

Zero Friction Cycling



Immersive Waxing FAQ

(for the video ; -

Normally I like to chat to camera like im having a conversation with you, but to cover the FAQ guide, forgive me I am going to read from document a lot, because the FAQ needs to cover a lot of specific detail on each question, which if I miss it, that question will keep coming back in emails.

Talking live to a camera is different vs typing and email, so to ensure I don't miss any detail on the question – again forgive me I have prepped the answers in full, and so I will be reading a lot to ensure I don't miss anything.

Prelude;

Immersive waxing with top wax like mspeedwax or silca hot melt has some unassailable advantages for day in day out super low friction, wear and

cleanliness vs drip lubricants because every re-wax does a near perfect re-set of any contamination that may have penetrated into chain, and re-coats chain in new solid, super slippery coating of wax.

Being a solid lubricant, it has highest level of contamination resistance.

Overall immersive waxing is extremely easy, just pop chain off, pop on top of wax on slow cooker, turn on low, come back whenever later when wax is melted and swish, then hang it to set. Then before next ride, break wax bond on links, re install chain, and enjoy silky smooth super low friction and wear.

That's it. That covers 99.9% of everything you need to know.

But – the nature of immersive waxing simply elicits a lot of questions.

For many it is a step into something very different vs what they are used to.

Cyclists often switch at a time when they have bought a fancy new bike or drivetrain upgrade and want to make sure they are going to do it right and look after drivetrain as best as they can.

Or a cyclist has road and mtb bikes and unsure if things are different re what they should do for one or the other.

Or they ride a lot in wet conditions – how do they do it right then.

Or they ride for very long rides. And sometimes very long in wet conditions.

And so on.

Initially the FAQ was literally the main FAQ's. But – over the years, I get a ton of questions outside of those FAQ's as those questions did not cover the more specific info they were after.

So now, welcome to the new FAQ Guide book 1 where I will attempt to answer all the questions that I get coming in from all around the world every night on waxing.

I have no idea how long this video will be – the document is going to keep growing, and at some point there will no doubt be a waxing FAQ video 2nd edition.

But - enjoy FAQ on immersive waxing video 1. For something that is essentially very very easy, it is pretty epic – here we go.

Q – Can I use a rice cooker or does it have to be a slow cooker?

A – It must be a SLOW cooker.

Rice cookers are tempting because they are cheap and a great size for a bag of wax. But paraffin likes to be heated slowly, as well as not get too hot. A slow cooker will blast heat in like a kettle on cook and this breaks down paraffin's long chain molecules damaging its lubricity. Then after rapidly heating to 100dg, it then switches to warm. So if you pop chain in and turn rice cooker on and come back sometime later, wax will be at 60dg c, near its point of setting solid again, so you will bring a chain out with far too much excess wax on it making for a heck of mess when first start riding, and it's a waste of wax.

Do not use a rice cooker – buy a cheap small slow cooker.

Q – What slow cooker do you recommend?

A) Currently the two best options in australia are the Adesso 1.5 litre from Woolworths for \$16 – perfect size for a bag of wax, or Kmart have a lamb

shanks 3 litre for \$25. I recommend only going up to about 3 / 3.5 litres max or you will get a very low fill level for a bag of wax that may not cover the chain after a fairly short number of Re-waxes. A smaller pot will ensure chain coverage for the recommended number of waxes.

Q – Can I use an instant pot, what is an instant pot?

A) In Australia an instant pot is also known as a multi function cooker. Multi function cookers will have options like rice, steam, broil, desserts, soup, slow cook and more.

Instant pots / Multi cookers are perfectly fine as long as you choose the slow cook function as then they will not blast heat in. They tend to heat up much more quickly than a slow cooker still, but not so fast that they damage the wax. They also often give you the ability to set temperature, so you can just set temp to 90dg c, and it doesn't matter on what ambient temp is or wax fill level, wax will get to 90dg and stay at 90dg.

So – these are great – but cost a lot more than a \$16 slow cooker – so decide if popping a chain on top of wax and turning as switch from off to low and coming back in 45 mins to an hour, or whenever after that is somehow going to be a problem, or if you really need to return after just 10 minutes for some reason re should you spend the extra.

Q) Is it ok to do on pot on my stove with a thermometer?

A) Ok will put aside the Silca Sous vide bag for their wax for a moment, for mspeedwax or any other wax, do not use stove top, bbq, microwave, your oven, camping stove, pressure cooker, tokomak fusion reactor, flux capacitor, anti matter drive or any other method of heating wax.

Aside from very poor temperature control, possible naked flames and possibly reaching paraffin base temperatures flash point – it is these methods where waxing goes wrong.

Slow cooker, on low, lid off – you simply cannot damage wax, cause a fire or do anything more dangerous than boiling your kettle – in fact boiling your kettle is more dangerous as the water will be hotter than your wax.

Q) What about silca's sous vide bag?

A) Yes silca released hot melt with a funky sous vide bag so you can put bag in a pot on stove and heat water to melt wax.

That's fine as water can only get to 100 degree's.

But...

ZFC recommendation is slow cooker, on low, lid off.

If you forget about your wax and go to bed, all is perfectly fine next morning. You can forget about it and go on holidays for a year, and all will be perfectly fine.

If your forget your wax and water boils dry, you will have a melt bag, and a problem. If it reaches wax flash point temp (circa 180dg c) – you will have a more exciting problem.

Also – it is more difficult to get a good swishing in the sous vide bag vs in a slow cooker pot to get the friction modifiers evenly distributed through the wax vs more sitting down the bottom.

Sous vide bag can be handy for some indeed – apartment living and no room to buy another appliance, away trips re waxing can be easier packing your bag vs a slow cooker pot. Those who are going the ultimate race prep with a good ultrasonic with temp control for their race chains – more on this on another video – again the sous vide bag can be super handy

In general though for I think most – a \$16 slow cooker, pour bag in, swish like a pro, and on low with lid off, you will never ever have damaged wax or any possible issue, it is fool proof / forget proof – people do go to bed forgetting about their re-wax – I like the impossible to go wrong options overall

Q) How accurate do I need to be with my wax temp?

A) Not very. You do not need a thermometer. Whilst recommended perfect temp is basically 90deg Celsius, realistically you will do a perfectly fine waxing anywhere between 70 and 100deg, so that's a pretty wide and easy temp range to hit.

Q) Do I need to pre melt the wax?

A) No. In fact it is best to put chain on wax then turn pot on. As wax melts and heats up, your chain heats up, previous wax coating will melt off, and then when you come back when wax is melted you can just swish and hang.

Some have gone wrong by pre melting, putting chain in and swishing and then removing and hanging to set. Chain has not had time to heat up and old coating melt off so this leads to a very poor re-wax. If you have pre melted wax, leave chain in there for at least 5 to 10 mins for it to get up to same temp as wax and old coating melted off.

Q) Should I put the full bag in or just half a bag?

A) Personally I think it is a bit of 6 of one half dozen of the other. I have not been able to track a tangible benefit for one vs the other. Half a bag you change wax twice as often to fresh wax, but the wax contaminated twice as fast. Personally I just go the full bag, and simply re-waxing erring on side of early vs pushing treatment lifespans – you will get astounding parts longevity.

Q) How long will a bag of Mspeedwax / Silca Hot melt last?

A) ZFC recommends to re-wax by around 300kms (road) and to change wax by 30 re waxes so you should get approx. 8000 to 10,000km per bag . If you re-wax more frequently to take advantage of the stupendous longevity benefits this brings – you can increase number of re-waxes per bag as long as your fill level in pot allows for it. When you re-wax more frequently less airborne dust will have penetrated, so you don't have to change by 30 re-waxes, you can use

km's (approx. 8000 to 10,000km) still as your guide re when to change to a fresh bag. So if you re-wax every 200km – go 40 re-waxes easy etc.

