

Karox's Guide to Almost Everything in Eve
Part 2 - Tanking
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Tanking is the term used when someone is talking about mitigating damage. There are 4 disciplines of tanking that can be done in Eve: Shield Tanking, Armour Tanking, and the more specialised Speed Tanking or Spider Tanking. Shield and Armour are fairly straightforward – you build up strong enough barriers to protect yourself from damage, whereas Speed and Spider tanking are a little more specialised.

Shield and Armour tanking have two subcategories of damage mitigation – Active, i.e. using repair modules to recover the damage done, and Passive – sustaining enough of a tank to not allow you to be killed during the course of the fight.

Stacking and Basic Rules

The first rule that needs to be understood when planning your setup is that modules that improve your ship's resistance do not stack in an additive fashion. Think of them, instead, as multiple layers of protection. If your ship has a basic resistance of 50% versus a certain type of damage and you add a module that gives your ship 50% resistance to that same type of damage, you now have 2 layers of resistance that combine for 75% resistance – the module mitigates half the damage, and your ship's basic resistance mitigates half the damage that makes it past the resistance module. The result is that only 25% of the incoming damage actually gets applied to your ship.

The stacking rule that needs to be understood is one that applies to almost all modules in Eve – if multiple modules/rigs improve the same stat of your ship, the 2nd and subsequent items won't work at full effectiveness. The 2nd module will only work at about 87% effectiveness. That is, if you use 2 hardeners that are each rated at 50% resistance, though the first layer will cut damage by 50%, the 2nd layer will only cut the remaining damage by about 43.5%. In comparison to the above example, if your ship has 0 resistance to a certain type of damage and you add 2 modules that grant 50% resistance, your ship's total resistance will be just under 72%, instead of 75%, as you might think. The 3rd module will work at about 57% effectiveness, and the 4th module will work at about 29% effectiveness. Because of the diminishing returns from stacking, most players advise that you never use more than 3 layers to resist the same type of damage.

One module that isn't subject to the stacking penalty just discussed is the damage control unit, which is discussed below in the armour tanking section. This is because only one of the modules can be fit to your ship at any one time, but the benefits it gives are generally seen as

Finally, when you are planning to view your resistances in game, when you add passive resistance modules (ones that don't need to be activated), you can see what your ship's resistances will be while looking at your ship's fitting window while in station. If you use active resistance modules, you will need to look at your ship's fitting window while in space, after you have activated your modules, in order to see your ship's actual resistance values. Alternately, you can use 3rd party software, such as Eve Fitting Tool to plan how to fit your ships.

Shield Tanking

This method of tanking is very reliant on your midslots on your ship, so tend to favour the Caldari, and to a lesser extent, the Minmatar as they tend to provide more midslots in their ships.

Shield tanking uses a handful of modules as its main base:

Shield Booster – A very quick activating module which supplies the shield boost at the expense of capacitor. These can be combined with Shield Boost Amplifiers to improve the amount of boost, and subsequently the amount of capacitor used per boost, as the amplifier gives you a zero cost increase to shield booster effectiveness, however it does cost you a second slot in your ship which you may well not be able to provide.

Shield Resistance Modifiers – These come in 2 varieties: Shield Resistance Amplifiers which are always on modules which use no capacitor, but provide a relatively low amount of resistance. This can be further modified by using the various Shield Resistance boosting skills to improve on the base resistance value. Shield Hardeners are the active modules which require capacitor to use, but provide a much increased base resistance (50% for Hardeners vs. 32.5% for the Resistance Amp when using Tech 1 modules, Tech 2 modules give an extra 5% on both of these values.) This module however does not gain any benefit from the Resistance skills when it is switched on, only in providing a minor increase in resistance when it is offline.

Both the passive and active shield resist modules focus generally on one type of resist. There is a shield Hardener module known as an Invulnerability field which provides resistances to all 4 types of damage, but does this at a reduced effectiveness to any one resist value when compared to any of the individual resist modules.

It should also be remembered that the stacking penalties which are applied if you use too many of the same module apply to resistance modifiers. You can't simply reach 90% resists by stacking 3, 30% resist items, each one after the first loses a little effectiveness each time.

