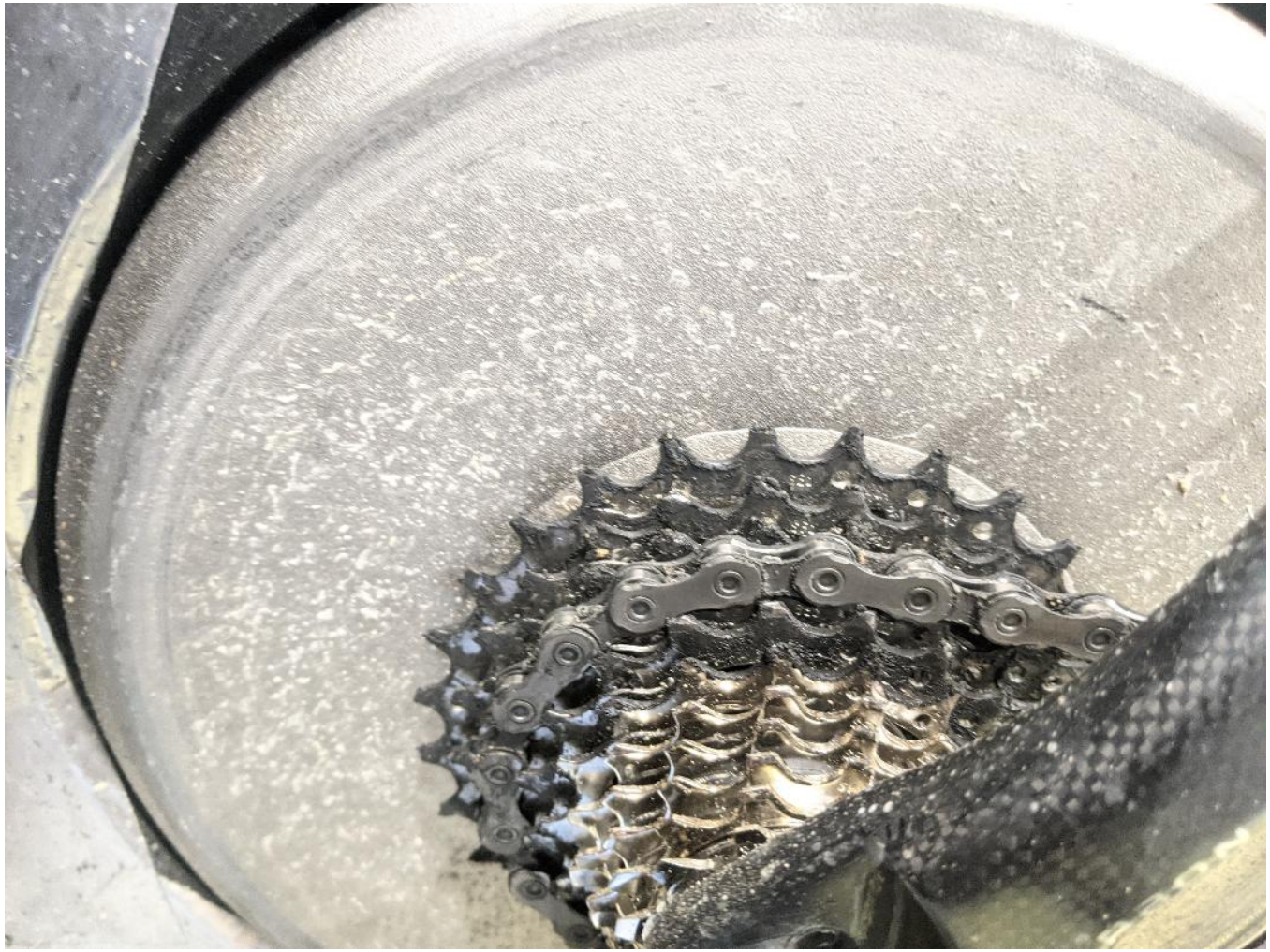
your chain coating chain if treatment is sounding too dry. Synergetic is a great choice here EXCEPT the application needle does make it harder to get some out quickly in a race – if you are topping off in a race you aren't really too concerned if you over apply, you just need to get lube on asap and go. If I was me and I felt I needed to top off with synergetic in a race like Leadville, unbound gravel, paris-brest-paris etc, I would put some in a different applicator bottle that I could literally apply in 10 seconds and go vs the needle applicator. If I was silca, I would release a 5ml race carry bottle with an applicator tip suitable for quickly topping off during a race.

Pictures From test

Mid point of main test – 3000km. Very clean for a wet lubricant.

Again – 3000km mark – cassette. Most would be pretty happy for their road / ergo drivetrains to look like this after 3000km of riding, and remember this has also been through dry contamination block which is pretty harsh which your road / ergo riding will not subject it too.

Synergetic end of main test – 5000km mark.



Synergetic end of test – 5000km mark – having been hit with wet contamination block and double re lubrication rate through that block (which is the test protocol as most people will relubricate more often when riding in harsh conditions).

When Chain lubes go wrong…

For fun lets compare that to the chain from the worst lubricant tested to date, Muc-Off Nano, which had used up 145% of its wear allowance after just 2000km. Muc-off Hydro / wet go exactly the same in the same time, and the above is also exactly what I have seen with customer bikes on those lubricants by muc-off, as well as what is reported to me via social media. It's a hard choice to live with. Remember some of muc-off lubricants come with a UV light to ensure you havent missed any spots on your chain. On the outside of your chain. Where you do not want excess wet lubricant. The above is the result of

such as system. You need lubrication INSIDE your chain. Why oh why would one want to ensure all of their chain is thoroughly wet with a wet lubricant?! It is just going to attract all that much more contamination. Hence the horrific look , and horrific wear rates. Beware marketing vs physics.