For off road – it is hard to give a km's or hours guide as the conditions are much more variable. Stereotypically in good dry conditions that are not super dusty – you should get 8hrs per treatment, so 30 re waxes x 8 hrs = 240 hrs – call it 250hrs – which is about same as 5 x 50hr suspension services – so a long time. Again – erring on re-waxing more often has enormous benefits overall.

Q) I have read about two pot system – do you strongly recommend this? How much difference does it make?

A) Over the years and over 100,000km of personal immersive waxing experience and both field testing with many riders and control testing, I have become much more of an advocate of re-waxing early – which in some cases means a two chain on rotation system – as having overall a much greater benefit vs two pot system.

What is the two pot system – basically you put chain in pot 1, swish, move to pot 2, same – and pot 1 has flushed out contamination from old coating, pot 2 leaves a cleaner coating.

But of course over time, pot 1 will get less amazing, and so you are swishing in less amazing wax. It is kinda like diluting the contamination into 2 bags vs one bag, but getting the worst out into first pot to try to keep second pot cleaner. It is better than one pot, but.... Vs re-waxing early and therefore if necessary having two chains on rotation vs going two pot system, the two chain system / re-wax early delivers very large, easily tracked, much greater chain and parts longevity vs two pot system, so this is recommended over the two pot system.

However – there is a way to do two pot system like a boss, which I will demonstrate at end of this FAQ video.

Basically pot 1 needs a little bit of raised mesh for chain to sit on. This way the old coating melts off and any contamination will settle to the bottom of wax

pot. You do not swish, but after melted, gently remove chain and move it to pot 2. This keeps pot 2 wax super clean.

Doing the two pot system like a boss you can double the number of re-waxes from a bag of wax before worrying re it becoming too contaminated, because when you have done your 30 re-wax's, pot 2 wax moves over to become pot 1 wax, fresh bag into pot 2. But that has pot 2 bag seeing 30 re-waxes in pot 2, and then 30 re-waxes in pot one – so it has merit – but it definitely works best to ensure contamination gets out of chain and at bottom of pot 1 vs swishing and mixing it around as part of the wax.

This is demonstrated on ZFC you tube vid – if not yet on ZFC channel at time of reading this it will be soon.

Q) What is the re-wax early / two chain on rotation system?

A) Ok so here we get to an absolute top tip for immersive waxers – and one that if you do this – its super happy days on top of the already super happy days you were getting from switching to immersive waxing.

Now – firstly – my re-wax frequency recommendations a much different to the manufacturer instructions. The manufacturers put maximum feasible treatment lifespans on for marketing – and the treatments can and do last that long, but there will be over time a greater wear rate vs those that re-wax much more frequently.

When always pushing towards max treatment lifespan, you increase the time that any contamination that has snuck in has to get a shot at wearing on your chain metal, and as the coating becomes very thin, it does offer less wear protection.

If you re-wax frequently, you re-coat all parts of chain in a solid super slippery coating again, chain metal just rarely gets a chance to come into play and start

wearing, and airborne dust has more trouble getting into freshly waxed chains vs chains where wax is worn very thin.

From lots of tracking on road customers – those who re-wax by ZFC's recommended 300km mark typically achieve;

- Average of 15,000km for a ybn chain re-waxed by 300km
- This drops to 8000 to 10,000k for those frequently pushing to 400 / 500km
- This increases to 20,000 or even 25,000km for those re-waxing by circa 150 to 200km.

Q) Isn't re-waxing that often a hassle?

- > Ok so this leads me to my 2 chain on rotation recommendation.
- > Sooner or later almost all of us are going to need another chain, so pre buying you next chain costs you no more.
- > With two chains on rotation – high mileage riders can use one chain for mon to fri, then one for weekend – re-wax both at once on rest day
- > More normal volume riders can use one for one week, next chain next week – re-wax both at once.
- > Aside from increasing chain longevity to pretty astounding numbers, you also ensure that you get two chains through your drivetrain instead of one if one is left running too long.
- > For expensive drivetrains – ensuring you get two chains through it is very very smart for the simple process of pre-purchasing your next chain.
- > Re-waxing frequently also ensures there is a protective coating of super slippery wax on your chain ring and cassette teeth which is again very wear protective
- > This wax coating also softens the feel of running a solid lubricant which for some can feel quite different vs if they previously ran a thick, heavily damping drip lube.

> If you are in camp wet lube, I just lube chain, wipe and ride – you might think that going to two chains on rotation & immersive waxing is all a bit nuts – but the reality is, waxing is super easy – refer episode 4 demonstration – and you don't have to do any cleaning ever to attain simply astounding chain and drivetrain longevity.

> This of course means you are running very low friction day in day out too. If your parts are wearing fast, this = high friction chain.

> Many avid racers on two chain system with immersive waxing sell their bikes after a couple of years having done somewhere around 30,000km – and they haven't had to change any drivetrain components.

> Normally in that time they would have replaced circa 6 chains and somewhere between 3 & 6 cassettes, and a set of rings.

> They just same system again with new bike. Enormous cost to run savings better spent on other cool cycling stuff like glasses, helmet, shoes, kit etc vs spending it on just burning through drivetrain components.

> if that sounds batshit crazy to you – well, its your money. I know what I would rather spend mine on.

Q) Should I clean my chain before I re wax it?

A) For most no.

I don't know where it has come from, but a surprising number contact me re they love waxing but are tired of turps and metho cleaning chain every time before re wax.

All information is that this is for initial chain prep only to clean off factory grease / existing drip lube before starting waxing, after that it is for most just pop chain off and re-wax, that's it.

Times when it is helpful to clean chain;

- If you ride off road some dust will stick to surface of chain from static elec from chain whizzing through the air, same as dust sticks to your frame and you didn't lube your frame.
 - Easiest is to spray some methylated spirits onto microfibre cloth, wipe chain – this will lift surface dust off so you greatly lessen how much you import into wax pot.
 - This should also be done for those on drip lubes anyway, as you do not want lubricant importing abrasive contamination deep into chain as the lubricant penetrates.

- Post any decent wet ride chain should be flushed clean with some boiling water rinses. Boil up kettle, and swishing in an OPEN container using same swisher tool you use for re waxing, swish chain for about 30 secs for 3 or 4 rounds of boiling water flush rinses. This will melt off a lot of previous coating and take out a lot of contamination that was brought in by water and pressed into set wax.
- This is especially great for offroad riders after a full mud ride – just boiling water, and silky smooth chain again. Mud will just wash off cassette with water. The job of resetting a wet lubricant chain post wet ride involves a litres of solvent and much more time. Not doing so will leave you with a very high friction very abrasive chain.
- Maintaining a wax chain post wet rides is vastly quicker and easier, and you don't need any solvents – just hot water.
- I RECOMMEND to blow dry chain after final rinse with a heat gun or hair dryer. Getting chain hot ensures water inside evaporates out. Cold air ie drying with air compressor – dries the outside well but less so the inside.
- 2 mins with heat gun / hair dryer – pop chain on top of wax, turn pot on, go do fun stuff / clean rest of bike.

Q) Do I need to hot water clean chain after any wet ride, ie even just a light spray?

A) No if its just a light spray, just re-wax.

Personally I always re wax after a wet ride, as wax is abraded off outside of chains rollers first, and chains rollers can oxidise if left exposed after being wet as they are made of a high carbon steel for hardness.

Sometimes its fine – ie freshly waxed chain, light spray – you are not going to have any issues.

But I cant give a black and white modelling of how much wet after how many kms done on treatment – just follow the if in doubt re wax – you can never go wrong by erring on re-waxing, all that ever leads to is super long lifespans.

Q) Should I do boiling water flush rinse all the time then if I want to get absolute best possible lifespan?