Shield Extenders - These increase the physical size of your shields, with a drawback of increasing your signature radius. They require a fairly large amount of powergrid to fit to your ship, but they are one of the few modules that can be thought of as 'bigger is better' as the total shield bonus from 2 smaller modules does not equal the next sized module up the chain, therefore it helps to squeeze in the larger module if you can afford it with your fitting. Aside from the increased fitting requirement for the larger module and the increased signature radius, there are no performance related hits to the ship as a result of fitting an oversized module.

Shield Rechargers – These modules, as can be expected from the name, help recharge your shields faster. These are used almost exclusively in passive tanking setups, so their detailed information is covered in that section.

Methods of Utilising a Shield Tank:

Active Tanking

Active Tanking relies on the shield boost and possibly a shield boost amplifier. The benefit of this method of tanking is that the damage mitigation is extremely fast. Shield boosters typically activate once per 4 seconds, and the boost effect is applied at the beginning of the cycle so as to get an immediate boost as soon as the shield booster is activated. There is a rig which can reduce this cycle duration called a 'core defence operational solidifier' but this is generally seen as a bad choice as the cycle time on shield boosters is already quick, therefore the benefits of improving it by a percentage are not too great.

The downside to this is one of capacitor; a lot is needed to maintain a strong active shield tank. Many ships will fit capacitor control circuit rigs to help maintain the capacitor when shield boosting, especially for mission running setups, where capacitor stability is usually preferred to prevention of burst damage that is the main focus of PVP.

Resistance modules should be used where possible to reduce the amount of damage that is taken, for most this will mean using the Hardener (active) modules as without significant investment in the appropriate resistance skills, these will provide a much greater benefit. These should only be considered when there is a risk of losing capacitor or when fitting limits mean that you can't fit the modules (as the Resistance Amplifier modules do provide some CPU saving over the Hardeners) or when travelling, as every jump through a gate deactivates your modules, and therefore your shield hardeners will need to be reactivated on every jump, whereas passive modules protect your ship at all times.

These active hardeners do need an investment in capacitor – whilst they have nowhere near the same drain as the shield boosters themselves, they can catch the unprepared pilot out, and without the capacitor to power the module, it is all but useless. The problem is increased when using the multi-resistive Invulnerability Field module which needs more capacitor to run per cycle than the standard hardeners.

Shield recharge is not a significant worry with this method of tanking, only having enough of a basic level of shielding to ensure that the shields are not wiped out before the shield booster can repair it.

Passive Tanking

Passive tanking relies on the fact that the shields will recharge naturally during their operation, and improves on the main factor of this – peak recharge rate.

Passive tanking relies on resists to reduce damage to a point where the natural regeneration can come with the incoming damage, thereby negating all future damage – note that typically the active hardener modules are used for adding resists, though these are active modules, the passive description refers to the shield recharge method. This relies on the fact that each ship has a in-built recharge rate that does not change as more shields are added – i.e. if a ship recharges its shields in 600 seconds, it will do that with one thousand points of shields, and ten thousand points of shields. As can be imagined, with a greater increase in the value of shields, as they both recharge in the same time, the peak recharge will be approximately 10 times faster in the above example – in this way, adding shield extenders can help a passive setup.

The recharge time can also be modified by using the various shield recharge altering modules and rigs. If you can, for instance reduce the above 600 seconds recharge to 200 seconds will treble the peak recharge rate as well.

Shield Rechargers are mid slot modules and will reduce the recharge rate of your shields with no significant downsides, however the effect is fairly unimpressive with the Tech 1 module providing a 10% reduction in recharge rate, and the Tech 2 module providing 15%. It may well be that utilising the mid slot for another shield extender or resistance hardener could provide more benefit.

An otherwise attractive option for many ships is to fit one of the two lowslot modules which affect shield tanking – Shield Flux Coils or Shield Power Relays.

