Zero Friction Cycling

Main test protocol - Understanding the ZFC benchmark test and data.

What does the data mean? The recommended time to replace your chain is at 0.5% elongation wear. This is the benchmark used in the zfc main test.
As such, 0.5% elongation wear = 1.0 chains worn in the data tables. Thus 2.0 would mean 2 chains would have been worn to 0.5% replacement mark by this point etc.
The LOWER the number of chains worn to recommended 0.5%, the better performing the lubricant. In real riding, the lower chain wear WILL = lower cassette and chainring wear as well.
Lubricants protecting your chain (and thus drivetrain) from wear can have a huge impact on your running costs - especially for higher end components.
Or - if you just replace your drivetrain at an annual service, a lubricant protecting your drivetrain from a lot of wear will have a significant impact on your drivetrain performance,
especially towards the end of its tenure - keeping it much lower friction, better shifting, reduced chance of chain drop, reduced chance of chain failure. All very good things.
Your chain and its lubricant work EXTREMELY hard. Your chain has many moving parts per link, and they need lubrication under thousands fo PSI pressure load, with high contamination exposure. Your humble bicycle chain, at the heart of propelling you forwards, is actually quite an extreme lubrication challenge that many underestimate, to their cost.

A pretty bonkers market segment....

Your chain lubricant choice can very easily either cost you a lot or save you a lot - in both efficiency and running costs.
But it can be so hard for cyclists to know which brand or which product to trust. Manufacturers can make any claim they like about their products performance, and often with zero substantiation of the claim, or zero independent substantiation. Sadly it is also very difficult for cycling media to properly assess, and most cyclists struggle too (Track your chain wear!!!)
That is why the ZFC benchmark test exists. It is a test where load, time, contamination exposure, re lubrication etc etc are all controlled. The wear rates that come in are purely down to the performance and wear protection of the lubricant to do its job in its actual use case - on a bicycle chain on a bicycle drivetrain. Not some esoteric ASTM test for a different use case.

The ZFC test is a difficult test. Each block is 1000km, and alternates between clean and contamination blocks. Most facilities lubricant tests are very short (hours).
Wheras most ZFC tests last from 3000 to 6000km. There are re lubrication intervals, but NO cleaning during main test - it is up to the lubricant to resist becoming abrasive.

Assessing a lubricants performance via wear correlation is a relatively blunt tool. It cannot directly predict efficiency (speed). Ie if two lubricants return similar wear rate results, the ZFC test cannot say which may be 5w loss lube or a 6w or 4w etc. As a blunt tool to measure performance, we are looking for large differences in wear rate, as a high wear rate denotes rapid wear of the chains steel parts, and it flat out takes friction to wear steel at a notable rate. So a 0.1 vs a 0.2, or 1.3 vs 1.4 etc - I don't care.

But a 0.1 vs 0.3 or 0.4 difference result is becoming a notable performance difference if this is for an individual wear block, or around 0.5 for the overall cumulative wear.
Ie a 0.5 difference means a chain was more worn by half of its wear lifespan vs another lubricant. A 1.0 difference means an entire other chains was worn to wear allowance by same point.
Also look for notable changes by Block. Ie if a lubricant is impressive in block 1, but increases notably in block 2 - then it has absorbed a lot of contamination and become abrasive

The test is just a Tacx Neo smart trainer set to 250w resistance, driven by an industrial motor at 100 cadence. So it is an actual bicycle drivetrain.
So the chain, and its lubricant - is being tested in its ACTUAL use case, not some esoteric efficiency test method.
If a lubricant shows high chain wear in this test, it is EXTREMELY unlikely to be a high performing product in your cycling. If you are happy with a product that tests poorly here, you will do cartwheels of joy if you switched to a high performing product of your preference (wet, wax, wax drip etc).