A) No. This is a waste of electricity and time. There is no tangible benefit to boiling water flush rinses after dry rides – especially road riding where extremely little contamination will get into your solid wax lube – but even for most offroad riding unless extremely dusty – just wipe outside.

There have actually been some cases of possibly killing chains earlier with too much intervention. Water is not pure – it has minerals and chemicals in it. Maybe once or twice a year I get a case of a customer getting far less lifespan than expected from chain, and if another error hasn't occurred like using a rice cooker – often it has been they have boiling water flush rinsed every time even though they ride only in the road.

It is possible that doing every time, over time it is possible this is leading to a poor wax bond to chain and higher wear.

I have been waxing for a long time, so have countless riders in my city of Adelaide including a number of entire race teams as well as feedback from countless waxers around the country. Don't over complicate things – basically just re wax unless fully wet ride and you are likely to get the same amazing average lifespan immersive waxers on a top wax enjoy.

If you just can't help yourself and have to perform some type of clean every time before putting chain into wax pot, then always finish with methylated spirits round to ensure no film left.

But – if you follow recommendations – you absolutely do not need to, nor should you – boiling water clean every time for training chains – race chains should always be reset – but that is a more involved process including ensuring no film left. Training chains – the vast majority of the time for the vast majority of riders – just re-wax for the best lifespan – again the best thing you can do overall is re-wax early.

Q) I ride / commute often in wet conditions / wet and salted roads – I have heard that waxing is not suitable for such riding and that I should use a wet lube, is this true?

A) No.

This is one of the biggest misconceptions around waxing I am trying to correct, but there are a few components to it that have led to this misconception.

- Firstly – the abrasive contamination brought in by water will abrade wax off chain and so wax treatment lifespans are shortened in harsh wet conditions
- Secondly, as the rollers will be exposed and not coated with a wet lube – if you just park your bike for a day – they will oxidise or rust.
- This leads to the common habit of such riders using a wet lube.

Alright step one is to get your head around just how extreme a lubrication challenge this is. Your chain has a lot of moving parts, under very high pressure load as the parts are small, and it is operating completely exposed to the elements.

Imagine if you took the seals off your bearings – how do you think your wheel bearings and bottom bracket would be feeling after a couple of rides in such conditions?

They would be feeling very gritty and rough, they would be high friction, and a lot of damage to balls and races would be occurring, and they would wear out quickly.

EXACTLY THE SAME THING IS HAPPENING with your wet lube chain. Unless after every wet ride your fully solvent flush clean chain to reset contamination, what you have on your chain will largely be a grinding paste masquerading as your chain lube.

So yes, you can park your bike post wet ride and chain wont rust, you can drip more lube on and wipe and think job done – but – you will know from your own riding the cost in chain and drivetrain component lifespan.

Those that do try to maintain go through a lot of solvent or degreaser, and where is all that ending up and how much is that costing?

Re-setting a wax chain post harsh conditions ride is vastly quicker and easier. Boiling water rinse, dry and re-wax, or simply just re-wax. Yes if do this you will contaminate wax in pot faster, but still, compared to what is happening with your wet lube chains – even skipping the rinses you will be vastly ahead re friction and wear.

The main challenge is that if you are riding all the time in such conditions – re-waxing every night etc may not be appealing.

Again this is where simply having multiple chains is a smart way to roll.

If you are riding all the time in harsh conditions, your next chain was not really very far away unless you are running it way past 0.5% wear and eating out the rest of your drivetrain. So again, it costs no more to pre buy next chain, or next two chains – and then clean and wax 3 at once.

This is very very time efficient, and the overall drivetrain longevity from having say 3 chains running on wax on rotation will save you a ton of money over the course of a year.

If you need to boiling water rinse every time, as per previous point – every now and then give them a methylated spirits flush too to ensure no film from minerals in water messing with wax bond. You wont need to do every time, and you will be able to get a lot of rinses from same bath of methylated spirits.

The testing from ZFC is extremely clear re wear rates of top immersive waxes vs top wet lubricants to date.

At time of this video / FAQ update (2nd September 2021), the average wear rate for Mspeedwax and Silca Hot melt in wet contamination block 4 is 8.5%.

The average for the top two wet lubricants tested to date which are Silca Synergetic and Nix Frix Shun is 28%

For Extreme Contamination block Mspeedwax and Hot melt average 14%.

The top two wet lubes which in this block were again silca synergetic and nix frix shun averaged 56%.

That is a massive wear rate difference and the reason for this wear rate difference is not what happens on the single wet ride, BUT CRITICALLY IT IS WHAT IS HAPPENING AFTERWARDS.

With a wet lube, if you ride in harsh conditions, add lube and wipe chain – more and more you are just going to be adding lubricant onto what is trending

ever more towards an abrasive paste unless you very frequently use a lot of litres of solvent to fully flush clean.

With waxing just even straight re-Waxing will reset contamination in chain extremely well, and a brilliant job can be done with just some boiling water.

Again – just think about what would be happening to your bearings riding in such conditions – even if you throw more grease into bearings – you are not getting rid of the contamination that’s in there causing lots of wear and damage.

What if you were able to easily pop bearings into a nice bath of hot super high quality grease that was going to flush out the old grease and replace with new grease – that’s what you are doing everytime you re wax.

Yes over time your wax will become less amazing so you need to periodically change it, same as if you would need to do that in the bearings in hot bath of grease analogy – but vs adding a few ml of lubricant over 100+ links of chain which is about 0.05ml of lubricant per link going on top of a lot of abrasive stuff – well – hopefully you can see why the test results, and the real world results simply have waxing delivering massively lower wear rates vs wet lubes.

It is just a different way of operating. Instead of one chain you keep just dripping lube on or trying to clean and re lube, the best solution for you is likely to be 2 or 3 chains on rotation going through your hot wax spa.

Q) What should I do with my chains if I cant re-wax them straight away post proper wet ride?

A) Ok especially for the above question running multiple chains where there could be some days between wet ride and re wax, you should wipe chain dry, remove, and wrap in a microfibre cloth. This will prevent any issues for plenty of time until need to re-wax. If your roads are salted, flush it in tap water (or

do your boiling water flush rinse), dry, wrap up in microfibre cloth and set aside until re-waxing.

Q) Should I remove my waxed chain if I am going to wash my bike?

A) Depends on how you wash it. If you are hitting it with garden hose and detergents – yes. If you are just spaying bike wash or cleaning agent onto cloth and wiping frame – no. You just don't want to water your chain unless you are going to re-wax it, and you don't want to get stuff onto your chain that may contaminate wax on chain, which will then go into pot – as this may impact wax adherence.

Q) Should I re-wax my master link?

A) Mspeedwax and I think silca also say yes, ZFC says no.

Reason why I say no is that when you re-wax the master link, when wax sets you will get a build up of wax at base of pin, and this makes it much harder to push pin fully through link when re-installing.

It makes installing the master link / connect link much harder, and it also greatly increases the chances that you may only lock in one side and miss getting pin in locking channel on the other side, which will lead to master link failure on your ride.

If you follow the re-wax early advice of zfc, there is plenty plenty enough wax on your chain to take care of master link, it will be a doddle to re-install, and extremely low risk of only engaging one side of locking channel.

****NOTE** you should always, always check both sides of master link and ensure that the pin is clearly in locking channel on both sides of link.

Q) Can I re-use Master links / connect links

A) Ok this comes up a lot.

Some links are officially re-useable such as the YBN qrs links, most other brands links are officially stated as single use link only.

For immersive waxing to be viable you need to be able to re-use your master link.

The YBN QRS links which I have for 8 through to 12spd are officially re-useable 5 times. Most customers do not keep an exact count – somewhere between 5 & 10 has seemed fine, in 5 years and thousands of 6 packs of QRS links sold I have had 2 reported link failures, both of which were link engaged on one side only.

