

ACCURACY OVERHAUL

In the true tradition of Sacred Phoenix, the accuracy check does not escape its overhaul. The major change is the injection of an affinity factor for debuff moves, which can result in resistance from the target despite the fact that the attack hit it.

The calculations are naturally made in float and rounded at the last moment.

There have also been a few rebalances, including reduction in infinite accuracy cases and an increase in the means to bypass evasion boosts.

The cause of an attack's failure is also perfectly identified and notified to the player (target out of range, resistance, missed target, evasion or evasion by friendship).

hud

Attacks with infinite accuracy are noted with the infinity sign (∞) on the menus.

Accuracy calculation – formula

The formula is called only:

- If the precision check is required (terrain moves are exempt from this).
- If we are not in a case of forced success or infinite accuracy
- If we are not in a case of forced failure (target out of range or zero affinity)

Otherwise, the following formula is applied.

Accuracy formula

$$\text{Accuracy (\%)} = \text{Move}_{\text{acc}} \times \text{Affinity} \times \text{Acc}_{\text{stat}} \times \text{Acc}_{\text{mod}} / \text{Eva}_{\text{stat}} / \text{Eva}_{\text{mod}}$$

 **Move acc = Move accuracy**

The true accuracy of the move taking into account the STAB (Toxic) and the field effects which directly impact this accuracy.

 **Affinity**

Tiered factor related to affinity. Already calculated upstream during preliminary tests.

Varies **from -0.5 (absorption) to 2 (critical vulnerability)** if it is a debuff or lethal move.

Is **1** in all other cases.

Affinity is ignored if the move is used to disable immunities.

Acc stat = Accuracy stat

This is the launcher's Accuracy stat. Its value depends on the stage of the stat. Is 1 at neutral stage or if the target has the Unaware ability.

Stage	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
Value	0.3333	0.375	0.4286	0.5	0.60	0.75	1	1.3333	1.6667	2	2.3333	2.6667	3

Acc mod = Accuracy modifier of the launcher

It is all the factors on the launcher's side that affect its accuracy:

- Field effects that benefit (or handicap) the launcher, such as Fog.
- Its ability
- Its held item

Eva stat = Evasion stat

This is the target's Evasion stat. Its value depends on the stage of the stat. Is 1 at neutral stage or if the launcher has the Unaware ability.

The table is the same as with the Accuracy stat.

Eva mod = Evasion modifier of the target

- Field effects that benefit (or handicap) the target, such as Gravity.
- Its ability
- Its held item
- The friendship factor

Note that the positive changes to the stat and evasion modifier may be partially or completely negated if certain conditions occur.

Accuracy calculation – details

Success or failure guaranteed

A first skimming is done by eliminating unambiguous situations:

- Terrain and Entry Hazards moves are exempt from the accuracy check and **always succeed** in hitting their target (although their effects can be blocked or bounced, but this is not accuracy).
- Except in case of absorption (negative affinity) ...
 - If the target is asleep and the attack cannot affect a Pokémon in that state, the attack **fails** and a message indicates why. Note that a loud debuff attack launched against a lightly sleeping Pokémon will wake it up in addition to failing.

- If it's an offensive or debuff move and it's aimed at an ally who has the Telepathy ability, a message indicates that this target is avoiding its allies' attacks and the attack **misses**.
 - If the Pokémon is protected by its Soundproof or Bulletproof ability, the ability activates, the attack **fails** and an immunity message is displayed.
 - A target under Lock-On / Mind Reader allows you **to hit it for sure**, even in case of semi-invulnerability (Dig, Fly, Dive, etc ...). Note that such an attack will have no effect in case of zero affinity.
 - Attacks that bypass a specific semi-invulnerability status (Earthquake during the first turn of Dig, Hurricane during the first turn of Fly ...) are calculated with their usual accuracy as if the target were in range.
 - All Z-Moves can hit a target out of range (and **will definitely hit** due to their infinite accuracy), but they will lose 75% of their power.
 - Outside of the above cases, if a Pokémon is targeted during its semi-invulnerability phase, the phrase “*But [target] is out of range!*” will be displayed and the attack will **miss**. This sentence is also provided in case of targeting a Pokémon out of range on a triple battle (not yet implemented in the game engine).
- Note: The No Guard ability is nerfed does not allow to hit a target out of range anymore. Nevertheless, the accuracy of attacks launched and suffered remains infinite, including for the 4 lethal attacks (see “Infinite accuracy”).

Influence of type affinity

- If the attack is used to disable an immunity (Odor Sleuth, Foresight or Miracle Eye) or if it is a buff move, the type affinity is not taken into account. The neutral rate of 1 will be used.

** If the above condition is false, the affinity is calculated **

- If there is absorption (strictly negative affinity), a neutral affinity coefficient (1) is applied, and the accuracy check continues with an “**Absorbed**” tag.
- If the affinity is strictly zero (immunity), the accuracy **returns 0**, the message “*It doesn't affect [target] ...*” is displayed, and the calculations end there. Immunities to powder attacks for Grass-type and the insensitivity of the Ghost-type to debuffs of their type are checked here.
- If it is neither a lethal nor a debuff attack, the neutral rate of 1 is returned.
- Otherwise, an affinity coefficient is calculated according to the steps of the **Tiered Multiplier***, then according to this result ...
 - # If the affinity coefficient is 1 or more, it multiplies to the accuracy of the attack.
 - # Otherwise, a neutral rate is applied and the calculated value will intervene downstream on the final calculation of the accuracy. (This distinction will make it possible to detect whether the attack has failed or has been resisted).