*Before you email me about the great results you have had with X poor result lubricant - pls note that getting 10,000km from a chain is easy if you run it WAY past recommended 0.5% wear mark. And/Or if you flush clean your chains every week to reset contamination. I would get about 60,000km if I took an Mspeedwax / Hot Melt / Rex BD chain to 2%.
The test is a true like for like benchmark. The lubricants are tested at same load, same intervals, same contamination introduced at the same time and same amount.
The wear rates are a true reflection of one lubricants performance vs another, as a bicycle chain lubricant, in its actual use case on a bicycle drivetrain.

Understanding Cost to run calculations.

This has been a difficult area to model. Previously I had extremely detailed modelling, factoring lubricant cost, different components etc - however the numbers were often difficult for viewers to understand, and for the poor performing lubricants, the cost to run numbers were pretty unbelievable - because in real life no one would actually spend those $$
For example, the worst performing lubircants would eat through many chains per 5000km or 10,000km to a 0.5% recommended wear replacement mark. And if one actually replaced their chains and components from this wear as should be done, the cost to run modelling would have been very accurate of that very high cost. But, people running such lubricants do not do this, instead they keep running chain and drivetrain parts until they are very very worn, and then replace. Often they may have no idea just how worn their drivetrain was, they just know when they get their bike back it feels brand new! But when they would see a number saying X huge amount of $ per 10,000km, and they are not spending that due to riding things to the death vs replacing components at recommended wear - they would disregard cost to run calculations entirely as being wildly inaccurate - which in reality, for them - they were.

But cost to run is a key driver of this testing. Lubricants that wear your chain (and thus drivetrain) components rapidly DO cost A LOT of cyclists A LOT of extra money every year.
And many components can be very expensive. We now have chains costing over $200 and cassettes costing $700 to $1000+, as well as some very expensive chain rings. On high end components a lubricant that prevents half the wear vs another lubricant can literally save you $1000 on component wear over a year, or 5000km, or 10,000km etc.
What would you rather spend your money on? Those news glasses you covet? Or shoes? Or helmet? Or winter jacket? Or Cargo bibs? - Or just burn it on buying new groupset components that by simply buying a proven excellent lubricant vs a proven meh or poor lubricant - you can easily prevent that wear and needed replacement.

However in light of the issues on original cost to run, it has now been greatly simplified, and more leeway given around replacement. Cost to run is based on rider taking chain to 1.0% wear as opposed to recommended replacement mark of 0.5%, and then cost to replace components of $500. If you components cost less than this, factor that for yourself when you are comparing the cost to run $ amounts. Remember also your components may cost MUCH more than this, so - factor accordingly. If the cost to run on my modelling has one lubricant at $500 and another lubricant at $1000, but your compnents will cost your $1000 to replace vs $500, then there will be $1000 wear saving between those 2 lubricants vs $500.

Sadly - despite the changes, the cost to run calcs for the worst performing products are still a bit nuts. They just eat so many chains. In reality what happens is people just run them very worn for a long time. They pay for it in a very badly running drivetrain vs paying in $, because if they realised how bad things were, they would try a different lubricant.
Or in some cases people mask a poor lubricant by way of very frequent and very thorough maintenance, which also carries time and solvent costs (and solvent ends up where?)

REMEMBER THIS IS A BENCHMARK TEST!

Yes - I know - for X lubricant that performs poorly on the data below there will be cyclists that have achieved very different KM's to wear rate in their use. But I am not testing your personal riding conditions or terrain. I am not testing your power. I am not testing your chain and drivetrain maintenance. In the ZFC test, all aspects and conditions are the same, so the results are relative to each other. If you ride gravel, and in the ZFC table Lubricant A is much lower wear than Lubricant B in the dry offroad test block 2 - whilst your wear rate will differ for your cycling vs this benchmark test, the relationship will be highly linked. You can expect lubricant A to deliver much lower wear to you Vs lubricant B just like it did in this test.
In summary - if you have been happy with a product that tests poorly in the ZFC test, you will be doing carthwheels of joy if you used a high performing product instead.

At the bottom of the lubricant test page on website is the full test brief if you wish to read the full test protocol and deeper information.