There is a but here though – the QRS links I only rate for road use. Narrow /wide tooth profile systems + offroad riding – the short straight locking channel – I have had a couple of failures in offroad use – so I will cover options there in a mini.

But for road use, the QRS links have been basically perfect – they are really well priced with a 6 pack for 24.90 lasting circa 10,000 to 15,000km for road use.

Other links – sram power lock 10 & 11spd, sram eagle 12spd mtb, sram axs road 12spd, shimano 11 or 12spd – all officially single use.

For say sram eagle waxers, axs road waxers, shimano 12spd waxers – Officially I need to say you should only use the links once as per mfg instructions.

Unofficially I can also say that countless waxers have been re-using said links circa 5 times each to make waxing viable – including myself on my mtb's - and to date I have had zero reported failures – which again considering my waxing customer base and years passed now – is a good sign.

But – YOU have to make the call yourself to go against mfg instructions – you cant re-use a single use link, have a failure and go over the bars, and then sue ZFC because I said its fine to do so. I am just reporting what has been happening with re-useable links since little ZFC started, and ZFC is a bit synonymous with waxing as ZFC has done a fairly strong job of explaining why immersive waxing delivers astounding low friction and wear every day.

However – IF you want to get onto waxing BUT you do not want to take the chance of re-using an officially single use link, then you should go to next best option to immersive waxing and that is;

Use Silca ss drip in conjunction with immersive waxing. SS drip was designed to be used in conjunction with immersive waxing.

So start waxed, use silca ss drip for next 5 re lubes, then do an immersive re wax again to reset any contamination, and use a new master link.

SS drip used properly is extremely clean as it has a low application amount and sets to a chain coating so you apply, work into chain, wipe excess, allow overnight set.

Other top chain coating lubricants can also be used such as UFO drip – brilliant lubricant, also extremely low wear – but heavy application amount so just be prepared to spend more time and cloths wiping excess after application.

Also true tension tungsten all weather – also extremely clean, was overall outmatched in dry riding wear rate performance by SS drip and UFO, but it did come out ahead for wet weather riding – like ss drip this one is a low application amount so very easy to keep chain very clean between waxings.

Q) What link for what chain?

A) For all 8 to 11spd road use chains – QRS links are recommended as no failures, officially re-useable, and very budget friendly.

For offroad use for 10 or 11spd I would use either a shimano or sram link as they have a longer and stronger locking channel which seem to have no issues with narrow / wide mtb systems.

12spd chains – YBN 12, the QRS 12 links are perfect for road, if using offroad – I recommend sram eagle mtb links which has long curved locking channel

Campy 12 riders can use either YBN QRS 12 or sram eagle mtb links

Shimano 12spd I recommend staying with shimano links – they have an extremely tight locking channel, but also shimano 12 chains are a little bit thinner vs ybn / campy / sram eagle 12 – and so I would use the matching link.

Sram Axs road 12spd – these chains are much thinner than any other chain and so you must use sram axs road links.

Again – many of the latter options are officially single use – but again, in all these years and thousands upon thousands of link re-uses, the reported failures have been tiny, less than a handful, half of which have been install error with only one side of locking channel in place.

Although also overall very rare, I am at basically triple the amount of chain failures - remember I sell many thousands of chains per year – vs the master link failure rate - so concerns re master link failures are near nil following the above information.

So – All up – it's a whole hooaaa of information that's probably overall seemingly really messy – but these are the questions I get coming in all from around the world every night – and so im answering those Frequently asked link questions in full here – but just know – if in doubt – use the link that is a match for your chain, decide for yourself if happy to re-use 5 times or go with immersive wax + ss drip combo approach and use new link each re-wax. The only caveat to that is that I personally do not recommend the QRS links for offroad use – so ybn 12 for mtb riding use sram eagle – sram eagle chains use sram eagle, shimano 12spd use shimano etc.

Note that even factoring in the cost of master links – the total cost to run due to the exceptionally low wear rates of immersive waxing with either msw or hot melt – or the combo approach using wax + ss drip. A pack of links lasts a long time, and the super low wear rates, always super clean drive train – these product just deliver the lowest overall cost to run when you factor in wear rate cost for your chain, chain rings and cassette, and the margin is not even close vs your normal random lube choice.

Q) How do I know when I should change my wax?

A) If you haven't been keeping a rough track of how many re-waxes or km's your wax has done, you will know that it is time to change wax when each re-wax is feeling and sounding dry noticeably faster than it used to. This means that over time as each re-wax imports some amount of abrasive contamination, the amount of contamination in wax is reducing treatment lifespan and it is time to change to a fresh bag.

Q) How do I change my wax?

A) Simply melt wax, pour into an aluminium bbq, wipe pot clean with paper towel (wear gloves as will be hot), and pour in fresh bag.

Let wax in bbq tray cool, and when full, dispose of in hard rubbish.

The top immersive waxes of Mspeedwax and hot melt are both now extremely environmentally friendly the main base is highest quality food grade paraffin – so the base sans friction modifiers you could literally eat.

Hot melt has not PTFE and msw last update was under 5 grams per bag, I believe at time of writing / this video now their latest formula has removed all ptfе – will be confirmed soon on product page on website if not already.

Friction modifiers like tungsten disulphide according to material safety data sheets are toxicologically inert, however will can cause lung damage if you breath in the powder. As the tungsten disulphide in your wax or lube is not in powder breathable form, this is not possible.

I have gone through material data safety sheet for molybdenum disulphide and its basically same – again I am not sure if latest blend of Mspeedwax has both moly and tungsten disulphide or also moved to tungsten disulphide as main friction modifier – so it may no longer be present – I think their packaging still has to be updated re latest formula – I will update the FAQ document when I confirm further.

Overall however consider system as a whole. These products themselves are either 100% environmentally friendly or extremely close to 100%, and whatever % they are not is inert and would take some kind of chemical reaction to release harmful components.

Compared to the environmental impact of millions of households using how many litres a year of solvents & degreasers to maintain drivetrains, and where is this ending up, as well as the extra waste of components being used up at around triple the rate, or more – they are an extremely environmentally friendly option. Disposed of in household rubbish it will go to a rubbish dump, which are typically designed not to leech into wider environment as people throw away all sorts of very toxic stuff in their household rubbish like batteries, harsh chemicals and more.

In short – it is environmentally safe out on the road or trails, and environmentally safe to dispose in household rubbish.

No compounds will soak through your skin and cause cancer.

Q) I overheated my wax and it started fuming, are the fumes hazardous?

A) Yes.

Not related to previous answer, the fumes are dangerous because the base is paraffin, and when paraffin is burned or heated to the point where it starts fuming, it is breaking down and releasing benzene gas – this is toxic.

The same happens when you burn a candle, just on a small scale. But – you should be aware of a romantic evening with 50 candles around your bathroom for a nice hot rose petal bath, a lot of candles in a small room will have some measurable concentration of benzene gas from burning those candles.

Also – if your wax blend contains PTFE – there is one DIY wax recommended on a common waxing you tube video that recommends 50 grams of PTFE per pound of wax – 50 grams!!! – For interest, msw was at 5 grams per half kilo – they recommend 50 grams because he has no idea how much is actually needed, and that over that amount is just a waste of money.

If you have followed poor DIY wax blend advice and put a ton of PTFE in your wax, and then overheated your wax – overheated PTFE can release a chemical called PFOA – too hard to pronounce what that stands for.

This is the chemical that is released when one overheats their Teflon pans in kitchen and kills one's birds and can make one temporarily feel unwell – referred to as “Teflon Flu”.

Remember – if not overheated – Teflon is inert. High grade paraffin you can eat. Chemical changes occur when you burn stuff, ie wood is not the same after it has been in a campfire.

