

Zero Friction Cycling

CHAIN Cleaning Prep FAQ guide.

***** For the concise version refer to Chain Prep Guide –
Concise – instructions tab on website *****

Brand new chains – FACTORY GREASE

Prelude – There is still a lot of incorrect information being pushed by some major parties (who absolutely know better but have their own agenda – one which is not in your benefit but theirs) driving a message that the best thing you can do is leave factory grease on.

I will not bog down this FAQ document with the huge amount of PROVEN information (by multiple independent parties) that this is THE WORST ADVICE.

The short version is that vs top known lubricants factory grease is a) a lot slower, and b) IT IS A CONTAMINATION MAGNET – quickly becoming an abrasive paste and c) it does not mix with top drip lubes – ie if you add a top wax drip over the top, you just end up with a gunky horrible mess of incompatible lubricants.

Major brands sell their factory grease as some wonder lube as part of marketing – however independent testing starting way back in the friction facts days has simply proven beyond contest that the top known lubricants are much lower friction, and much lower wear, than any factory grease known.

Media pushing factory grease (IE GMBN with KMC) and paid to say so. They have a lot of staff and production costs – they need money, if you are willing to pay the big bucks, they will say whatever you want (in my opinion). This does not help the cycling community looking for accurate information however.

I cannot stress strongly enough that the cleanliness and parts longevity of the top known lubricants vs factory grease is simply many many many times greater.

If you want a low friction, low wear, clean running chain, Factory grease has to go, simple as that. Anyone telling you differently – it is your drivetrain, I leave it up to you who to believe. Hopefully though if you are here, you are already stepping into a solid logical place.

Ok – so, hopefully established, factory grease has to go, and it is VASTLY better if you do this as step one before using chain.

You can absolutely clean after some riding, you will just greatly increase the amount of solvent / cleaning product use vs cleaning a new chain. So if you cannot do from new, just do as soon as you can to a) cut down on product use and b) reduce the amount of damage to chain from running factory grease vs top known lubricant.

Q)What should I use?

(*this information updated May 2022 – major change*)

Since this document originally launched, over time it is being reported more and more frequently that it is difficult to find the correct mineral turps / white spirits or their equivalents in many countries, as well as methylated spirits / denatured alcohol – both are being progressively banned or becoming

expensive – despite those products have very low to extremely low environmental toxicity (the banning seems to be more about political enviro optics).

However this progressive landscape has led me to properly nail down using and recommending a 100% environmentally friendly and very powerful solvent;

Ceramic Speed UFO Clean.

****remember – what you are cleaning off is NOT environmentally friendly – so pls ensure you dispose of responsibly****

I will outline now the recommended cleaning procedure for new chains using both UFO clean, or previous recommended method with mineral turps & methylated spirits. Below the UFO clean section is the Q&A I had with the creator of UFO clean at Ceramic Speed.

New chains with factory Grease – UFO clean

**Yes – a bottle of UFO clean expensive, but a bottle will clean AT LEAST 10 chains (can do many more if done off bike). Even at 10 chains that's around \$5 to \$6 to clean a new chain, that is absolutely competitive with cost of doing via turps and metho.*

On bike

refer to CS video instructions from their website. ZFC does not recommend on bike for removing factory grease, however, CS advise UFO clean will do it perfectly if follow their instructions;

<https://www.ceramicspeed.com/en/cycling/shop/ufo-products/ufo-clean-drivetrain>

Off bike - ZFC recommended method

- Pour approx. 100ml of UFO clean into a contain (from supermarket or spare bidon you are not going to use anymore for drinking).

- Soak chain 5mins. If chain is not fully submerged, flip chain over and soak other side.
- Agitate for around 1min (shake etc).
- Remove from UFO clean, and in a separate container, flush out UFO clean with boiling water (approx. 1 litre).
- Initially water will turn white, then it will start to become clear.
- Dry chain. It is best (by far) to dry chain by hair dryer or heat gun. This heats up the chain quite a bit, and evaporates the water out from inside chain very effectively. Whatever top lubricant you are looking to use, it will bond to chain metal surface much more effectively if water isn't inside chain. Normally around 3 mins with hair dryer or heat gun is sufficient. Hanging to dry will be highly variable on temp and humidity of your environment.
- Wax / apply top lubricant.
- ** Ceramic speed advise that the chain may still have a waxy feel to it post cleaning above, this is a film left by UFO clean, but this film does not in anyway impact wax / lubricant bonding to chains.

