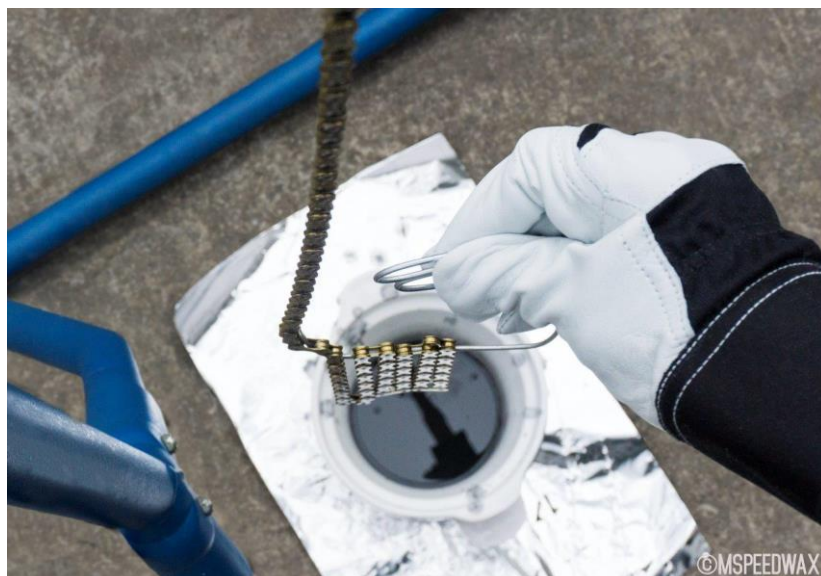


Zero Friction Cycling

Waxing Zen Master Guide



HOW TO CLEAN MY CHAIN FOR WAXING

Cleaning a chain to prep for waxing (or even most good drip lubes) is best thought of as a two part process. Part one is cleaning the drip lube / factory grease off, the second part is ensuring there is no film left on chain from cleaning that would affect wax adherence / lube access to chain metal. The solvents we recommend here are a simple, relatively cheap, tested and proven way to clean and prep your chain. Some swear by cleaning chain with petrol / diesel/ degreasers etc but these in themselves are problematic in how much residue / film of themselves they leave behind - making it more laborious to clean off what you just used to clean chain.... If you follow the below, it is easy, cheap and always works perfectly.

***NOTE – Cleaning of new chains or existing chains for waxing only needs to be done prior to first wax. After first wax no further cleaning is required, simply pop chain off bike – stick on top of wax in pot, turn pot on, come back sometime later when melted to give a bit of a swishing, hang to set. That's it. Cleaning days are basically over. You get very quick at re waxing in no time, and with no cleaning time / solvent costs, and usually at least double to triple the lifespan extension on chain and drive train parts – immersive waxing is both a TIME SAVER vs drip lubes as well as big \$\$ saver in drive train running costs. And you are running always low friction. And you have an always great looking drive train. Win, win, win, win. Hence why it is ZFC core product.*

For normal riding there is so little contamination picked up by solid MSW that it is not economically viable in either time or \$ on cleaning products to try to attain greater extension of chain / wax lifespan by following any type of cleaning process prior to re waxing. Just pop off bike and into wax pot.

Post solid wet rides or dirty cx / mtb rides, a quick bit of maintenance can be good to minimise the amount of contamination imported into wax pot. But, good news is – it is the easiest chain clean ever.

Simply swish chain in boiling water in an open container using same swisher tool you use for re waxing (do not shake in a closed container, this will release steam pressure, blow lid off container and spray your face with scalding water and steam which isn't optimal). Whilst MSW is solid and the most contamination resistant lubricant there is, water provides the medium which transports contamination inside the chain, some of which will be forcibly pressed into the wax. A good swishing in boiling water will melt a good amount of the more contaminated wax off chain, keeping the wax in your wax pot cleaner for longer. Thoroughly dry chain with hair dryer, pop chain into pot, turn pot on. You will feel chain is silky smooth when drying after nothing more than a hot water rinse that took you all of 5 mins to do and not a solvent in sight. Brings a smile every time 😊

**It is not worth doing boiling water rinse as standard practice for normal dry road riding – it will cost you more in electricity to boil the kettle than you will attain in extending lifespan of chain / wax. There is simply so little contamination is gathered in normal road riding, just pop off bike and into wax pot.*

Cleaning New chains with factory grease



Factory grease is meant for packing, it IS NOT a good lubricant. Never ever put a new chain on and then race / do a big event. You are adding a stack of extra friction. Some factory grease is up to 5w higher friction vs just a decent drip lube. It is also horrendous for grabbing and holding contamination. So no matter if waxing or using a good drip lube, clean off factory grease – it is meant for packing and if stock may sit on a or warehouse for a decade or so – it is not for riding.