Don't get your wax way to hot – ie slow cooker on low, lid off, or instant pot set to 90dg c, and again things are no more dangerous than boiling your kettle.

If you do try to wax via what I personally think are very silly methods to try and wax such as your stove top, bbq, oven, microwave etc – and you way overheat wax so that it starts fuming, then yes – the fumes are toxic, do not breath them in, get your exhaust fan going and open your doors and windows.

Then start using a slow cooker on low with the lid off.

Q) How do I know if I have overheated and damaged my wax?

A) If the wax started fuming, that's a first hint. But if just at that point and no further, often things can still be ok.

You will know if you have really damaged the as when it cools it will have a distinct yellowish tinge to it. If the wax has not been overheated it will cool to a dark grey, light grey or white colour – those shades just depend on how much tungsten disulphide settles to bottom of wax when it cools – good swishing and cools quickly – will be dark. If it takes a long time to cool due to high ambient temp, much will settle to bottom of the wax and it will be white, or any shade in between dark or white depending on cooling rate and how well swished.

Q) My partner doesn't like me waxing in the kitchen as it has a scent and we are not sure if this is toxic?

A) No the scent is not toxic. Candles have a scent too, and the scent is not toxic, but the candles will be releasing a tiny amount of benzene gas, your not burning wax will not be. As long as it is not too hot so that it is fuming, it is just basically a lubrication candle – without the burning.

It is not an offensive scent – at least no to me, it just has its own candle scent.

Q) I have switched to waxing but have noticed some rusting on my chain / cassette – why is this? What should I do?

A) It is important to remember that MSpeedwax is very highly refined to nearly zero mineral oil content, so post wet rides the outside of rollers / chain and the cassette will not have a wet coating of lube to stop oxidation / spot rusting.

If you follow advice earlier of always re wax erring on early vs pushing, you will find there sufficient wax imparted to cassette from chain to protect cassette from both wear and rusting. If you are riding a lot in the wet, just either keep that re-waxing frequent which you will want to do to reset your chain contamination anyway and stop chains rollers from oxidising, or – simply complement with an immersive waxing compatible lubricant such as Silca ss drip, ufo drip, or tru tension tungsten all weather.

These lubricants are fully re-wax compatible meaning you can re-wax straight over the top of them without needing to clean them, and they make it very easy as just apply, work in, wipe excess and you are all sweet until you can get to your next re-wax to re-set contamination – try not to go more than 2 or 3 re-lubes if riding in harsh conditions as you will want to re-set that contamination with a re-wax, or boiling water flush clean, dry and re-wax – sooner vs running with more and more contamination brought into chain by water.

Hence multiple chains and always re-waxing is going to give you the best possible wear rates for those always riding in harsh conditions, but if multiple chains is not your thing – then use wax compatible chain coating lubricants mentioned above.

Q) I've just done a re-wax and my roller is missing from end of my chain!

A) This can happen every now and then, as chain heats up in wax and all metal parts expand, the roller “one the whip” of the chain so to speak may get whipped out during a good swishing.

No problems, just decant wax into a small bbq tray, retrieve roller from bottom of wax pot, decant wax back into pot.

Or use a strong magnet.

Going forwards, put a paperclip through the end of chain that will be “on the whip” – this will keep it in place.

Q) what to do for cycling holidays / cycling trips / bike packing.

A) Depending on how long / conditions etc – often packing your slow cooker is not practical, most either pack a second chain, and or a bottle of silca super secret drip / ufo drip or tru-tension tungsten all weather, apply as needed, re-wax when get home. Easy easy.

Q) What drip lubes can I use with Mspeedwax?

A) The best lubricants known to use with immersive waxing are Silca SS drip as number one as it was designed to be used with immersive waxing, but Tru tension tungsten all weather and ufo drip I have also tested and work perfectly well to be able to re-wax over without any cleaning intervention necessary.

Other wax emulsion lubricants like squirt or Smoove you can – just note they use a very different wax base, so it is best if using those lubricants to a) ensure when apply you wipe excess thoroughly after working in – something you should do for all lubes anyway – but this keeps them from gunking up – and b) run that treatment until chain starts to sound and feel a bit dry – then re-wax. One or two applications of such lubricants do not appear to impact wax adherence, but I wouldn't recommend re waxing over many applications of Smoove or squirt without cleaning first as it may impact adherence as their wax base has a higher mineral oil content.

absoluteBlack have also confirmed perfectly fine to re-wax straight over graphene lube with msw or hot melt as their base is also an extremely refined wax base.

Never re-wax over a wet lube.

Q) I am doing a long event and I am not sure if wax treatment will last – what should I do if I need to re-lube?

A) Firstly – great job considering super low friction option – for long events saving circa 5w or more vs many other options can really add up to a lot of time, and when you are really really tired – it helps to know that as much of your effort as possible is going into pushing your forwards further, vs being lost to chain friction.

So much mechanical action is happening in your chain, don't underestimate just how big the differences can be between the best and the meh lubes as the km's clock up.

Secondly – the latest blends of mspeedwax and hot melt are very long lasting and will cover most events up to around 12hrs or more no problems unless conditions are really harsh.

If it is much longer than that, or conditions harsher – then consider if you need a quick top up of a wax compatible lube that you can just re-wax when get home - so like using silca ss drip.

If its still a long way to go / really harsh – then topping off with a long lasting wet lube that wont wash off may be the best option, so using say silca synergetic, or nix frix shun, or if you know of another wet lube that genuinely does really well in harsh wet conditions – I havent had time to test many lubes yet as my testing takes a long time per lube – I have a lot of work to do still.

Just know that you will need to do a full solvent clean re-set before re-waxing if you use a non wax compatible lube to top off.

For some events the fastest option may be to swap out to a fresh chain. I.e 24hr mtb with support – when you stop to re-fuel / grab lights – support person if experienced can put a fresh chain on for 2nd half, and you are straight back to a circa 4w loss chain again for the next 12 hrs.

Q) I often do very long wet training rides and find my wax chain is getting very noisy by the end – what should I do?

A) My recommendation would be to avoid the temptation to go back to a wet lube simply because of the challenge involved to re-set contamination post wet ride to get chain back to contamination free and low friction without spending a lot of time and using a lot of solvents.

If your wax treatment is not making it, either top off during ride with a wax compatible lube like silca ss drip / ufo drip / tt aw, or – sometimes if you tend to have a coffee stop – pack a second chain and do a chain swap – a chain swap for waxers takes 2 minutes.

Again it may sound like this is a big hassle vs long lasting wet lube – but – when you get home you can either just re-wax and all is great, or boiling water flush rinse dry and re-wax and all is amazing.

The wet lube may be no hassle for your training ride itself, but the job to reset is much greater, and if you don't reset – well, one way or another with wet lubes you have to pay the piper. You either pay for it in solvent flush cleaning maintenance – a lot of it if you ride in such conditions, or you pay the piper by running what quickly becomes and remains more of a cutting fluid vs a silky smooth low friction lubricant.

Again I always like to bring it back to your bearings – could you keep your bearings silky smooth and low friction riding in such conditions with the seals removed by just shoving more grease into them. No you could not. You can either fully flush clean them every time and re-set, or imagine if you removed and put in a nice big bath of hot grease – which would do a shit ton better job of re-setting.

Your chain is super easy to remove and pop on of course vs your bearings – just getting you to try to imagine the lubrication challenge that your chain and its lubricant is facing when your ride in such conditions,

It truly is an EXTREME lubrication challenge, and the most important part overall for your drivetrain longevity is how easily you can keep it super low friction ride after ride, not just focussed on getting from A to B on the one single ride.

Its your drivetrain, and your money – but I can absolutely assure you – waxed and using wax lube top off / chain swap – then rewax, will deliver hugely longer drivetrain lifespans vs wet lubes that will go the ride distance – but leave you with a gritty nightmare to reset, and a big friction and wear penalty if you do not.