****Below is Q&A with Ceramic speed for UFO which should answer any FAQ's you have re using UFO clean.**

The main questions remaining really from your info below so that I can have exact instructions for cyclists around the world;

- Can you confirm that the CS instruction video of spraying UFO clean onto chain, allow some mins to dissolve, and then rinsing with water – that this is sufficient for effectively removing factory grease. **Yes, this is sufficient to clean your chain and strip it from manufacturing grease.** Or, really should we still be driving for factory grease chains to be removed and soaked in a container with ufo clean.

It is also possible to remove factory grease by placing 100mL of UFO Clean Drivetrain in a container. Soak the chain in a few minutes. If the chain is not completely immersed, then shake the container a few times. Hereafter take the chain out of the container and rinse thoroughly with warm water.

(I will say, that this is the easiest method of cleaning your chain rather than using a spray – especially to remove factory grease).



A cup comprising 100mL UFO Clean Drivetrain and 1 shimano 11sp chain. As you can see the solvent turns black, but this does not affect/reflect that the solvent needs to be changed.

After rinsing with water:



As you can see the chain is cleaned and no oil/grease residues are left on the tissue.

- How many factory grease chains could a user put through a bottle of ufo clean if removing and soaking. Your numbers make it sound like a lot (20) – which would be amazing. Or I gather if they wished to keep the main ufo clean perfectly clean, they could just use whatever small amount they could use that submerges chain in a container (0.1l) – and so that would 10 factory grease chain preps per 1l botte (still very good, that is still much cheaper for most vs doing via mineral spirits).

So just for fun. I used these 100mL UFO Clean Drivetrain to clean in total 5 chains (one Shimano 11sp, 2 KMC 11sp and 2 PYC chains). These chains comprise different factory greases. All 5 chains were cleaned without any problems using this same 100mL solution. This means that 1L of UFO Clean Drivetrain can clean 50 chains!

After cleaning 5 chains, the UFO Clean Drivetrain is completely black, hence the liquid/solvent is really excellent in absorbing factory grease.



The 5th chain after cleaning:



Again, no oil residues are left on the tissue, which shows that the chain is completely clean.

However, I must note: After cleaning, the chain might feel different than cleaning with mineral spirits. This is because the UFO Clean Drivetrain leaves a thin film on the metal surface. This thin film does not hinder wax in binding to the surface, so it does not negatively affect the longevity of the wax (or oil) lubricant.

- 5 min soak ok for factory grease? Yes, more than enough for 1 chain. However, if you clean more chains at a time, then it might need more time.
- CS video instructions show rinsing with cold water. I have always advised hot water as this is simply much easier to dry (and I recommend for users to use hair dryer / heat gun as this heats up chain and evaps water out from deep inside chain – and so much more effective vs long air dry / compressor which is cold air etc). It is easier to remove UFO Clean Drivetrain with hot water instead of cold water, but since a lot of people

do not have access to warm water when cleaning their bike, we specify that you can use cold water. But if hot/warm water is available, then this is optimum.

- For cleaning wax chain as part of maintenance, 5 mins soak ok? (does this vary if one is using it on UFO drip or mspeedwax etc or same)

I have not tested every different wax product, but for mspeedwax, UFO drip, UFO Chains, 5 mins of soak is sufficient for cleaning 1 chain. I have not meet/tested any wax product that UFO Clean Drivetrain could not strip away.

Rippa!! Thankyou Lina at CS for taking the time to answer all Q's re UFO clean.

Unable / willing to use UFO clean – SOLVENT cleaning instructions.

- In Aus - Mineral turps and methylated spirits – cheap, clean, very low toxicity, no hydrogen embrittlement.
- Other countries, or states in countries (ie California) – whatever the equivalent of mineral turpentine & methylated spirits is called may be getting harder to find. Google for correct solvent name conversion first, or if stuck check at local hardware store.
- Some degreasers / petrols etc – may cause hydrogen embrittlement / corrosion stress cracking. If you cannot get mineral turpentine / white spirits etc – you want a similar ORGANIC solvent. Link to detail information below;

https://en.wikipedia.org/wiki/White_spirit

- If unsure of your solvent re hydrogen embrittlement, simply do not soak longer than 5mins, and move to alcohol baths immediately after solvent baths.

- Methylated spirits / denatured alcohol – frankly it is nuts this is being banned in some places as is EXTREMELY low toxicity. A good bit of article research leads to this being done for political optics, and widely denounced by environmental bodies as completely useless from an environmental standpoint. If I am incorrect here, pls send information why, I like to know if I am incorrect on things so I can update.
- If you cannot obtain then isopropyl alcohol or acetone are also perfect finishing agents for clean metal prep, just generally much more expensive take much care with acetone and fumes.
- UFO clean should be looking more attractive about now if you can get hold of it (or getting a pre prepped chain).