Shield Flux Coils provide reduction in maximum shield power, whilst providing a much greater increase in shield recharge. This has 2 main effects: Shield peak recharge is lowered due to the lower maximum shields, but is boosted back above and beyond the original value by the increased recharge effect by the flux coil. The net effect is fairly marginal when compared to using a dedicated Shield Recharger module, but these do fit into the lowslots, which are usually unused for a shield tanker, and can therefore be usually be an easier fit than giving up a midslot.

Shield Power Relays reduce the capacitor recharge rate whilst significantly boosting the shield recharge rate. This is the main module of choice when using cap-free weapons such as Missiles and Projectile ammunition as there is little if any capacitor draw from the shielding systems, aside from the very likely inclusion of Hardener modules.

When using lowslot modules, one of the main factors that need to be considered is the classic 'gank versus tank.' Most of the weapon improvement modules (for example, Ballistic Controls for the Missile users) fit into these lowslots and if too many are used for defensive measures, there will not be many available for improving damage output.

Also of note are two important rigs – the Core Defence Field Extender, which increases shield amount, and the Core Defence Field Purger, which decreases a ship's shield recharge time. Both have the effect of increasing the ship's natural shield regeneration rate at the expense of increased signature radius. Generally, the Purger contributes to a stronger sustained defence.

Armour Tanking

The second main focus of tanking is that of Armour tanking. Typically Gallente and Amarr ships get several bonuses to this method of tanking, also a selection of Minmatar ships specialise in this form of defence due to their piloting methodology.

Armour tanking utilises the lowslots on your ship to equip the modules – this has a positive and negative of course. The positive is that it frees up your midslots to fit the various 'utility' items which all pilots need to use to a greater or lesser extent – things like Afterburners/Microwarp Drives, Capacitor Rechargers, Webifiers and Warp Scramblers which have benefits to both PVP and PVE pilots depending on what you need to equip. The downside, as mentioned in the passive shield tanking section is that the lowslots are also the area where your weapon damage modules fit, which means that by improving your tanking ability, it will mean that you will have less room to fit damage increasing modules, and as such lose a significant amount of damage. This is the juggling factor that an armour tanker needs to consider.

Armour tanking is much more common in PVP than shield tanking, due to 3 main factors:

The ability to fit tacking gear (scrambler and webifier) as well as a speed module (AB/MWD) in most cases. If a shield tanker was to put the same modules into their ship, their tanking ability would be significantly compromised.

Armour repair and its associated modules are much less dependant on capacitor. Typically the capacitor needs are much lower for armour repair modules and their hardeners compared to shield boosters and shield hardeners. Armour tanking also has access to the multi-resist focused Energised Adaptive Nano Membrane module which functions similarly to the shield tanking Invulnerability Field module, but requires no capacitor to use, and benefits from the resistance boosting skills as it's a passive module.

Armour tanking generally requires less skillpoints to have a similar level of protection as can be gained from shield tanking. Most of the skills are a lower rank (i.e. Hull Upgrades to provide an Armour HP boost is rank 2, whilst Shield Management, the equivalent for Shields is rank 3, and therefore takes more skillpoints to train) as well as being much quicker to train for, as Hull Upgrades combines the effects of the skills required for raw shield HP, as well as those required to fit the extender modules, and hardeners into one, fairly quick to train skill. Hull upgrades needs to be trained to level 5 in order to get the most out of it compared to many of the shield skills that you only need to train up to level 4 to access the equipment, but the simple fact of the difference in rank from 2 to 3 for the armour vs. shield hitpoint skill means both need to be trained up anyway to get the most out of it.

Ships have slightly more base resist to armour than what applies to shields. If you add up the resistance points available without any additional modules fitted, armour has 20 points more than shields – 110 for shields, and 130 for shields. This makes it easier on armour to fit a more durable tank across all 4 resists due to the 20 points 'head start' but in many cases this will not mean much as that all depends on what your opponent is shooting at you. Note that these resistance increases are not uniform across all races, as each race gets a bonus to the resists of the 'racial damage' of their opponents – for example, Caldari get a bonus to thermal resistance to offset against the Gallente racial thermal damage.

Armour Tanking Methods:

Active:

Active armour tanking requires fitting an Armour Repair module, and in function, this is similar to a shield booster – capacitor is used to reinforce the defence system by repairing the damage once it has been done.