Until ridden which oxidises factory grease, it is also pretty stubborn and doesn't dissolve off readily – it takes a bit longer to properly dissolve. So just using a small plastic container with lid;

- Overnight soak in **mineral turps**. Agitate, pour out, wipe chain and container, and give a second overnight soak (or at least a few hours) in fresh mineral turps.
- Agitate, pour out, wipe chain and container, and give a final third agitated flush with fresh mineral turps.
- A thorough agitated shake in methylated spirits – 2mins. Methylated Spirits is almost pure alcohol and so ensures no film left behind.
- Pour out and give second agitated shake in methylated spirits for 2mins.
- Wipe dry
- Blow dry for 5mins with hair dryer.
- Now ready to wax. (note – turn wax on after chain cleaned to allow for more drying time as wax melts)

Cleaning Existing / Used chains



Everything is the same as above except – once factory grease will have been oxidised by riding it will dissolve off without needing overnight soaks. Using mineral turps simply agitate bath one after the other until the turps comes out as clear as it went in. The first will go instantly black, pour out, wipe chain and container, go again – it will go black, repeat, repeat, repeat etc.

On average it takes usually 7 to 12 agitated mineral turps baths with to get an existing chain clean, then move to 2 to 3 thorough agitated methylated spirits baths.



Wipe chain dry, blow chain dry hairdryer for 5 mins, now ready to wax. (note – turn wax on after chain cleaned to allow for more drying time as wax melts).

Because of the amount of product needed, as well as how quickly a chain's special low friction coatings and other surface treatments are damaged using gritty drip lubes, you have to weigh up how old a chain you want to clean up. World Tour teams replace their chains every 500 to 1000km – largely due to the fact that on drip lubes the low friction coating will be abraded off by this time. The good news is switching to waxing – this is less of an issue if able to stay on top of re-wax intervals, because for "x" km's after every re wax, all parts of the chain are sliding on

each other on solid super slippery wax surfaces – pretty much leaving chain metal out of it. This is why chains on MSW from new you can expect around 10,000 to 15,000km lifespan to 0.5% wear, vs 3000 to 6000km for drip lubes. Over 20,000km to 0.5% wear has been recorded.

However as wax wears thinner and any airborne dust or contamination that has entered chain and been forcibly pressed into wax - chain metal will start to come into play. Despite being solid and the most resistant of any lubricant to contamination – a chain operates completely exposed so some contamination is inevitable. So like a piece of glass embedded in a tire – run tire thin and it gets a shot at your tube. As wax gets thinner, the small amount of contamination gets a shot to abrade on chain metal. I did a test on one of my chains for 3000km where I re waxed every approx. 100km. In 3000km the chain wear went from 0.00 to 0.01. Recommended replace 0.5. That demonstrated perfectly that after every re wax – there is a window where chain metal is completely left out of the equation – it is all protected by MSW solid coating.

But at normal feasible re wax intervals, quality of coatings and surface treatments remaining will be handy, however far less of an issue vs if using drip lubes. What can be the deciding factor is the sheer amount of product needed to properly clean an existing chain, and the decision of clean current chain for waxing / get new chain to start your happy waxing life / use up rest of this chain and start happy waxing life when need to get new chain.

I usually only recommend cleaning a customer chain up to around 1500km or 0.15 wear mark old. Once a chains coatings are abraded off, there is a jump in friction and wear rate, so one has to weigh up is it worth spending the \$ on the amount of solvent required to get a properly clean chain – it could be up to 3+ litres of mineral turps and then half a litre of methylated spirits on an already compromised chain – so cleaning a 50%+ worn chain for waxing is likely not worth it. Either stay the course and keep an eye on wear and switch next new chain, or get a new chain and switch and enjoy a whole new world of low friction, cleanliness and parts longevity now.

Ultrasonic Cleaning



If you wish to ultrasonic clean your chain please contact me for How to Ultrasonic Clean Chains For Waxing Guide. I have had only a handful of customers experiencing wax adherence issues when prepping chains at home and all but one of them used an ultrasonic cleaner to prep. The perception is that a US clean is king and one's work is done having completed doing that. This leads to the methylated spirits rinse being skipped, and the film left behind from the US clean

prevents wax adherence leading to a poor experience. This film can also contaminate wax in pot etc.

Also, a US cleaner will not quickly dissolve factory grease – you still cannot skimp on that initial good soak.

There is also not much point in using for the initial stages of cleaning for existing chains as there is so much contamination the solution is quickly contaminated and there is only so clean you can get a chain if what is cleaning it is a dirty contaminated solution. So the heavy lifting should always be done with agitated container baths first – you can rip through many of those in just a few minutes, then the Ultrasonic is to get to the tiny nooks and crannies and fissures that agitated container cleaning simply cannot get too.

