# Splitwars Online: Combat Guide

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These are the actual rules the server uses when two fleets shoot at each other. I went through the battle engine and wrote down what it does, with the live numbers. Sieges against forts and buildings add a few rules of their own that I left out.

A warning before the math: some of this is not what the tooltips suggest. Where the code and the common wisdom disagree, this document follows the code. This is the first revision; the numbers will move as the game is balanced, and later revisions will say what changed.

## 1 The shape of a battle

A battle is a sequence of rounds, at most 100. Each round every fleet acts once, in initiative order, and initiative is decided by the captain's *Velocity*: the fleet whose captain has more Velocity moves and fires first. Ship speed only decides how far you move, not who goes first.

On its turn a fleet picks one enemy fleet, moves toward it, and fires if it is in range. One fleet, one target, one volley per round. Range is measured in grid cells, counting across plus up or down, and a fleet's range is the union of its weapons' ranges; research adds range in whole cells. Movement per round is the slowest ship in the fleet, capped at 16 cells, plus captain bonuses.

The fight ends when one side has nothing left standing, at round 100 (nobody wins), or when a siege objective falls.

## 2 Who you shoot at

At fleet level the target mode decides. *Closest*, the default, picks the nearest enemy fleet. The other modes pick the strongest or weakest attacker, the toughest or softest fleet (current shields plus hull), or the best captain. A nexus is only targeted when nothing else is left.

At slot level both fleets are a $3 \times 3$ grid with row 1 facing the enemy. Every occupied slot in your grid fires on its own, at one enemy slot, chosen like this:

1. The enemy slot in the same column as you, nearest row first.
2. Failing that, the enemy's front-most live row, and in it the slot just to the left of your column, or the leftmost one if there is nothing to the left.

Nothing random here. The front row soaks the fire, and an empty column in front lets your shots reach the back row. All the ships in a slot fire together at that one enemy slot.

## 3 Reload and fuel

| Weapon type | Fires |
|---|---|
| Artillery | every round |
| Energy Blaster | every 2nd round |
| Rocket | every 3rd round |
| EMP | every 5th round |

Only reloaded weapons fire. If a slot mixes weapon subtypes, only the first reloaded subtype fires that round and the rest wait. Research gives rockets and EMP a chance to skip a round of reload; EMP research and some captains grant an instant reload.

Every volley costs tritium per weapon per ship. Interceptors, shield modules, armor modules and repair modules also burn tritium when they work. No tritium, nothing happens. Running dry in a long fight is a perfectly normal way to lose one.

There is an overkill guard: once a volley has emptied the target slot's shields and hull, the rest of that slot's weapon groups do not fire, do not pay fuel and do not reload.

## 4 How many ships actually shoot

A slot's firepower, its mitigation and its interception all scale with the number of ships in it, up to a cap set by the captain:

| Hull class | Ships that count |
|---|---|
| Fighters | 1100 + captain bonus |
| Corvettes | 1000 + captain bonus |
| Destroyers | 900 + captain bonus |

The captain bonus comes from rarity and stars. An ordinary captain adds nothing; a top rarity at seven stars adds about a thousand. Ships above the cap add hull points to the slot but no damage.

## 5 Hit rate

There is no dice roll per shot. Hits are an expected value:

$$\text{hits} = \text{weapons in the slot} \times \text{ships shooting} \times \text{hit rate}$$

and the hit rate is

$$\text{hit rate} = h_{\text{weapon}}\,(1 + r_{\text{hit}}) + (1 + T - M) \times 0.04 + \left(1 + \tfrac{A}{12} - \tfrac{E}{12}\right) \times 0.01 + \text{debuffs}$$

clamped between 0 and 1, where

- $h_{\text{weapon}}$ is the weapon's own hit rate, 70% to 95% depending on the module, and $r_{\text{hit}}$ the hit rate research for that weapon family;
- $T$ is the weapon's *targeting* (artillery 5 to 8.6, energy blaster 6 to 9.6, rocket 1 to 4.6, EMP 0.1 to 3.6), scaled by steering research. Each point is +4% hit;
- $M$ is the *target* hull's *maneuverability*, 0.1 to 10 by hull, scaled by the defender's maneuverability research. Each point is −4% hit;
- $A$ is the attacking captain's *Aiming*, $E$ the defending captain's *Evasion*. Every 12 points moves the hit rate by 1%.