Armour repairers differ from shield boosters in that the capacitor requirement is much lower for armour repairers of a similar level, but the repair is slower. In addition, the regeneration of the armour does not occur until the end of the cycle for armour repairers, whilst with shields it occurs at the beginning of the cycle. This means that a little amount of pre-planning is usually needed for using armour repairers so that the pilot is sure that they can withstand the damage long enough for the repair process to kick in. Note that this cycle speed can be reduced by using a 'Nanobot Accelerator' rig but this will make your ship slower due to the drawback of using the rig.

Additionally, armour repairers only have a maximum of a 'large' sized module, whereas shield tankers can access an 'extra large' module which both fit on battleships. This means that some armour tankers choose to fit 2 armour repair modules to their ships, this offsets the greater repair potential of the extra large module, and also allows their starts to be staggered so the long delay of the repair effect can be mitigated somewhat by having multiple hardeners. The obvious downside is that there are 2 modules used up which can be very limiting.

Again, it is typically best to fit armour resistance modules to help reduce the incoming damage to a manageable level as well as use a repair module. Armour has a few options for resistances. The active modules (Hardeners) are similar to the shield modules, but there is no multi-resist module for armour in the active category. In the passive module category there are 2 types of resistance modifier – energised and non-energised. This is a trade off for effectiveness vs. CPU as the energised plates offer greater benefits whilst requiring a large amount of CPU to fit. The non-

energised plates require no CPU but are very limited in what they can do. Both passive modules have the Adaptive class of resistance modifier, which offers resists in all 4 of the damage types.

Passive:

Passive armour tanking performs a little different to shield tanking. There is no natural armour regeneration, instead the entire focus of passive armour tanking is to put up as large a barrier as possible and hope it doesn't get removed before you can remove your opponent's defences.

There are 2 main methods which can help do this – adding armour plates and/or increasing resistance modifiers.

Resistance modifiers are covered above in the active tanking section, but there is generally a lot of focus on improving your resistance when using this tanking method. Fitting armour plates is the second main option, which boosts the raw armour hitpoints available. Armour plates have a downside that they add mass to your ship however, so in turn slow them down and make them harder to manoeuvre, which in many cases is undesirable. This is the decision that the pilot must make.

Armour tanking can make good use of the Damage Control module. This provides a non stacking-penalty module which provides a small amount of resist in all 3 resist groups – shield, armour and hull. For shield tanking ships, the damage control is not too useful as it is only gaining the benefit of the shield portion of the ship, as once the shields are breached, the pilot should be looking to get out of the action straight away, as untanked armour and hull damage will tear the ship apart very quickly. For armour tanking ships though, they get the benefit of the shield resist portion (thereby giving a little longer of 'free' tanking ability whilst the shields are removed) and then gaining the benefit of the additional resist to armour. If by an unlucky chance the armour is breached, the additional hull resist can give a little longer for the ship to get away, or kill your opponent if you do not mind risking your hull as well.

Whilst the damage control is an active module and does use capacitor, the value it needs is negligible (1 capacitor every 30 seconds) so can be fit to any setup without too much thought. One point that should be remembered though is that only one damage control unit can be fitted to any ship.

The main negative about passive armour tanking is that there is no way to repair the damage once it has been sustained. If you can get to a safe station, it is possible to swap out a temporary armour repair module instead and repair the damage once it has been done, but in most cases during hectic fights, it may simply be necessary to dock up and pay for repairs to get back into the fight.

Speed Tanking

Speed tanking was very controversial in the past, so much so that the Quantum Rise expansion in late 2008 made some very significant changes to the speeds that certain ship types could reach as well as the way certain weapons systems dealt their damage.

The premise of speed tanking is that all of the weapon systems are most effective when dealing with targets of a certain limited speed. For missiles and drones, this is the physical speed that they can travel through space. Turrets (and sentry drones as they do not move) have a tracking

statistic to determine the direction the turret is pointing when it fires, and with a high enough transversal velocity (i.e. the velocity acting perpendicular to the line of fire) it's possible to move so fast that the turret cannot track to where the target would be at any point in time, therefore the shot would fire off without doing any damage.