Cleaning prep process

Q) How many rounds and how many ml of solvent?

PART 1

- Shimano / KMC / YBN chains – 3 x 250ml per chain agitated solvent baths. **15 minute soak on bath 1**. Shake in sealed container for 2 mins per bath.
- Campy chains 4 x 250ml baths (same 15 min soak bath 1)
- Sram chains 5 x 250ml baths (same 15 min soak bath one)

NOTE – Final 2 rounds solvent can be kept in separate bottle to use as first round for next chain

Grease soaked initial rounds should be kept in container, labelled with solvent used, and do an annual run to your councils /states hazardous liquid disposal facility

I am often (as in OFTEN) asked are other cleaning agents – the list is endless – shellite / petrol / diesel / simple green / detergents - the list is endless. Some are needlessly more expensive vs turps and will not do any better job, some will maybe clean ok but leave a much heavier film behind for part 2 to deal

with (petrol / diesel) and some solvents may cause corrosion stress cracking / hydrogen embrittlement if soaked too long.

Hence good old mineral turpentine – organic solvent, - great strong solvent but very low toxicity, does not cause hydrogen embrittlement, is easily recycled, has low environmental toxicity if not properly disposed, it is cheap (in Australia), and it leaves little film behind.

Beware of information on forums re chain cleaning. Any article on chain cleaning inevitably brings out something like this “I was shown by the ex pro cyclist mechanic X who says to use diesel, then petrol, then shellite, then xylene, then spin 3 times, face north and agitate.....” and so on. Many will say they do x / y / z and its perfect – but they have no way of assessing if its perfect.

Stay with what is known to work perfectly every time. The process has been used to perfectly prep chains for lubricant testing / race chains by industry pioneers well before me, and I prep THOUSANDS of chains per year perfectly for commercial sale using the above solvents and amounts.

PART 2

Chain cleaning for top lubricant or waxing is always 2 part process. Part one is cleaning chain. Part 2 is removing any film left behind from cleaning so that lubricant / wax can bond to clean and clear chain metal. If it has to fight through a film, result / experience can be poor.

RECOMMEND METHYLATED SPIRITS – this is basically just pure alcohol – it is cheap and does the job perfectly.

- Complete 3 x agitated cleaning baths – 250m per bath, 2 mins shake per bath.

- Dry chain (hang to dry or blast for a few mins with hair dryer or heat gun in a small aluminium bbq – careful chain will get very hot. Heat works much better vs air compressor as heated chain evaporates methylated spirits from deep inside chain in a just a few mins.
- Immersive wax or apply top recommended lubricant.
- ****DO NOT LEAVE A STRIPPED clean chain exposed to air for longer than 12hrs or rollers may start to rust. If you are not / cannot lubricate after cleaning for some reason, wrap in a microfibre cloth. This will give you a few days protection – but no do not leave longer than that.**
- ****Keep final 2 baths in separate container for bath 1 next chain**.** You can dispose of methylated spirits onto a weed no problems, it is extremely low environmental toxicity. Do not pour down drain.

ALTERNATIVES – YES you can use ACETONE or ISOPROPYL ALCOHOL as the finishing rounds – they work perfectly, they are just a lot more expensive vs methylated spirits, and acetone is much more fuming – done breath in the acetone fumes. Methylated spirits / ISO low fuming and no issues doing normally (ie not burying face into the process as breathing hard and fast to maximise fume consumption, which would be weird behavior whilst cleaning a chain.

If you want to know re ultrasonic cleaning (YOU REALLY DO NOT NEED ONE. AT ALL) then refer to race chain and ultrasonic guide.

Chain break in?

DO NOT DO A CHAIN BREAK IN RUN UNLESS YOU HAVE AN ULTRASONIC AND KNOW HOW TO USE IT, and it is part of dedicated race chain prep.

There is information out there from some places to do stuff like 400km of riding to break in before cleaning.

Do not do this. This will increase your solvent use to litres vs less than a litre for most chains, and for some chains can already cause measurable wear / begin to compromise low friction coatings etc.

Again if you are looking to break in chain this is part of race chain prep, refer to race chain prep guide.

Existing used chains - Solvent

Once you have ridden a chain (new with factory grease, or existing drip lube chain), note that the process is the same as above in cleaning new chains – you will do many more rounds of cleaning with mineral turpentine followed by methylated spirits.