How to use this data?

The table below shows the wear recorded across the main test (cumulative - each blocks wear added to all previous wear).
For most data / cost comparisons I use the first 5000km only, excluding harsh block 6, as most lubricants have failed long before, and I am using heavily extrapolated data to fill.
The main test up to the end of Block 5 (5000km of testing including a dry contamination block and a wet contamination block) - is an overall fairly tough test.
A lubricant with a result of 1.0 (one chain worn to the recommended chain wear replacement mark of 0.5% elongation wear) for Block 5 is a high performing lubricant
For MOST cyclists - especially predominantely dry conditions road cycling - you should also expect to attain at least 5000km to a 0.5% wear mark for that lubricant.
IF you ride predominantly offroad - you should refer to the individual block by block data table (below the cumulative wear table) to select a lubricant that performs well in offroad conditions (gravel / mtb). Many wet lubricants especially become very abrasive very quickly when exposed to the world of dirt and dust.
IF you ride predominantly or frequently in wet condtions / harsh wet conditions - you should refer to the block by block data table (below cumulative wear table) to select A lubricant that performs well in those conditions.
Data fields that are RED denote the data is Extrapolated as the test was stopped at end of previous block due to high wear not warranting continuing test.
Extrapolated data is the average result for lubricants of that type that have physically been tested (better performing) in that block. It is likely if tested the red data fields would be worse than shown

Friction / wear test - CUMULATIVE WEAR - Main test protocol

WAX / Wax DRIP / DRIP - WET / GREASE

Number of chains worn to recommended replacement mark of 0.5%. 1.0 = 1 chain worn to 0.5% wear mark.