Q) Why does my local bike store mechanic tell me waxing is shit?

A) They either a) have seen a lot of DIY wax jobs which are often a horrible gunky mess, or b) they don't understand the huge benefits of waxing so don't stock it, c) they do understand the benefits and worry that they will sell less chains and cassettes – kid you not, d) They just want to sell you a bottle of what they do stock.

Also – in a surprising number of cases – you can find very good mechanics overall who are simply out of date and out of touch re lubricants. Amazingly they can still be of a mindset that you should leave factory grease on, then use x wet lube, or you should clean chain with some funky method, then use X wet lube.

What I have seen with a surprising number of experienced mechanics is that some stay extremely stubborn when it comes to lubricant knowledge, despite great advances in lubricant performance and options over recent years.

What I think happens with some mechanics is that for a time – when they are learning, they are a sponge. At some point though on some fronts – they draw a line under this knowledge. THEY know the absolute best way to clean a chain and THEY know the best lube to use after that as X pro tour mechanic showed them.

They then become very defensive of this BEST knowledge, and are extremely resistant to change.

It is often also fine for them to use a less than optimal lube as they get parts at wholesale – you do not.

You choose who to believe – the worlds most exhaustive independent testing that has verified the outstanding performance of some truly amazing products that have come to market in last few years, or someone who hasn't updated their knowledge on lubricants since 1990, or may have some other commercial bias.

Why wouldn't a shop want you to be using a product that often doubles to triples the lifespan of your drivetrain components?

Simple rule for retail success – look after your customers with the best known products and best service and advice you can, and your customers will always look after you.

Selling a Shite lube today in the hopes of a soon selling another chain and cassette – it's a short sighted and failing way of running your business.

There is a reason why so many key world tour stages, world championships, Olympics etc are raced on waxed chains. Low friction.

Low friction = low wear.

You choose.

Q) I am overall loving the switch to waxing but for my dedicated trainer bike I am getting a bit of build up of wax flakes – is there a way to minimise this?

A) Yes you can minimise it by wiping chain after removing from wax pot, but – you will go through some cloths, and you will still get an amount of wax flakes pretty quickly if it is your dedicated home trainer bike.

I use my road training bike / tt bike on ergo mostly, I don't have a dedicated trainer bike, so for me the wax flakes are no problems, easily vacuumed up off trainer matt.

However, if I did have dedicated trainer bike, personally I would use a super clean lube like silca ss drip / tt aw, or I would use a super long lasting wet lube like synergetic, rex black diamond, Revolubes, nix frix shun, or if you are a millionaire – graphene lube.

Contamination is very low inside your house, unless something is wrong with your house, so a top wet lube – just don't over apply – yes it will go black but it wont be a big abrasive black mess and these top wet lubes have very low wear rates, stay impressively clean for a very long time in clean conditions riding, and some like the appeal for trainer bike that re-lubing can be once a month or

bi-monthly thing depending on mileage, so such lubricants definitely have some appeal here.

As much as I am obviously a massive proponent for immersive waxing for a stack of proven reasons, for a dedicated ergo bike I personally would run a non flake lube and there are some proven amazing drip lubes that will stay super low friction on an indoor bike.

If switching between outdoor and indoor like me though, I personally stay with waxing, and grab my vacuum, the benefits for outdoor riding well outweigh 30 seconds of vacuum work post ergo.

Q) How do I prep my chain for waxing – new chain / existing chain

This is a video in itself as so many questions re chain cleaning, so pls refer to the episode prior to this one which covers chain prep for waxing / top lube choice.

Q) I am sure I prepped my chain correctly but it is sounding and feeling dry very quickly, and or it is noiser than I expected

A) Some chains are noisy on wax as the wax does not adhere as well to their coatings. Shimano 10 and 11spd chains tend to sound and feel dry about 50% faster than ybn, sram and campy 10 and 11spd chains.

Also kmc chains seem to typically have poor wax adherence, about 9 times out of 10 when I receive an email re this – when I check, it is a kmc chain. I have also tested some myself, and found they feel very dry very quickly.

It just means for such chains that you basically will need to rewax them really frequently to keep them in the silky smooth zone, or use in conjunction with the recommended wax compatible drip lubes to keep them sounding and feeling lovely.

Also note that whilst in general sram chains have really good wax adherence, so sram 10, 11spd, eagle chains feel silky smooth for a really good stretch on a treatment, axs road chains are seemingly just a really noisy chain, as this is coming up a lot for axs road waxers as well. Basically now 99% of such emails it is either kmc chain, or an axs road chain.

Even on many drip lubes, cyclists report axs road is noisier than previous groupset – and so yep either re-wax frequently – not a bad thing as it will have your super expensive axs parts last for longer than you are likely to own the bike, and or frequently top off ready for next ride with wax compatible drip lube.

Other chains – enjoy many hours in silky smooth silent zone – if not experiencing that, something may have been not quite right in prep, or wax is getting on a bit, or wax has been contaminated or damaged – if not getting wax experience you expected – zing an email through .

Q) Do I need to stand and wait for wax to cool to 60dg c and remove chain when wax near it set temp to “lock in as much wax as possible”

A) No. The pressures inside your chain from pedalling load reach into thousands of psi, so all you will achieve by doing this is a huge excess of wax being pressed out when start riding, and after 10 minutes you will have same amount of wax inside your chain as if you removed the chain at 90degrees after swishing and hanging to set.

Again this instruction is on a common you tube vid, and unfortunately such vids just make waxing look crazy time consuming and involved, and put people off immersive waxing, which can prevent more people enjoying vastly longer lasting drivetrains.

Q) I have a question about my DIY wax.....

A) Honestly, unfortunately here im not going to give DIY waxing too much air time or document time. It's a minefield.

Unfortunately most DIY wax information on you tube or forums is terrible.

Most use cheap wax base, so no matter what you add to it, if the base is shit, the wax will be shit.

The ratio's of what people add is often ridiculous, like 50grams of ptfе per pound. What controlled accurate testing led to such a conclusion.

People add paraffin oil to soften the feel and extend the lifespan – this then makes it attract contamination like a wet lube, completely destroying the advantages of running a solid wax chain.

Most cheap waxes have a high mineral oil content and so get very gunky very quickly and attract a lot of contamination, and some like using candles – can also contain soy or palm oil. Such waxes are also very slow.

Also, by the time some people buy wax from place X + delivery, then ptfе from place Y + delivery, plus Moly from place Z + delivery – they have paid a decent amount, similar to or more than if they had just bought a bag of mspeedwax, and because the base wax is cheap crap, the final product is cheap crap.

Yes there is video on youtube that shows a DIY wax having less wear than Mspeedwax – I have a document covering that in my instructions tab. The test had no key variables controlled, and the fact the mspeedwax chain was rusting is a pretty big key that the mspeedwax chain was not being re-waxed frequently enough.

Cheap waxes with high mineral oil content can last longer per treatment, and will provide more protection against oxidation if left exposed for a long time before re-waxing, but – the flip side is they are slower and dirtier over time. The test had a lot of flaws, all stepped out in the document on website.

Unless your base wax is an extremely high quality food grade paraffin like gulf canning wax, then your wax blend will not match the performance of msw / hot melt / ufo. Extremely smart people and phd chemists and huge testing resources sit behind these products – what sits behind the DIY backyard blends?

I get it – some people love to tinker and love to DIY vs pay a brand money – and so if that's you that's cool, just ensure you start with a very high quality base or the rest of what you do is a waste of time and money. If you have a very high quality base, you can DIY a lubricant that will beat a huge number of drip lubes on LBS shelves.