You do not need to soak however (*except if previous lubricant is a wax lubricant – soak 15mins bath 1 as waxes are hard work for solvents*) you put turps in, lid on, shake, turps will go black in 10 seconds, pour out – wipe chain and container, repeat, repeat repeat.

Over the baths the turps will move from black to dark grey to light grey – when turps is basically coming out as clear as when it went in, the chain is clean, and time to move to methylated spirits baths.

Dry then move to methylated spirits rinse baths.

It is common to need to use 3 litres + of mineral turps to fully clean a chain that has been ridden.

Existing used chains – **UFO CLEAN**

If using UFO clean – Go with 2 x 100ml or 150ml baths – the first will capture the bulk of contamination particles. Agitate THOROUGHLY and RINSE THOROUGHLY with hot water, dry before second UFO Clean bath, again rinse with hot water, dry, yeehaa.

*****If previous lubricant was a wax lubricant soak for 5 mins*****

The second bath of UFO clean is also likely to go black for a used chain. However as UFO clean is extremely concentrated, this is sufficient to have absorbed previous lubricant.

*Check after final rinse that chain is feeling silky smooth. If it feels gritty (bend chain side to side and listen / feel for any contamination crunching) – repeat if you want to spend the \$ on keeping going until perfect.

If you are moving to a drip lubricant, it may be balance of it is not perfect but its good enough and now im moving to a great lubricant, so overall im happy enough re how things will be going forwards.

If you are moving to a top immersive wax, ZFC recommends placing more focus on the clean being close to perfect. If the clean is not so great, you risk contaminating your entire pot of wax, which is less awesome. It may be worth spending a little bit more on the cleaning to ensure your \$50 to \$80 pot of wax is seeing a beautiful clean chain.

Weigh up for existing chains if it is worth it

As the amount of solvent required to clean a used chain is so high, one has to weigh up;

- **How many km's have I ridden**
- **What lubricant has been used?**
- **How expensive is the chain?**
- **How worn is the chain?**

There is no hard and fast rule. If one has ridden 1000km on an ultegra chain with factory grease then meh random drip lube – is it worth putting 4 litres of turps and 600ml of metho through that chain, which will already have a compromised low friction coating and some decent level of wear already, or is it worth moving a brand new chain to the correct start and top lubricant.

You don't have to do this straight away - vs wasting the chain, or wasting a lot of money on solvents – you can just stay the course on existing chain to get some good useful life out of it and make the switch to better lubricant path next chain.

****KEEP A VERY CLOSE EYE ON CHAIN WEAR AND REPLACE EARLY** so as to ensure no premature wear to cassette / rings.

Conversely if you have a \$150 axs road red chain or \$170 xx1 eagle chain, which are very wear durable chains – the cut off time where it is viable to properly clean to run a top lubricant choice is much, much longer indeed.

The main thing to be aware of is simply that once ridden, vs circa 750ml or 1 litre of turps for a new chain, it is going to be many litres, or a few hundred ml or more of expensive UFO clean– so just balance the cost of chain, its amount of use and wear, how much life it has left, and the cost to clean it - or do you stay the course and switch next new chain, or are sick of the black abrasive mess and make the switch now with new chain.

Can I clean chain on bike with a degreaser / solvent spray?

Yes you can, but results will not be guaranteed. Factory grease really can be stubborn stuff, and you really want to ensure that deep inside chain on the pins etc, that it is all dissolved off.

Typically the amount of solvent put through a chain for an on bike clean is pretty low. Ie pump 100ml through and you have made a pretty big puddle on the ground, and you will be thinking you have gone pretty hard, surely that must do it. But compared to say 3 x 250ml baths – and the fact that most of it has just run right through the chain – really the level of dissolving factory grease is going to be well short of the surety of off bike fully submerged baths in a container.

And really you still want to put some alcohol through it to try to remove film – especially if you are aiming for wax lube / wax to bond to clear chain metal.

ZFC does not endorse trying to properly clean a chain on bike at all in relation to moving to a top lubricant (as opposed to on bike general maintenance, in which case it is definitely better for most lubricants than no maintenance).

However, if you MUST prep on bike, then ZFC recommends UFO clean as likely the only solvent concentrated enough to enable. Again follow CS instructions from their website – note that hot water rinse is better than cold water.

Q) I want to remove my chain but what about single use master links?

Refer to master link FAQ guide for all you need to know

<https://zerofrictioncycling.com.au/wp-content/uploads/2021/10/Master-Link-FAQ-Guide.pdf>