Lubricant	Block 1 - No Contamination	Block 2 - Dry Offroad conditions	Block 3 - No Contamination	Block 4 - Wet conditions riding	Block 5 - No Contamination	Block 6 - Harsh wet conditions riding	COST TO RUN - 5000km Based on drivetrain parts replacement cost of $500, and with replacement necessary after 1 x chain wear to a 1.0% elongation wear necessitating new components with a new chain. Refer to Cost to run explainer in main information section.
Silca Hot wax X	0.00	0.00	0.00	0.23	0.28	0.60	$ 141.00
Prestacycle One	0.08	1.03	0.01	2.99	3.95	5.54	$ 1,974.00
Rex Black Diamond Wax - 4+1 Mix	0.00	0.00	0.01	0.20	0.21	0.49	$ 107.00
Mspeedwax New Formula	0.00	0.01	0.02	0.11	0.12	0.32	$ 59.50
Rex Black Diamond Wax - 11+1 mix	0.00	0.01	0.02	0.07	0.09	0.45	$ 44.50
Private immersive wax (2)	0.01	0.02	0.03	0.40	0.45	0.87	$ 225.00
Private Immersive wax (3)	0.01	0.03	0.03	0.35	0.38	0.76	$ 190.50
Effetto Mariposa Flower power wax	0.02	0.05	0.05	0.37	0.48	0.80	$ 240.00
Private immersive wax	0.00	0.06	0.06	0.40	0.46	0.83	$ 230.00
Ceramic Spd UFO Drip New Formula	0.02	0.06	0.06	0.39	0.56	0.92	$ 278.00
Silca Hot Melt	0.00	0.02	0.07	0.15	0.19	0.27	$ 95.00
Silca Super Secret Drip	0.03	0.08	0.08	0.44	0.73	1.33	$ 367.00
Tru Tension Tungsten Race - (*D.A)	0.05	0.07	0.10	0.48	0.78	1.17	$ 390.00
Private wax drip (1)	0.05	0.10	0.10	0.69	1.12	1.72	$ 560.50
Molten Speed Wax Original Formula	0.00	0.12	0.12	0.20	0.20	0.98	$ 100.00
Finish Line Halo IM wax (*RE-Test Jan 25)	0.05	0.12	0.12	0.22	0.24	0.40	$ 118.50
Candle wax	0.05	0.15	0.20	0.34	0.40	0.78	$ 201.00
Session S-Wax	0.15	0.20	0.25	0.58	0.85	1.21	$ 423.00
Silca Synerg-E	0.02	0.10	0.29	1.03	1.23	2.33	$ 612.50
Rex Black Diamond	0.02	0.13	0.30	0.73	0.97	1.61	$ 485.50
Finish Line Halo Drip wax (*Re-Test)	0.16	0.28	0.33	1.32	2.16	3.17	$ 1,080.00
Tru Tension Tungsten All Weather	0.14	0.24	0.36	0.67	0.85	1.17	$ 425.00
Smoove	0.19	0.37	0.39	0.87	1.18	1.64	$ 590.00
Revolubes	0.04	0.22	0.40	1.01	1.19	2.12	$ 594.00
Silca Synergetic	0.00	0.18	0.43	0.70	0.92	1.47	$ 458.50
Ceramic Speed Wet Conditions	0.12	0.28	0.45	0.86	1.10	1.52	$ 548.50
Rex Domestique	0.05	0.34	0.49	0.93	1.08	1.73	$ 538.00
Nix Frix Shun	0.13	0.40	0.54	0.83	1.55	1.97	$ 775.00
Rock N Roll Gold	0.09	0.38	0.58	1.22	1.43	2.40	$ 714.50
Allied GRAX	0.22	0.40	0.59	1.01	1.27	1.70	$ 635.50
Squirt	0.19	0.39	0.61	1.09	1.41	1.90	$ 702.50
Boeshield T9 - Aerosol	0.11	0.43	0.66	1.13	1.35	2.07	$ 677.00
Finish Line Dry	0.15	0.50	0.77	1.31	1.76	2.57	$ 877.50
AB Graphene Wax	0.22	0.60	0.85	1.89	2.14	3.17	$ 1,068.50
Singer general purpose ($6.95)	0.09	0.47	0.87	1.52	1.92	2.88	$ 959.00
Tunap Ultimate Synthetic	0.10	0.47	0.88	1.61	2.02	3.11	$ 1,010.00
Private test - wet lubricant (1)	0.15	0.59	0.90	1.60	1.91	2.96	$ 954.00
Private test wet lubricant (2)	0.11	0.37	0.93	1.95	2.51	4.03	$ 1,254.00
Wend Wax test 2 (dissolved in)	0.36	0.69	0.98	0.40	2.06	2.71	$ 1,029.50
Cycle Star Gold	0.22	0.53	0.98	1.55	2.00	2.86	$ 1,002.00
Wolf tooth wt-1 on Factory grease	0.18	0.55	1.03	1.66	2.15	3.09	$ 1,073.00
Dumonde Tech Pro X-Lite	0.16	0.85	1.07	2.02	2.23	3.66	$ 1,116.50
Wolf tooth wt-1	0.17	0.70	1.24	2.03	2.57	3.38	$ 1,284.00
Muc Off C3 Ceramic Dry	0.11	0.72	1.25	2.12	2.65	3.96	$ 1,323.50
White Lightning Epic Ride	0.23	0.57	1.61	2.01	3.25	4.15	$ 1,625.00
Airolube	0.10	1.09	1.67	3.32	3.90	6.37	$ 1,948.50
Tunap Eco	0.11	1.23	1.73	2.54	3.04	4.26	$ 1,518.50
Finish Line Wet (green bottle)	0.15	1.06	1.83	3.00	3.77	5.53	$ 1,885.00
Muc Off Ludicrous AF	0.09	0.90	1.83	3.05	3.85	5.67	$ 1,927.00
Cyclon All weather	0.24	1.21	2.09	3.73	4.61	7.07	$ 2,305.00
Muc Off Hydro Dynamic	0.28	1.27	2.11	3.36	4.21	6.08	$ 2,103.50
Muc Off Nano Lube	0.38	1.45	2.39	3.73	4.66	6.67	$ 2,330.00
Shimano Factory Grease	0.11	0.32	N/A	N/A	N/A	N/A	
Finish line Ceramic Wax (unable to extrapolate data)	0.72	N/A	N/A	N/A	N/A	N/A	
Wend Wax test 1 - stick only	0.74	N/A	N/A	N/A	N/A	N/A	
NO LUBRICANT	0.90	N/A	N/A	N/A	N/A	N/A	
Average	0.14	0.42	0.67	1.28	1.66	2.51	