[And – must always, always finish with methylated spirits baths / ultrasonic– not just whatever solution you used in Ultrasonic.](#)

Cleaning a chain be it for waxing or good drip lubes is always a two part process. Part one is cleaning the chain, part two is ensuring no film is left on chain from cleaning. This means no matter what lube you are using – be it wax or a good drip lube, it has clear access to chain metal so it can bond and work as designed. Fighting it's way through / mixing with a film – you are just compromising the performance of what you just shelled out some hard earned \$ on.

Getting a pre waxed chain

At ZFC one of the most popular services is cleaning chains / drive trains for waxing. Especially with a new chain purchase, having the chain already pre cleaned of factory grease and waxed takes the hard part out of switching, and at a similar cost as if you had to go out and buy mineral turps and methylated spirits yourself. You can just skip straight to cleaning up your drive train then happy days re waxing. I am rather well practiced and set up for cleaning chains, I have ultrasonics and know how to use them, and so you can get a properly prepped chain at a small surcharge to cover product cost and prep time.

Also, about 99% of my solvent use is recycled via an alcohol distiller, and any remaining solvent that needs to be disposed of is done so via SA Hazardous Liquid Waste. Correct disposal of solvents is less likely with home cleaning.



ZERO WASTE SA

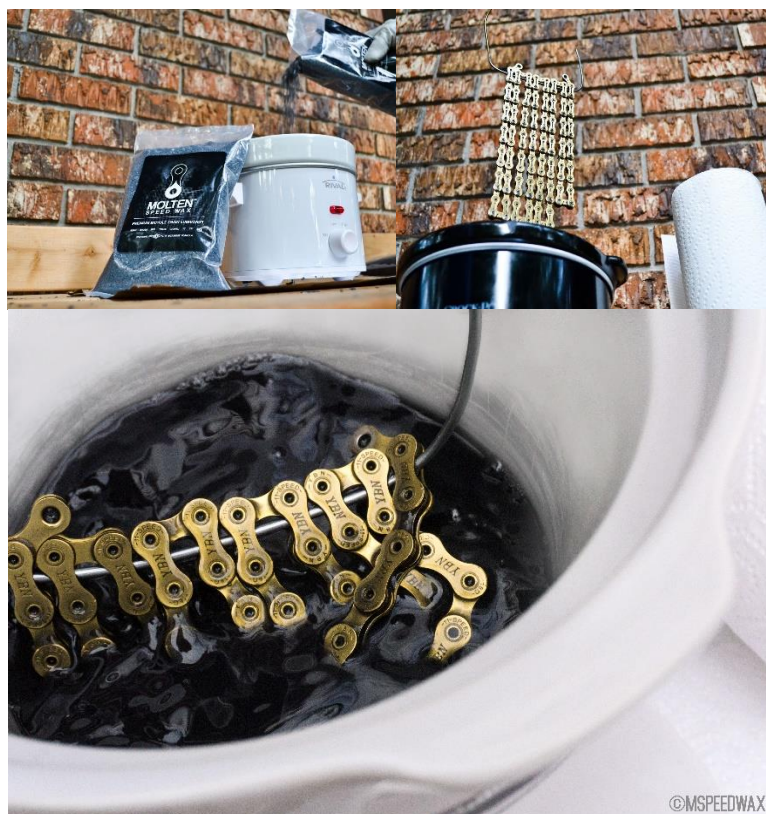
How to clean drive train for waxing?

Cleaning drive train is much simpler as you don't need to worry about leaving a film behind / wax adherence to internals of chain etc – but you do want a clean drive train. Good news is it will be pretty much the last proper clean you will need to do!

You don't want to put your beautiful clean wax chain on an oily dirty drivetrain – the wax will absorb some of that oily stuff, contaminate it, then it goes into wax pot etc – so just give it a good clean with your favourite drive train cleaner be it degreasers, mineral turps, morgan blue is great etc.

Main thing is don't just clean side of cogs and chain rings – make sure clean between teeth, and make sure clean derailleur cages etc. If you have the tools and know how – removing cassette and jockey wheels for cleaning can make it easier.

So.... How to wax, Here we go... 😊



- 1) Remove chain from bike by popping open master link and keep link somewhere safe (insert master link removal pliers as shown and squeeze pliers – master link will pop open, chain can then be easily removed). **Make sure you have in small chain ring and 11t cog otherwise spring tension from rear derailleur can make for an energetic chain opening!*



- 2) Thread chain onto swisher tool (made easily from coat hanger) – basically a piece of wire bent into a u shape



- 3) If planning to hang chain off a nail / screw after waxing, thread a paperclip through hole of last link
- 4) Turn slow cooker pot **onto low setting**, remove lid and place chain on top of wax in pot. *(It is best to let chain melt into wax. As the wax melts the chain will heat up with it, and the wax on the chain melt into the pot as well. That way, when you come back, you can just start swishing it around. If you melt wax first and then place chain in later – leave in there for 5 mins so the chain can heat up fully as well)*
- 5) Come back in about an hour or whenever you like after an hour – ish
- 6) By then wax should be all melted, and with it the chain has heated up very nicely too and the wax on the chain has melted into pot.