The two "1+" terms add a flat 5% on top of the weapon's base. Worked example, an energy blaster with 85% base and 8 targeting, captains equal:

| Target hull | Maneuverability | Hit rate |
|---|---|---|
| Corvette | 4 | $0.85 + (1 + 8 - 4) \times 0.04 + 0.01 = 1.06 \rightarrow 100\%$ |
| Fighter | 9 | $0.85 + (1 + 8 - 9) \times 0.04 + 0.01 = 86\%$ |

So maneuverability is the anti-hit stat, and it matters most against weapons with low targeting. Rockets and EMP feel it hardest. Energy blaster research can add a chance to ignore a quarter of the target's maneuverability, or to fire at maximum hit rate; energy blaster hits can also apply a hit rate debuff on the target ("radiative interference", capped at 25%). Some captain skills ignore maneuverability or evasion altogether.

# 6 Interception

Artillery and energy blasters cannot be intercepted. Rockets and EMP can. Interceptor modules remove *hits*, before any damage is computed:

$$\text{hits removed} = \text{interceptor rate} \times \text{weapon interceptability} \times \text{defending ships} \times \text{interceptors per ship}$$

The interceptor rate is the module's value (Flak 12%, Ion Shroud 20%, Nullwave 20%, Skycleaver 40%) times one plus interception research. Weapon interceptability is a property of the incoming weapon, 65% to 80%, reduced by the attacker's anti-interception research. Because it scales with the number of defending ships, a full stack with two Skycleavers per ship erases a big rocket volley outright. Interception costs tritium per interceptor per ship, and it is deterministic.

EMP weapons double as EMP interceptors on your own ships once you have the custom intercept research.

*Steadiness* has nothing to do with interception, despite the name. See section 10.

# 7 Damage

## Base damage

For each weapon group that hits:

$$\text{damage} = \frac{\text{min attack} + \text{max attack}}{2} \times \text{attack power} \times \text{hits}$$

with a small random wobble, about ±3% and never past ±9%. The min to max range is not rolled. A "100 to 200" weapon is a 150 weapon.

## Attack power

Attack power starts at 100% and adds up:

- captain attack bonuses from skills;
- the captain's weapon expertise letter: S +30%, A +10%, B 0, C −10%, D −30%;
- the captain's hull class expertise for the hull you fly: S +10%, A +5%, C −5%, D −10%;
- research: damage per weapon family up to +45%; artillery execution (a bonus once the target is at 30% hull or less) and point blank at one or two cells; rocket Overpressure (+20%, chance based); EMP Boarding (+25% for 35% more fuel) and Hull Breaker, which ramps up between 6 and 10 cells;

- the alliance territory bonus when attacking on alliance ground.

### Critical and double hits

Crit chance is the hull's 1%, plus the weapon's crit, plus captain crit bonuses, plus a *Knowledge* term, all times one plus crit research. Energy blasters get extra crit chance on any round the fleet moved. Crit damage is +35% base, times crit damage research, plus captain crit damage, plus the Knowledge term, minus the enemy's crit reduction research.

The Knowledge term is $0.01 \times (1 + \text{Knowledge}/12)$, so a captain with 120 Knowledge adds 11 points of crit chance and 0.11 of crit damage. A double hit doubles the damage; it comes from captain skills and EMP research at ten cells or more.

### Damage type against armor type

Every weapon has a damage type and every hull an armor type. The multiplier:

| Armor \ damage | blast | electro | flechette | thermic |
|---|---|---|---|---|
| chrodanium | 1.50 | 1.00 | 0.75 | 0.50 |
| nanite | 0.50 | 1.50 | 1.00 | 0.75 |
| plasma | 0.75 | 0.50 | 1.50 | 1.00 |
| hardisteel | 1.00 | 0.75 | 0.50 | 1.50 |

That is a threefold swing between the best and the worst matchup, which makes reading the enemy's armor type the biggest single lever in the game. Defender research adds a flat reduction per armor type; artillery research adds bonuses against armor.