*D.A = Re lube applications doubled
*E.A = Extended application intervals

Red = extrapolated data as test stopped before testing this block.
See Below Wear by block data table for current extrapolations.

Wear - Block by block (individual wear rate for each block)

How to use this data?

The table below shows the wear recorded for each individual test block. This enables you to drill down to what lubricant performs for your riding - ie offroad? Frequent wet?
A high result in block 1 may indicate initial penetration issues, especially if there is a similar or even lower wear rate in block 2 where abrasive contamination is now added.
Or, if there is a high wear rate in block 1, followed by a much worse result in block 2, it is simply a very poor lubricant.
A high amount of wear in block 2 (regardless of block 1 result) - shows the lubricant becomes abrasive once exposed to dry dust contamination = NOT suitable for offroad / gravel
Block 3 gives us an indication if the lubricant was able to improve / flush clean itself after block 2 - ie any ability to "clean as it lubes".
Block 4 gives us an indication of the lubricants performance in wet weather conditions.
Block 5 is similar to block 3 - how does the lubricant recover post block 4's wet contamination.
Block 6 is a harsher wet conditions test vs block 4 - it has double the amount of water, double the amount of contamination, this is applied twice as often (4x amount all up).
Data fields that are RED denote the data is Extrapolated as the test was stopped at end of previous block due to high wear not warranting continuing test.
Extrapolated data is the average result for lubricants of that type that have physically been tested (better performing) in that block. It is likely if tested the red data fields would be worse than shown

SUMMARY

If you only ride in dry road conditions - Any lubricant with a low wear rate in BLOCK 1 will suit you well, especially if you follow chain maintenacnce guide (instructions tab - ZFC)
If you ride gravel or mtb in predominately dry conditions - you want a lubricant with a low wear rate in BLOCK 2. ZFC RECOMMENDS BELOW 1.5 chains per 5000km
If you ride in frequent wet conditions (road or offroad) - you want a lubricant with a low (comparatively..) wear rate in Block 4 - ZFC RECOMMENDS BELOW 2.5 Chains per 5000km
If you ride in frequent VERY HARSH conditions - you want a lubricant with a low (comparatively..) wear rate in Block 6, ZFC RECOMMENDS BELOW 3.5 chains per 5000km

Number of chains worn to recommended replacement mark of 0.5% in EACH block. 1.0 = 1 chain worn to 0.5% wear mark