- 7) Swish the chain around relatively vigorously in pot for about 20 – 30 seconds then lift out and hang for about 15 seconds above the pot to let wax drip off chain into pot
***Note – it is possible – especially if wax is quite hot and therefore chain quite hot – that the swishing will cause a roller on end of chain to come out of link. Check that the rollers are in place when remove chain, and if not find roller in wax pot and pop back in (wear rubber gloves or use magnet). It is rare this happens – but I have heard of it happening and had it once myself – threading a paper clip through the chain ends will prevent from ever happening.*
- 8) *If using two pot system, repeat the swishing in pot 2. Two pot system has the advantage that any contaminants are flushed into pot 1, leaving pot 2 wax very clean. After approx. 30 waxes, pot 2 wax becomes pot 1, discard pot 1 wax (into a take away coffee cup works great), and fresh bag of wax into pot 1. Two pot system expect around 9000km per bag vs 6000km for single pot where recommend change wax after approx. 20 waxes x 300km ish vs 30 waxes for two pot system).*

- 9) Hang chain somewhere to dry. Some wax will drip off chain onto the ground, so if hanging over any marble and gold flecked tiles or expensive paving, place a matt over tiles (the wax can be cleaned off surface but depending on surface it can be a bit tenacious. It bonds well to most surfaces, part of why it is most excellent on chains).



- 10) When wax is dry / set – about 15 mins most days – it will be very stiff and solid.

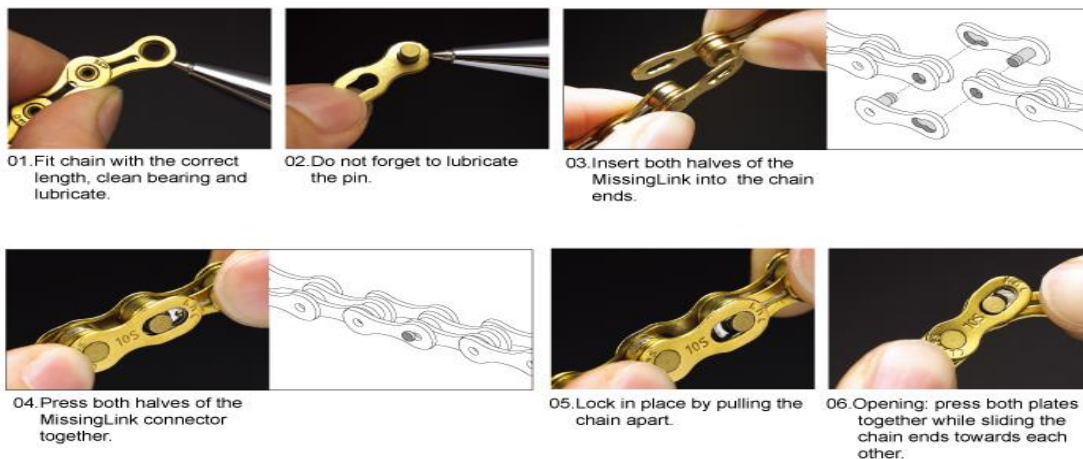
You can re-install now, but usually I just hang my chains to dry and then allow 2 mins before next ride to re-install. You get very quick at it in no time.

- 11) To re-install, you need to break the wax bond on each link. There are various methods of doing this, you can break each one by hand, I do mine of the handle of my big tool chest, you can do it standing over bike with chest on seat, wrap chain just around cassette and pull chain up towards you, bond on each link will be broken as it is pulled through cassette, or u can use a piece of dowel or plastic tubing – you will find an easy method that works for you. On warm days breaking wax bond is easy, if it set on cold day, it will be a bit harder.



- 12) Re-install chain on bike and reconnect master link. Simply push pins into wider part of link plate locking channel such that they will be able to be pulled back into the narrow part of the link plate locking channel. Pay close attention that the channels at end of pins are in correct place ON BOTH SIDES OF LINK such that when link is pulled in opposing direction they will slide back to lock into narrower part of link plate locking channel. It is possible to have just one side lock into a channel whilst other side misses locking into channel. This will lead to failure of the master link under pedalling load. It is simply reverse of step 1.

As my photography is terrible, I have pulled an image of the good ol interweb. This demonstrates what is happening nice and clearly. What it doesn't show is that some force is required to pull pins into locking channels. Master link connect pliers make this easy, they simply do the reverse of release pliers. Release pliers squeeze link together so that pin pops out of wider part of channel, connect pliers force pins away from each other such that pins are pulled into locking channels.