The controversy came about because certain other ships that were never intended to be fast, such as battleships, but more commonly, heavy assault ships (usually called HACs, or heavy assault cruisers because they are Tech 2 versions of Tech 1 cruisers) were reaching speeds of thousands of meters per second where they weren't able to be damaged. This meant that in order to catch them and stop them from decimating fleets with their superior firepower, it was required to use speedy ships as well. Thus, 'nano-ing' was fast becoming the required format for anyone wanting to survive in PVP.

The masters of the speed tank are undoubtedly the interceptor class frigates. Able to reach speeds well in excess of 4,000 m/s these ships can leave missiles simply trailing behind them and they can orbit their target so fast, the turrets have no chance to catch them. Note that due to the changes these ships can now be caught by weapon systems that are intended to catch small, fast moving ship types (Warrior II drones for instance) whereas in the past these were almost immune from those weapon types as well.

Speed tanking works by usually forgoing any of the classic tanking modules for fitting overdrives, and nanofibres as well as the equivalent rigs (Auxiliary Thrusters and Polycarbon Engine Housing) which directly increase speed (in the past the Nanofibre would reduce weight, leading to a better thrust per kilo ratio, but now it simply increases speed and improves agility to a lesser extent than the dedicated module). Note that stacking rules now apply to the speed modules (see the basic rules section above) so fitting lots of speed mods is ineffective.

A Microwarp drive was also classically a standard fit, whilst it raises signature radius by a significant factor, but the speed benefits much outweighed the signature issue as you were unlikely to be hit in the first place. Since Quantum Rise however, there is an additional option of fitting an Afterburner. This will improve speed by a lower factor (roughly one fifth to one third of the speed of a Microwarp drive) but does not increase the signature radius. Since the signature radius is now much more a factor during combat, this slower, smaller method of speed tanking does have its place among smaller ships.

One final change that was brought in was to alter the operation of the close range Warp Scrambler modules. These now have the added functionality of completely shutting down a Microwarp drive when they are successfully hit with it, whereas afterburners are unaffected. This means that ships that were designed to get in close now need to weigh up the options of losing their Microwarp drive in combat and therefore the majority of their speed versus using an afterburner and maintaining a constantly boosted, but lower speed.

Spider Tanking

This has gained a surge in popularity as time goes on, and in some ways is almost perfect for gang warfare.

The focus of this tanking method is to ensure that all members of the gang have a remote repairer of some type and when someone takes damage, all members of the fleet immediately assist them and repair the damage. If the opponents move to a different target, the tanking focus moves with them to ward off the damage.

This forces an opponent to split their damage to several targets, thereby reducing the DPS given on each target, which can normally be tanked against using standard passive shield/armour techniques.

An alternative to this approach is to have several defined DPS ships which do not fit defensive modules at all, but instead go all out for damage, and relying on the fleet to protect them – this can be a way for opponents to destroy opposing spider-tank gangs by aiming to out-damage even a remote repairing fleet before they can stop the module and switch targets. The gang simply focuses on one target long enough to make the enemy think they want to kill it, and then rapidly swap to another target with the high DPS ships before the opponent can react and move their repair targets.

A significant disadvantage of spider tanking is that the range of all of the remote repair modules is quite short, meaning that the ships need to keep very close to each other (around 8-9km maximum range) – though note that if the logistics cruisers (or their Tech 1 equivalent) are used to complement the individual ships, they get range bonuses to remote repairers – though this means that they will be split off from the pack and could potentially be very easy targets for enemy snipers.

ECM is the bane of the spider tanking setup, as if a ship is jammed, it is prevented from targeting friendly targets as well as enemies, which makes remote repair impossible.

Normally armour is tanked due to its prevalence in PVP combat, but shield tanking is also viable in spider tanking – it has the advantage that shield repair occurs at the beginning of a repair cycle. It can be harder to overwhelm a shield spider-tank by switching targets, since you have to beat the reaction time of the defenders switching their remote repairers to a new target. With armour spider-tank gangs, you have a few extra seconds to kill the target due to armour repair occurring at the end of the repair cycle.