I am also an avid tinkerer – but before I started zfc, I can assure you – when I was just a normal if somewhat nerdy cyclist – the path of logic led me to a bag of mspeedwax - \$44.90 for a bag of amazing that lasts around 10,000km of riding – just – done, sold, I have other things to tinker with. Even silca hot melt – double the price, but again – the difference between these and 99.9% of diy waxing is simply a different league.

It is terrible DIY waxing jobs that may also be behind why you lbs mechanic is very anti waxing, as they see time and again drivetrains clogged up with so much gunk wax that chain wont even shift into the 11t cog etc.

And no I am not testing you lanolin blend or beeswax blend or lanobees blend – you can test it, if you get 15,000km to a genuine 0.5% wear without any cleaning maintenance, you have a pretty good blend – keep at it. If not, buy a bag of mspeedwax or hot melt.

I don't want to come across as im not interested in your DIY wax because I cant make money from it, it is just that it is a never ending minefield. I am contacted constantly from people all over the world asking about every possible blend of stuff you can imagine.

It is just not my focus, I am beyond flat out and miles behind testing a lot of lubricants either on the market or in development by major manufacturers that have huge development resources behind them to be a genuinely amazing product that ZFC may look to stock & recommend. That is ZFC focus, I just don't remotely have the time resources to go into a never ending stream of guesses of throwing together different stuff from your pantry. There are plenty of forums like minded DIY waxers can go and chat about their super lanolin beeswax paraffin oil ptfе moly tungsten candle super wax.

All DIY wax enquiries will no be referred to this section of this you tube video



Q) What is the best wax – Mspeedwax, Hot Melt or Graphene Wax

A) MSpeedwax has had a new formula out for about a year which removes ptfе and has updated to tungsten disulphide vs moly, as well as other secret tweaks. I have only just found a slot for testing in ZFC protocol – it is still testing at this time but main results are in and it is testing extremely close to silca re outright longevity, dry contamination, wet contamination – hot melt had a slight advantage in wear rate for extreme conditions block.

My testing confirms or not if a lubricant is outstanding or not in these conditions but does not give an outright efficiency number as it is based on wear correlation due to many reasons – efficiency testing does not yet have an agreed test protocol and numbers are all over the place from one lab to another. Im not going to add to this mess until an approved protocol by a governing body is in place – until such time – the zfc test protocol is extremely robust.

For more info on this front refer here;

<https://cyclingtips.com/2021/08/nerd-alert-podcast-separating-chain-lube-testing-fact-from-fiction/>

Which one is slightly faster out of Mspeedwax or hot melt I do not know, and I love both of those products immensely, they just deliver unbeatable day in day out super low friction and wear and cleanliness just for popping chain off and into a pot. It would almost feel like choosing between ones children – ZFC has been driving home the benefits of immersive waxing with proven top wax since inception.

I can say that in the control testing and field testing Graphenwax unfortunately and surprisingly tested very poorly with very high wear from the start, and it quickly continued to get worse once contamination was added, it did not reset contamination like msw / hot melt, it was very dirty, and just as flakey -whilst seeming being too soft and so not forming a solid super slippery polished and self healing coating like mspeedwax / silca hot melt. I have had a lot of feedback from cyclists all over the world emailing same experience. I have contacted absolute black and they refute all such test results and feedback, all their feedback has either been very positive or they have tracked the issue down to being the customers fault re incorrect initial prep.

ZFC stands by its proven extremely robust control testing, the same test that proved their Graphenlube to be one of the best lubricants invented, which zfc does stock and recommend (for the right rider).

Q) Waxing and TRACK Chains

Most track chains are a) Bushing design and b) have very tight tolerances. It is much harder to both ensure factory grease has been cleaned out from

between pin and bushing and bushing and roller, as well as ensuring wax penetration in.

Waxing track chains it is best to use a candy / cooking thermometer to take wax up to max safe temp before may start to break down the paraffin's long chain molecules – so bring wax up to 105dg Celsius – ensure chain is in wax for at least 10 mins to be at same temp as wax, and really swish the bejeezus out of it.

At ZFC for track chain prep not only are ultrasonic's handy for cleaning the chain initially, but they are also used as part 2 of the re-wax process to ensure 100% penetration.

On the plus side, a wax treatment for track chains lasts a lot track time and no mess when changing cogs.

***NOTE!! – Wax break in on track chains post re-wax is notably longer vs road chains, and it can take a bit to get rollers moving as there is a big wax bond surface between roller and bushing. If you have a race coming up, ensure chain has had at least 45 mins to 1 hour break in time to ensure all wax surfaces fully broken in and polished.

The YBN SLA 410 chain is a brilliant option, it is the only track chain I know that is a bushing-less design just like derailleur chains which makes them much easier to wax and break in – they are as easy to do as derailleur chains, and despite being much lighter the YBN 410 tested as having almost 1000n greater tensile strength than an Izumi Super Toughness. Izumi chains are notoriously hard to wax and break in due to very tight tolerances. Super tight tolerances are also a concern for outright efficiency out of the box – such chains may need extensive break in periods to hit optimum efficiency.

Q) What is the difference between candle wax / cheap paraffin online vs MSpeedwax? I know Mspeedwax has some good additives in it but it costs a lot more?

A) Candles / cheap paraffin have a very high mineral oil content of typically around 7%. This means it will get quite gunky quite quickly, and this gunky part will gather more contamination more quickly, so the wax in the pot will become contaminated much more quickly as well. The base wax in Mspeedwax is the highest lab grade paraffin available which is refined down to practically zero mineral oil content. You can literally eat this base paraffin with no ill effects. This lab grade paraffin is expensive, I have looked at this lab grade paraffin from Norco chemical supplies in aus, and 1 lb bag of just the paraffin costs more than a 1lb bag of Mspeedwax.

Over the years I have had A LOT of home waxers using candles / cheap paraffin try mspeedwax. The fact they keep ordering mspeedwax shows me they don't go back to the cheap stuff. I have also seen many home wax chains, and most are not a good look. If you listened to a recent Nerd Alert podcast on Cycling Tips – their go to mechanic Zac was anti wax because he had just seen too many “waxed” drive trains so gummed up they wouldn't even shift gears or be able to shift into the 11t cog etc.

A lot of the voodoo and poor miss-conceptions re waxing come from the cheap backyard wax methods that one see's on you tube etc, and overall it can give waxing a bad rap which leads to many people being turned off and missing out on saving a veritable shipload of friction and wear every ride, as well as all the maintenance savings.

Make no mistake, the difference between the majority of home blends & Mspeedwax is night and day.

Q) Should I add paraffin oil to it? I've heard it makes it last longer?

A) Adding paraffin oil will make an mspeedwax or other paraffin wax treatments last longer, but it will completely undo the unassailable advantages of immersive waxing and running a super slippery solid lubricant on your chain. Not only do you re-introduce viscous friction and increase stiction which are two of the key area's where solid wax has an efficiency advantage over drip lubes, but by having a wet lub on top, every airborne particle will now stick on contact just like any other wet drip lube.

Outright longevity per treatment is not mspeedwax / highly refined paraffin wax's main brief. Ultra low friction, parts wear rates and cleanliness is what it delivers – adding paraffin oil will destroy that.

Don't do it.

Q) have you tried Steve from Oz cycles wax blend and what do you think about his video where he shows his blend had lower wear than mspeedwax, the mspeedwax chain was rusting, and there were metal particles caused by moly being corrosive

A) yes I have and that video was a bit of a nightmare of a lot of hard effort to unfortunately produce a bunch of terrible conclusions.