WAX / Wax DRIP / DRIP - WET / GREASE

Lubricant	Block 1 - 1000km- No Contamination	Block 2 - 1000km - Dry Offroad conditions	Block 2 - Dry Offroad conditions - CHAINS WORN to 0.5% PER 5000km	Block 3 - No Contamination	Block 4 - Wet conditions riding	Block 4 - Wet conditions riding - Chains Worn to 0.5% per 5000km	Block 5 - No Contamination	Block 6 - Harsh wet conditions riding	Block 6 - Harsh wet conditions riding - Chains worn to 0.5% per 5000km
Silca Hot wax X	0.00	0.00	0.00	0.00	0.23	1.16	0.05	0.32	1.79
Rex Black Diamond Wax - 4+1 Mix	0.00	0.00	0.00	0.01	0.18	0.92	0.02	0.28	0.43
Mspeedwax New Formula	0.00	0.01	0.06	0.01	0.09	0.46	0.01	0.20	3.90
Private Immersive wax (2)	0.01	0.01	0.06	0.01	0.37	1.85	0.06	0.42	0.99
Rex Black Diamond Wax - 11+1 mix	0.00	0.01	0.07	0.01	0.05	0.23	0.02	0.36	0.80
Silca Hot Melt	0.00	0.02	0.09	0.05	0.08	0.40	0.04	0.09	1.87
Tru Tension Tungsten Race (D.A)	0.05	0.02	0.10	0.02	0.38	1.92	0.30	0.39	1.40
Effetto Mariposa Flower power wax	0.02	0.02	0.12	0.00	0.32	1.60	0.11	0.32	1.60
Private Immersive wax (3)	0.01	0.02	0.12	0.00	0.32	1.59	0.00	0.37	2.77
Ceramic Spd UFO Drip New Formula	0.02	0.03	0.17	0.01	0.32	1.62	0.17	0.37	2.15
Silca Super Secret Drip	0.03	0.05	0.23	0.00	0.37	1.85	0.29	0.66	1.60
Private wax drip (1)	0.05	0.05	0.23	0.00	0.59	2.96	0.43	0.60	1.87
Private Immersive wax	0.00	0.06	0.29	0.00	0.34	1.70	0.00	0.37	1.60
Session S-wax	0.15	0.06	0.29	0.05	0.33	1.63	0.27	0.37	1.83
Finish Line Halo IM wax (re-test Jan 25)	0.05	0.07	0.36	0.01	0.09	0.47	0.02	0.16	1.83
Silca Synerg-E	0.02	0.08	0.39	0.20	0.73	3.67	0.20	1.10	1.87
Candle wax	0.05	0.10	0.48	0.06	0.14	0.71	0.06	0.37	2.09
Tru Tension Tungsten All Weather	0.14	0.10	0.50	0.12	0.31	1.55	0.18	0.32	3.30
Rex Black Diamond	0.02	0.11	0.56	0.17	0.43	2.13	0.24	0.64	1.95
Molten Speed Wax Original Formula	**0.00**	**0.12**	0.60	0.00	0.08	0.40	0.00	0.78	1.87
Finish Line Halo Drip wax - re test.	0.16	0.13	0.63	0.05	0.99	4.97	0.83	1.01	2.14
Ceramic Speed Wet Conditions	0.12	0.16	0.80	0.17	0.41	2.06	0.24	0.37	3.20
Smoove	**0.19**	**0.17**	0.87	0.02	0.45	2.26	0.34	0.46	3.28
Revolubes	0.04	0.18	0.92	0.17	0.62	3.09	0.17	0.92	2.29
Allied GRAX	0.22	0.18	0.92	0.19	0.42	2.10	0.26	0.43	3.56
Silca Synergetic	0.00	0.19	0.93	0.24	0.27	1.37	0.22	0.55	2.48
Shimano Factory Grease	0.11	0.21	1.04						4.08
Squirt	**0.19**	**0.22**	1.10	0.18	0.49	2.45	0.33	0.50	4.28
Private test wet lubricant (2)	0.11	0.25	1.27	0.56	1.02	5.09	0.56	1.53	2.99
Nix Frix Shun	0.13	0.27	1.37	0.14	0.27	1.37	0.73	0.43	3.24
Rex Domestique	0.05	0.29	1.43	0.15	0.44	2.19	0.15	0.66	4.49
Rock N Roll Gold	**0.09**	**0.29**	1.45	0.20	0.65	3.25	0.20	0.98	4.62
Cycle Star Gold	**0.22**	**0.31**	1.55	0.45	0.57	2.85	0.45	0.86	4.74
Boeshield T9- Aerosol	0.11	0.32	1.62	0.22	0.47	2.37	0.22	0.71	4.83
Wend Wax test 2 (dissolved in)	0.36	0.34	1.68	0.29	0.60	2.99	0.46	0.65	4.88
White Lightning Epic Ride	**0.23**	**0.34**	1.69	1.04	0.60	2.99	1.04	0.90	5.26
Finish Line Dry	0.15	0.35	1.76	0.27	0.54	2.72	0.44	0.82	5.51
Tunap Eco Ultimate Synthetic	0.10	0.36	1.82	0.41	0.73	3.66	0.41	1.10	4.05
Wolf tooth WT-1 on Factory Grease	0.18	0.37	1.86	0.48	0.63	3.16	0.48	0.95	6.13
AB Graphene Wax	0.22	0.38	1.92	0.25	1.04	5.18	0.25	1.04	5.48
Singer General Purpose ($6.95)	0.09	0.38	1.92	0.40	0.64	3.22	0.40	0.97	6.59
Private test - wet lubricant	0.15	0.44	2.20	0.31	0.70	3.51	0.31	1.05	7.13
Wolf tooth WT-1	0.17	0.53	2.65	0.54	0.79	3.95	0.54	0.81	7.63
Muc Off C3 Ceramic Dry	0.11	0.62	3.09	0.52	0.88	4.39	0.52	1.32	5.18
Dumonde Tech Pro X-Lite	0.16	0.69	3.45	0.22	0.95	4.75	0.22	1.43	7.81
Muc Off Ludicrous AF	0.09	0.78	3.90	0.64	1.04	5.21	0.64	1.56	8.79
WD-40 (originial)	0.13								
Finish Line Wet (green bottle)	0.15	0.91	4.56	0.77	1.17	5.86	0.77	1.76	9.08
Prestacycle One	0.08	0.95	4.75	0.81	1.21	6.06	0.81	1.82	9.38
Cyclon All weather	0.24	0.96	4.82	0.88	1.64	8.20	0.88	2.46	10.04
Airolube	0.10	0.99	4.95	0.58	1.65	8.26	0.58	2.48	12.30
Muc Off Hydro Dynamic	**0.28**	**0.99**	4.95	0.85	1.25	6.25	0.85	1.88	12.38
Muc Off Nano	**0.38**	**1.08**	5.39	0.93	1.34	6.69	0.93	2.01	
Tunap Eco (on test)	0.11	1.13	5.63	0.49	0.82	4.09	0.49	1.23	
Finish line Ceramic Wax (unable to extrapolate data)	0.72								
Wend Wax test 1 - stick only	0.74								
NO LUBRICANT	0.90								5.05
Average All lubes	14.4%	31.5%		27.2%	59.7%		35.0%	84.7%	