You do not have to purchase connect or release tools, you can squeeze links together with pliers, you can lock link into place by first setting pins in place ready to be pulled into channels, spin back wheel anti clockwise to move chain to top of drive train, then give pedal a sharp tap forwards to put tension on chain which will pull pins into locking channels. This method does increase risk of only one side of link engaging, so be sure to always check both sides of link before riding.

Note that YBN master links are re-usable (recommend 5 re uses per link then replace) and not directional.

- 13) After you have re-installed chain, pedal the chain in small chain ring and in smallest cog for about 30 seconds, this will break the wax in a bit more and fling excess dried wax away that will simply brush off bike or anything else. The chain will initially feel very stiff as the solid wax starts to be broken in, and it can be harder for rear derailleur to change gears until after a few minutes of riding.
- 14) First ride on freshly waxed chain it is best to ride in small chain ring and small cogs for a few minutes (I aim for 5 minutes). Small chain ring + small cogs articulate the links through full range of motion and will ensure wax is nicely broken in and ready to rock your world with silky smooth & clean lubrication for hundreds of km's.
- 15) Being very thorough – If the chain is freshly waxed and the next ride is a race, MSW recommend **at least** 20mins of riding to ensure wax is properly broken in and surface polished. 30-45mins is the real butter zone where a wax treatment is hitting its absolute lowest friction. But bear in mind, if you don't manage to get that run in time before a race, even after a couple of minutes of riding it is still going to be way lower friction than any oiled chain, and it will just keep getting better as the race goes on.
- 16) Speaking of racing part 1 – If you use Molten Speed Wax Race Powder which reduces friction a further approx. 6% - the chain needs to be run in for at least 20mins to create enough space between the wax for the powder to penetrate. Even better if you have the time is to run the chain for another 10-20mins after first powder application and then re-apply powder. To apply just brush on with small brush, use a little rectangular container or tray underneath chain to catch excess powder, and wear gloves as it is quite staining. Apply to top and bottom of chain.
- 17) Speaking of Racing part 2 – Consider a dedicated race chain. For those who race it is simply a very smart way to go. You are always going to need another chain sooner or later (sooner with drip lubes, later with waxing). So simply pre-buying another chain to be a dedicated race chain doesn't really cost any more at all. Then when training chain hits 0.5% wear – race chain moves over to become training chain, buy new chain to become dedicated race chain. Racing on the same chain you hammer away at in training is not as clever as having a chain kept as mint as possible for races. As a chain begins to wear, its efficiency losses increase, and also the first coating to be abraded away is a chain's low friction coating. Dedicated race and training chain = very smart and one of the most cost effective ways to minimise friction losses from your hardest working mechanical component.

See below for cool Q&A

Zero Friction Cycling

Q – What should I use to heat my wax?

A – Recommended is only use a slow cooker, for many reasons. Firstly you want to heat the wax slowly. Heating the wax too fast will damage the lubricity of the wax. Secondly, other methods such as stove top / bbq etc – aside from heating too fast – have very poor temperature control. They can easily get the wax to hot and it will damage the wax. **It will also start to fume, which is flammable and can therefore be a fire risk. On a stove top or bbq you can easily heat it to flash point where it will self ignite.** Only heat using a small slow cooker. *(*for those in Adl I keep a stock of these)*



****Do not use a rice cooker – They may look similar, but they heat up way too fast and will damage wax!**

Q – Can I leave the lids on the pots when heating up and will this make it faster to melt?

A – Yes – You just want to be careful if leaving it for hours with lid on as the wax can get too hot even on low unless it's quite cold outside. Less so when you have a full fresh bag of wax in, but over time the level drops because wax is leaving the pot and going onto the chain. So especially as the level gets lower, the risk of overheating with lid on increases, more so the warmer the ambient temperature. So if you leave lids on, set a timer for 45mins. **Note if waxing outside on cold winter days, I leave the lid on and temp on low if less than about 10dg Celcius**

Q – Can I use on high and with the lids on if Im in a hurry?

A – yes – but obviously the risk of overheating increases – set timer for 30mins if warm ambient temp, 45 to an hour if cold outside. If you find you continually need to wax in an urgent hurry, something is going wrong with the system. Depending on time balance, some have two or even 3 training chains. You can wax them all at the same time quite quickly, and then if you have done a few hundred km's and have a big ride coming up and don't want a dry feeling chain, you have another chain ready to pop on.

*Note – there is always the choice to get a multifunction cooker vs a cheap slow cooker – I use these for race chains so that I can set and forget the exact recommended temperature. I use kogan multifunction cooker – set it to slow cooker mode, set temperature to 90dg C, and its set and forget. I have tested wax temperature with multiple digital thermometers on very cold days and hot days – wax temp simply hits target zone and stays there. For those in Adl I now keep a stock of these too.



Q – How do I know if I have overheated & damaged my wax?