- Real world riding has so many variables (load / contamination exposure / re-wax frequency at same km's & load and contamination exposure etc) that one would need to repeat test for both waxes across many chains and average the results to get a very ballpark end result for both lubricants. It is not remotely accurate as a proper controlled test – one where load is controlled for the same time and distance per interval, re-lubes / waxes are done at the same point, contamination introduced is the same type, and at the same time, and the same amount etc etc.
- Can you think of any other type of test where so many key variables are run completely uncontrolled, that would be accepted as a valid test?
- The fact the mspeedwax chain was rusting shows that he was not re-waxing frequently enough. MSpeedwax being so highly refined to have no mineral oil content means you need to re-wax at

correct intervals, there is no oily coating to protect against rusting if you go too long between re-waxes. The rusting mspeedwax chain is huge hint as to why the mspeedwax recorded a higher wear rate vs his wax blend. I have been waxing for nearly 100,000km now, and have never had a chain rust, because I re-wax at the correct intervals.

- Lastly – the theory re moly causing the metal particles due to being corrosive is just way off. Moly is proven outstanding friction modifier and is used in many industrial applications. The presence of metal particles would likely have been from excessive wear periods when he has pushed waxed treatment far too long (like when it is rusting) leaving chain with basically no lubricant inside, and a resulting metal on metal wear.

Previous videos by Oz cycle on immersive waxing have included things such as dunking chain in cold water after removing from wax pot to “lock in as much wax as possible” – which is a terrible thing to do as the pressures inside chain when start pedalling will simply press all this excess wax out making a big mess. After 10 mins of riding you will have the same amount of wax inside chain whether you “Lock in as much wax as possible” or hang to set as is on a 40 degree day.

It seems like Oz Cycle is genuinely trying to add good value to his viewers but unfortunately a lot of his testing – whilst it gathers great support due to the sheer amount of time and effort put in – it too often simply arrives at the wrong conclusions due to lack of proper understanding and testing that has far too many uncontrolled variables.

So whilst well intentioned, I do worry that incorrect information can sometimes do more harm than good. I have lost count of how many people I have spoken too who have tried home waxing following Steve’s video’s, had a terrible time of things, thought waxing was pretty terrible, told all their friends it was pretty terrible, as well as any mechanic seeing those drivetrains would also think waxing is pretty terrible. It is just not a great situation.

The results and conclusions in that video when you take into account the above – show how easy it is for testing to seem on the surface to be very good – when in reality it was simply miles off on pretty much every outcome. And there are far worse video's re waxing and lubes on you tube than Oz cycles.

Sheer input effort and hours isn't enough – if you are putting out information to thousands of viewers, you have a responsibility – a big one – to ensure the accuracy of what you are reporting.

If I conduct a test and the results are a bit interesting, I contact the manufacturer / re- run test / both.

Where was the contact to myself re the strange test result, rusting, postulation re moly and corrosion wear? – There was none. Where was the contact to Mspeedwax? There was none.

Just skipped straight past go and jumped onto a bandwagon of incorrect postulations and conclusions that suited his own personal outcome. Fancy that.

Remember I do not care who makes the best lubricant – I test to find the genuine best, and if it is – I stock it.

I offered Steve to send me a batch of his blend for control testing – he said he would, it has never arrived –that was many months ago at the time of writing this FAQ.

I have had a number of Oz Cycle backers say “but he doesn't sell that wax, he has no vested interest in it!”

Yes he does. It is his recommended product, from his supposedly amazing knowledge of chains and lubricants. It is his apparent great free knowledge that he has many thousands of you tube subscribers. This brings him advertising revenue. The more he can wow you with his in depth testing and outcomes, the more shares, the more viewers & subscribers, the more money he makes.

If he is not selling a product, but making money, YOU are the product.

If all the above seems a bit harsh – Remember I work hard to improve the amount and QUALITY of information available that will genuinely save you watts and running costs. If video's are being pumped out that undermine this and add to miss-information, it is obviously frustrating.

Zero Friction Cycling's business model is very transparent – use the worlds most exhaustive controlled testing to find and stock the genuine best in class products.

If something was better than Mspeedwax, that would be what I recommended as number one, simple as that. If a drip lube was better I would simply stock that and recommend that as number one – as you can see, the support required around immersive waxing can be high – I often spend up to two or even three hours every day answering emails for questions about waxing. I would be lucky to spend 3 hours a month answering questions about the drip lubes I stock. Life would be easier if a drip lube was numero uno, and if an easy and cheap to make home blend was better, I would be making it and selling it.

Re the part re have I tested that blend by Oz cycle?

A) No – As above I did offer to test, but it was never sent. At the time of writing I have over a years worth testing that is “urgent” to get done. Similar to the number of questions I am asked re chain cleaning, I am also frequently asked with regards to so, so, so many different blends and variations of wax / lanolin / bee's wax and on and on.

Unless the base wax is lab grade paraffin, based on what I know from a fair bit of time concentrated in this space over the last few years – it simply will not be as good. The base for Steve's wax is a much cheaper paraffin, it will be longer lasting per treatment vs the very highly refined

lab grade in Mspeedwax, but it will not remain as clean or low friction – this is something I have seen countless times with countless home wax blends along the same lines – again I could spend my entire life testing home wax blends – to what end?

As long as the wax base isn't too terrible and one avoids silly things like adding paraffin oil, then many home wax blends may well outperform a lot of the typical drip lubes stocked on shelves of your LBS, but they won't match Mspeedwax for all the reasons above. If you want a less refined wax for its greater longevity and oily protection against rusting – then you can absolutely go forth and easily make your own and have a good time – but it is simply not a level of product that ZFC needs test – there is much more highly valued testing to get too asap vs a never ending stream of home blend variations from you tube.

I would recommend that when it comes to lubricant testing and immersive waxing, for proper independent information refer to the original Friction Facts / velo lab testing as well as Zero Friction Cycling testing and detail reviews, and be wary of low grade testing with huge uncontrolled variables on key aspects of the test, regardless of how many hours of effort were put into the test.

Finally - Is wend wax the same as immersive waxing?

ZFC recommendation at this time of writing would be not to consider Wend Wax, initial testing results, as well as communication with Wend, have come out very poorly indeed.

Wend hit the marketing hard stating “Just rub wax on outside of chain and have a race ready chain in seconds!”

If you rub a solid lubricant on the outside of your chain – you have a solid lubricant on the outside of your chain, no matter how you try and massage it. Massaging it may help it get a little bit inside rollers, but it will not penetrate at all through to the pin. The first test following instructions to the letter showed wear rate basically exactly the same as chain strip cleaned and run without lubricant.

Then wend came out with “the advanced application technique” where one now dissolves the wax in with their own special solvent. This did work, sort of, but it was very average vs good lubricants re wear rate, and chain & drive train becomes very gunky over time with wax that almost needs a chisel to remove.

And, I don't yet understand why one would spend more money, to mix their own wax drip lube on the go in a fatty multi part process, when you can simply buy a vastly better pre-mixed wax lube like Tru-tension Tungsten All weather, Swoove, Squirt etc.

Then Wend came out with colours, and dismaying the market went wild. I had hoped the market was smarter than this by now. Dear me.

To actually have your coloured drive train and some lubrication you need to;

- Rub on coloured wend.
- Dissolve wax in with their wax off solvent. This will dissolve the colour.
- Allow chain to dry
- Rub coloured wax on again to get your coloured chain back.
- Enjoy about 5 to 10 minutes of a coloured chain.
- Enjoy a massively over waxed chain and gunked up drivetrain.
Prepare hammer and chisel.

I have also sent wend factory wax chain off for outright efficiency testing at wheel energy, as well as seeing the same testing by Ceramic speed, both results were similar, but the friction loss result was so high I am double checking before I go to print.

They now have I believe a hot melt wax out and a liquid wax version out – I will get to testing and hold onto my hat re how it goes, but until it is independently tested and proven, based on what results and marketing vs reality to date, I would really, really think about that decision. Take a moment and think about the marketing vs what can possibly be occurring with solid rub on stick and the

deep internals of your chain. It's your drivetrain. I know what I'm running on mine.

*****Do not put a wend wax chain in a pot of Mspeedwax*****