### Formation

Hitting a fleet from behind is +10% damage, and the target loses stability for that volley (more ships die, section 10). Hitting from a side is +20%. Firing from your own second row is −10%, from the third row −25%. Facing comes from movement: a fleet turns toward its target before it fires, so you flank by shooting before the enemy has turned.

### Icarus

The target hull's *Icarus* (0.8 to 11.6 by hull), plus captain bonuses, times one plus defense research, cuts damage with diminishing returns:

$$\text{reduction} = \frac{0.03\,I}{0.03\,I + 1} \qquad I = 5 \to 13\%, \quad I = 10 \to 23\%, \quad I = 20 \to 37.5\%$$

Armor modules with an Icarus value only count once the slot's shields are down. Energy blaster research ignores part of it, and a few captains ignore it entirely.

## 8 Where the damage goes

For each weapon group, in this order:

1. Shield modules absorb a flat amount per module per ship (Kinetic Dampener 10, plus 25 against flechette; Omnibarrier 37), times shield module research and ship count. Only while the slot still has shields, and only if the fuel is paid. Unused absorption carries over to the next weapon group of the same volley.
2. What is left hits the shield pool.

3. Penetration, from research (up to 15%, minus the enemy's reduction), sends that share of the pre-shield damage straight to the hull, on top of what the shields took.
4. Armor modules absorb a flat amount per module per ship, same shape as shields.
5. Reactive plating (Safeguard Mantle divides damage by 1.25 once armed) and captain damage reduction.
6. What is left hits the hull pool.
7. Reflection modules (Wraithskin) and counter-attack modules (Retaliark) send damage back to the attacker's slot.

Shields and hull are pools per slot: per-ship value times ships. Damage does not pick individual ships.

## 9 Shields and repairs

Shields do not come back on their own. Repair modules (Aegis Regenerator, Framework Regenerator, about 55 per ship per round) restore shields or hull every round, scaled by regeneration research, and they cost tritium.

## 10 Steadiness, or how many ships die

This is the one people ask about most, and the one most often explained wrong. Damage goes into the slot's hull pool; steadiness decides how many ships that damage kills in *one* attack:

$$\text{hull damage per ship lost} = \text{hull armor} \times \text{steadiness} \times (1+\text{bonuses}) \qquad \text{ships lost} = \left\lfloor \frac{\text{hull damage this attack}}{\text{that number}} \right\rfloor$$

Hull steadiness runs from 1.0 to 1.7. Bonuses come from stability research and armor modules with a steadiness value (Project Icarus 0.8) once the slot's shields are down, scaled by gyro research. Being hit from behind takes 0.5 off the bonus for that attack.

The count only looks at this attack's damage. A dozen small volleys can drain the pool without killing a single ship, and then the slot is gone all at once when the pool reaches zero. Big volleys kill ships; chip damage does not, until it does. A few captains have "maximum stability", which means no ship is lost until the pool is empty.

## 11 Scatter

Part of the damage dealt to a slot spreads to its neighbours, and the pattern depends on the weapon: artillery spreads along the target's row, energy blasters along its column, rockets to every other slot, EMP does not spread. The share comes from dispersion research (artillery up to 25%, energy blaster 20%, rocket 10%), artillery Ricochet adds 30% when it procs, and rocket Salvo Barrage adds a bit against heavier targets. Scatter hits shields then hull of the other slots; the defender's dispersion research trims it.

## 12 Captain stats, one line each

| | |
|---|---|
| Aiming | +1% hit per 12 points |
| Evasion | −1% enemy hit per 12 points |
| Knowledge | crit chance and crit damage |
| Velocity | initiative |
| Expertise | S/A/B/C/D per weapon and hull class, +30% to −30% attack |
| Rarity and stars | ship cap per slot, skill trigger rate |
| Relics | extra Aiming, Evasion, Knowledge or Velocity |

Skills trigger on a percentage that grows with the captain's stats. Between them they can raise attack, force crits, ignore maneuverability, evasion, Icarus or every defensive module, skip shields, reflect everything, reduce damage, spread damage to slots of their choice, or waive the fuel cost.