*D.A = Re lube applications doubled *E.A = Extended application intervals	Red = extrapolated data as test stopped before testing this block. See Below Wear by block data table for current extrapolations.

Wet lubricants Extrapolation update - Nov 2024
Average All Wet Block 1 - 10.8%
Average All Wet Block 2 - %
Extrapolation = +28.3%

Block 3.
Average All wet Block 2 = 53.1%
Average all wet Block 3 = 38.8%
Extrapolation = -14.3%

Block 4
Average All wet block 2 = 53.1%
Average all tested wet block 4 = 79.2
Extrapolation = + 26.1%

Block 5
Too small data (only 3)
Use their block 3 wear rate (very optimistic
Extrapolation = use block 3

Block 6 - change to use a 1.5 multiplication on Block 4
Only one wet lubricant has been tested in block 6 - insufficient for data average extrapolation.

Wax drip lubricants Extrapolation update - Nov 2024

Average All Wax Block 1 - 9.7%
Average All Wax Block 2 -
Extrapolation =

Block 3.
Average All wax Block 2 =
Average all wax Block 3 =
Extrapolation = -3.0%

Block 4
Average All wax block 2 = 9.7%
Average all tested wax block 4 = 39.9
Extrapolation = + 30.2%

Block 5
Average all wax tested block 4 = 39.9%
Average all wax tested block 5 = 23.8%
Extrapolation = -16.1% reduction vs block 4

Block 6
Average all wax tested block 4 = 39.9%
Average all wet tested block 6 = 40.6%
Extrapolation = + 0.7% vs block 4

Immersive wax (excluding Finish line halo
Block 5 - use block 3
Block 6 - avg all tested = 37.4 - use this except for AB graphen wax - use block 4