A – You can be a bit concerned if you raise the lid and there is a lot of fuming coming off the wax. After you have switched off if the wax goes a yellow colour when it cools – its damaged. If the wax cools to its usual grey / white – it is still fine.

Q – After a couple of hundred km – my chain starts to feel dry, is it still ok to ride?

A – Yes indeedy. All that’s happening is the wax on the chain is getting thinner and thinner, and unlike oil it doesn’t have all this grinding paste gunk acting as filler. It is still perfectly lubricated for many hundreds more dry km’s. (*road). MSW have tested and tested and found that riding in normal road dry conditions wax lasts up to 800km, and to be safe they recommend re-waxing in the 500-600km range. I personally don’t like the dry feeling as much, and love the silky feeling of the first few hundred km, so I wax in the 200 to 300km range, which also leaves a big safety buffer if you don’t get around to re-waxing then. So unlike “dry” drip lubes, the safety buffer with wax is around a few hundred km vs a few km’s!!

Q- How often should I re wax?

A- I recommend approx. every 300km for normal road conditions and approx. 6 to 8 hours off road. You can re wax with much longer intervals, however up to 300km is a wax treatments real low friction zone. From 300km to 500/600km the friction will slowly start to increase to approach that of good drip lubes, and with a corresponding increase in wear. On the other side of the equation, for “X” km after each re-wax, all internal parts of chain are sliding on solid slippery wax basically leaving chain metal out of it. Re-wax very frequently and wear rates are extraordinarily low. Almost unmeasurably low as most customers change bikes before wear out chain! If continually pushing re-waxes to circa 500 to 600km, you can expect a quality chain to last circa 8000 to 10,000km to 0.5% wear mark. Re waxing at recommended approx. 300km, the average is around 15,000km. Re wax more frequently, 20,000 / 25,000km plus has been attained. And remember, that is to 0.5 (I have had customers advise “I got 10,000km out of my last chain on X lube” – and then I measure chain at it is at 1.2 wear, rollers are nearly falling off, cassette and chain ring teeth look like they were pulled from a sharks mouth – this doesn’t count as good longevity...)

If you are a high mileage rider and concerned about re waxing frequently – simply run two chains in rotation – one for the week, one for the weekend, then re wax both at once on rest day. This will keep re-wax frequency at a good km mark, and deliver must experience to believe chain and drive train longevity. Remember you also no long have any drive train cleaning

maintenance time. Waxing will save you stacks of friction, time, and \$ by simply running two chains. Easy peasy.

Q – Should I wax the master link as well?

A – You can, and MSW themselves recommend and have this in their video - but especially with re waxing approx. every 300km, there is plenty enough wax on the two female link ends & rollers that it is not necessary. Re waxing the master link also increases the difficulty of installing the link somewhat due to more wax thickness on all surfaces plus the base of the pins and the channels of the pins etc. (Note we wax master links for race chains, but trim extra wax from these area's, but it is just not necessary for training chains). I personally have not re waxed master link for years, and have never had any issues at all from not doing so, and have enjoyed much quicker and easier link installation by not doing. I do wax master link for race chains as I do everything by the book for race chains.

Q – Do I need to clean my chain / drive train anymore?

A – Road riders - Need to – no. The only bit of essential maintenance is to occasionally clear the wax build up from the channel between 11 & 12tooth cogs with end of paper clip or toothpick. Takes 30secs max every 1000-2000km ish. Without doing this over time the wax can build up in this channel leading to jumping when on the 11 tooth gear.



Your chain – once it has been cleaned of oil initially for waxing, you never ever have to clean it again. Off bike, into wax, back onto bike, and always a beautifully clean super low friction silky chain.

Other than that ;

If you want to get rid of any excess wax that builds up elsewhere over time, the jockey wheels just brush off with a cloth – 30seconds, chain rings brush off with medium strength wire brush – another 20 to 30 seconds. Cassette – same wire brush will brush off any wax build up – about 45 seconds to a minute. So to get drive train looking super clean again takes me about 2 minutes every thousand km's or so and once you have done it a couple of times is just super easy. And if you don't get around to doing it, the key difference to remember is that unlike oil, it is a build up of the slipperiest wax on the planet, its not a build up of gunk and grit.

A bit of wax build up is not a bad thing at all. It is very slippery and protective of your cassette and chain ring teeth and ensures the interaction with chain plates is very low friction. Have you ever seen chain rings made by Stronglight that are ceramic Teflon coated for lower friction interaction with chain? Well, you have that base covered using MSW which will coat chain ring and cassette

teeth with the lowest friction wax you can buy. Somewhat better than a build up of a gritty liquid paste!

Q – I did a ride that was quite wet, there is road grime / grit all over my bike and I can see there is an amount on the outside of my chain – is there anything I should do before I wax?

A – The good news is being solid, the road grit and grime is not actively absorbed by the wax like it would be oil. However – unfortunately with wet rides, your chain is hosed with gritty road water by your front wheel. Water provides a great medium for this contamination to enter the chain, and some of it will be forcibly pressed into the wax. As amazing as MSW is and it will outperform anything for contamination resistance in dry and wet conditions – but the fact is your chain operates externally and is put through very harsh operating conditions – some contamination is inevitable.

You can simply pop off bike and re wax, and your chain will be great again, however you will have imported good bit of contamination into your wax pot. It is a bit like doing a whole bunch of trench digging and then hopping in your spa. You will get clean, but your spa water won't be as great as it was before. The aim of the game is to keep wax in pot as clean as possible for as long as possible. Clean wax is fast wax just like clean chain is a fast chain.

The good news is, cleaning a waxed chain is the easiest chain clean ever. The wax melts above 57 degree's C, so just boil up the kettle, wearing rubber gloves swish chain around in open container of hot water from kettle (use same swisher tool as you do for waxing). The wax will melt and take the contamination with it. You will feel your chain is silky smooth when drying. Wipe dry then blow dry with hairdryer or heat gun for a couple mins, pop onto wax pot, turn pot on.

*** Post wet ride care – If you do a wet ride but are not able to re wax in a fairly timely manner – thoroughly wipe chain dry, and if possible wrap in a dry cloth. DO NOT wrap in plastic or put in plastic bag, there will still be water inside and this acts as a humidifier and rust accelerator. If you dry and wrap in cloth to minimise air exposure, you have a window of a day or so before you should ensure re wax. The wax is abraded off the outside of rollers and chain first from wet rides and so is most exposed to oxidation. If spot oxidation occurs – the inside – where it matters – will still be ok, but in general as the steel used for chains / rollers is a type that oxidises readily – re waxing sooner rather than later after wet rides is definitely recommended.*

Q- Are there any other differences I should be aware of switching to waxing vs drip lubes?

A- Yes waxing will feel and sound different. Drip lubes, being liquid – have a dampening effect on sound and feel. Aside from soaking up contamination, this also soaks up watts. So running a solid lubricant may sound and feel slightly different – but rest assured it is the sound and feel of speed and your drive train parts not being abraded away by a mild grinding paste.

Shifting!

It is possible you will initially notice a difference in shifting. A freshly waxed chain is quite stiff, especially laterally, and so performing a gear tune up on a freshly waxed chain will be a fun exercise.

But a waxed chain MAY highlight shift tuning that may not have been apparent with drip lubes due to being slightly more laterally stiff in general vs drip lubes. If your set up was such that it was on the edge of over shifting , either up onto big ring or down onto small ring – a waxed chain may bring this to fore. So it is always best to check once you have switched if you have an overshift issue – if you do this will be fixed very easily with just a 1/16th or 1/8th turn of applicable limit screw.

So especially if popping on a waxed chain or a MSW / UFO race chain for the first time for an important race – it is always good to pop on for a very light cruise the day before and check front shifting from all gears to check for any over shift one way or the other.

Q – I’m going on a cycling holiday, what should I use when I can’t wax?

Smooove Lube. Not only has testing shown it is one of the best drip lubes you can get, it also gets along very well with msw. You can apply it straight on top of wax, and then when get back you can clean it with boiling water (and a bit of smooove prep if you like for bonus points followed of course by methylated spirits), and then just go back to re waxing

Q – My roller came off the end of my chain and is in my wax pot! Why did this happen and what should I do?

Very occasionally if your wax gets a bit too hot and you give it a good ol swishing, because the chain metal has expanded the roller on the end of the chain that gets flung around the most may get flung out. Simply de cant wax into a small aluminium bbq tray, obtain roller and re-insert into end of chain. You can also fish the roller out with a magnet if you have nothing suitable to decant wax into.

To prevent occurring, simply thread a paper clip through hole at end of the chain, then the roller cannot get flung out.

Q – What are the main differences to the above if I am a mtb / cx rider?



A – Riding off road is a much more extreme environment, and the environment is different all the time. Dry and not very dusty, dry and dusty, wet, wet & muddy, combination of the lot – all impact how many km’s you can get before recommend re-waxing. You will quickly get the feel of when you need to re-wax – your chain will go from silky to feeling dry. For off road – definitely recommend regular boiling water flush rinses to minimise level of contamination brought into pot.

Real world data gathering so far on the lifespan of drop lube mtb chains will probably shock you. So far I am seeing they last 600 to 800km before hitting 0.5wear mark, after which it is chewing out your cassette. This is blink and you will miss it wear rate resulting in new cassette every time replace chain. If ever a demographic should be waxing and keeping a close eye on things with a good chain wear checker - it is MTB and CX riders!!

I have seen excellent longevity results for mtb riders on good drip lubes who perform regular maintenance, riding in the world of dust and dirt and mud – letting contamination build up and turning drip lube into a grinding paste or performing regular maintenance will deliver night and day difference in chain and drive train longevity. But what is the cost of all that solvent cleaning? And time?

Again the key benefits of immersive waxing – 1) most dry contamination simply bounces off vs sticking on contact, 2) For x km's after every re wax all parts of chain are running on wax surfaces leaving chain metal out of it keeping wear rates vastly lower, 3) If you have done a really dusty or muddy ride - the ease of cleaning a wax chain in few minutes with nothing more than boiling water is quite a boon, and lastly 4) No other drive train cleaning needed, its always clean. If you are balking at the cost replacing xx1 or even xo1 cassette's – chains, why not run a lubricant that will greatly extend lifespan of these parts, ride with much lower friction all the time, and have no cleaning costs?.

Q – Why do you recommend YBN chains?

A – Because that is what YBN do – they just make chains and their premium chains have as much tech as possible packed into them. All of their R&D go into making the best chains you can buy, and they have been doing this for a long time. The big three have their development resources focussed on so many things to have to bring to market, and then work on bringing the next round of updated products to market. Think of it just like bearings. The big 3 all make bottom brackets, jockey wheels etc, and they are perfectly fine. But do they match the performance of Ceramic Speed, HSC, Kogel, Enduro etc? No they most certainly do not, because bearings are what those companies are all about and all of their attention and R&D resources go into to making the best you can buy.

As your hardest working mechanical part by quite a margin, skimping on your chain doesn't make a lot of sense, especially when the difference between a cheap chain and a premium chain is likely to be in the order of 30 to 50 dollars. Considering a premium chain running on MSW from new you can expect around 15,000km to get to recommended replacement mark, it should definitely be worth considering.

Cheap chains you can expect will be made of cheaper and softer steel, without chromium hardened pins, or rollers, or any nickel or ti nitride plating. It is also possible they will not be manufactured to same tolerances as a premium chain, they are unlikely to have any or many parts treated with a low friction coating, and odds are very high they will have notably higher friction. For those on drip lubes running budget chains it is often a false economy. Budget chains often rip past recommended replacement mark so fast the catch rider out, by the time realise where chain is at too much wear to cassette has occurred to accept a new chain, and you will have also made decent inroads into wearing through your chain ring.

There is currently very little data on chain outright performance (something ZFC is working on as I type), however as best as we know at the moment – YBN are as good as you can get. Should I find something better, I will stock that instead or as well as.

Lastly – different chains get along with wax differently to others. Different chain metals and coatings will mean some chains feel drier faster than others. Quite a few chains coatings are “lipophobic” which means they repel hydrocarbons. This can have hydrocarbon based lubricants feeling quite dry fairly quickly. In a lovely match made in heaven – YBN SLA chains get along really well with MSW.



(A customers YBN ti nitride chain which chromium carbide hardened pins and rollers– checked at 3444km old – recommended replacement mark is 0.5, this is 0.01 – so 2% of wear allowance)

Thanks for Reading!

I hope the above, albeit rather detailed, was helpful on many fronts. At ZFC we love seeing people get the heck away from oil and onto beautiful clean low friction wax and having a very happy time of it.

ZFC would also like to sincerely thank MSW for all their support allowing ZFC to come to life. Without their assistance and sharing of expertise I could never have brought Re-Optimisation service to market, as well as their support enabling me to go from customer to being MSW product distributor in Australia. The cycling world is starting to wake up to wax, they are seeing the pro peleton using wax and powdered race chains for key stages and events, and now you know why. It is a lot of fun being involved with a truly industry leading product that makes a genuine large positive difference to a customer's riding and racing experience.

And of course lastly thankyou for purchasing with ZFC, any further questions or help zip them through, you have hopefully noticed by now we luv to help! ☺

 **Zero Friction
Cycling**



*Zero Friction Cycling has currently put in over 2000 hours of controlled testing to find the very best lubricants to stock. Since all lubricants claim they are amazing and there is no longer any independent testing facility – finding the genuinely great products in amongst the simply well marketed products was needed. Also – the Friction Fact lubricant testing, as ground breaking as it was – was limited in that how a lubricant performed for 5mins on a clean chain in clean lab conditions had no bearing on how the lubricant would perform in the real world when exposed to contamination. Does it resist or readily grab and hold contamination? Does it clean as it lubes? Does it form a protective film / membrane over chain metal protecting it from abrasive wear?

Round 1 of lubricant testing is complete and at time of this wax guide revision ZFC is currently on chain testing project. A number of companies have sent in lubricants for round 2 testing when round once chain test project is complete, including Ceramic Speed with UFO drip, Dry Fluid, Flaer Revo Via system to name but a few of the exciting tests that will be forthcoming. Stay tuned on updates via Zero Friction Cycling Facebook page;

<https://www.facebook.com/zerofrictioncycling/>