In practice, here's what it looks like with a few examples, with a neutral modifier for accuracy and evasion:

Example	Type	Final accuracy in %*					
<i>Affinity level</i>		<i>Null</i>	<i>Very Low</i>	<i>Low</i>	<i>Normal</i>	<i>High</i>	<i>Very High</i>
<i>Tiered affinity ratio</i>		×0	×0,4	×0,7	×1	×1,5	×2
Tackle (offensive)	Normal	0	100	100	100	100	100
Curse (buff)	Normal	∞	∞	∞	∞	∞	∞

Spectral Curse	Ghost	0	48	84	120	180	240
Confuse Ray	Ghost	0	40	70	100	150	200
Leech Seed	Grass	0	36	63	90	135	180
Toxic	Poison	0	34	59.5	85	127.5	170
Will-O-Wisp	Fire	0	32	56	80	120	160
Poison Powder	Grass	0	30	52.5	75	112.5	150
Grass Whistle	Grass	0	26	45.5	65	97.5	130
Hypnosis	Psychic	0	24	42	60	90	120
Supersonic	Normal	0	22	38.5	55	82.5	110
Lethal moves**	(Varies)	0	12	21	30	45	60

* Values to be divided by 2 if it's a debuff attack and if the target has the Wonder Skin ability active.

** At equal level between the launcher and the target, target not immune by Sturdy or its divine blood

Calculation of the true accuracy of the attack

This step of the calculation recovers the basic accuracy of the move. It will be weighted by certain factors if one of the following conditions is met:

- If the attack has 0 accuracy in the database, it means that its accuracy is infinite.
- The accuracy of Thunder and Hurricane is increased by a factor of 1.5 under rainy or stormy weather instead of being infinite. This corresponds to a base rate of 112.5% accuracy.
- The accuracy of Thunder and Hurricane is divided by 1.5 under the sun. This corresponds to a base rate of 50%. The divisor is increased to 2 if there is heavy sun.
- Blizzard's accuracy is:
 - multiplied by 1.5 (i.e., 112,5%) under hail (instead of being infinite)
 - multiplied by 1.2 (i.e., 90%) under the rain
 - divided by 1.25 (i.e., 60%) under the sun
 - divided by 1.5 (i.e., 50%) under the heavy sun
- Toxic nerf: its base accuracy is lowered to 85%. If launched by a Poison Pokémon, this base rate is multiplied by 1.5 (i.e., 127.5%) instead of having infinite accuracy and even hitting Pokémon out of range (which was totally abused, being one of the most centralizing attacks in the PvP metagame).
- The 4 lethal attacks gain 1% accuracy per level of difference in favor of the attacker. They systematically fail in 4 cases:
 - The target has a higher level than the attacker (already checked upstream).
 - The target has the Sturdy ability and this ability is active (already checked upstream).
 - The target is a Legendary who is a Master of Life or Death (Ho-Oh, Giratina, Arceus, Xerneas, Yveltal and Zygarde) (already checked upstream).
 - The type affinity is zero (checked above). Note that the Ice-type is immune to attacks of the same type, thus to Sheer Cold.
- Some attacks are deliberately more accurate than 100%. This is for example the case of Struggle, which has a basic accuracy of 150%. This is a rebalancing halfway between the classic 100% and infinite accuracy.

Infinite accuracy or evasion nullified

- If the launcher possesses the No Guard ability or if the move is rated at 0 accuracy on the database, the accuracy becomes infinite and the move **automatically succeeds**.
- If the target possesses the No Guard ability or has recently used Glaive Rush, its evasion is nullified and the move aimed at it **automatically succeeds**.

Calculation of stats and multipliers



Precision and Evasion stat stage

As in Gen 2, the value corresponding to the stage of the launcher's Accuracy stat (varying from 0.4286 to 2.3333 - neutral stage to 1) is multiplied by the target's Evasion stat (same amplitude). The cumulative amplitude thus varies from 0.1837 to 5.4444.

So, it's not capped between 0.3333 and 3. However, the limitation of stats variations between -4 and 4 limits this magnitude in Sacred Phoenix and avoids reaching 0.1111 or 9.



Weather and field effects

- The Fog multiplies the accuracy of all fighters by 0.75, unless they have the Fairy-type or the Keen Eye ability.
- Gravity multiplies the evasion of all fighters by 0.6, except for Time-Space Masters.
- Sand Veil and Snow Cloak multiply the holder's evasion by 1.25 if the right weather or terrain is present.



Held items

- Wide Lens and Zoom Lens remain unchanged (accuracy $\times 1.1$ in the first case, accuracy $\times 1.2$ if the Pokémon attacks after its target in the second case).
- Bright Powder multiplies the wearer's evasion by 1.118, which is roughly equivalent to the attacker's accuracy multiplied by 0.9.
- The Lax Incense no longer gives an evasion bonus so as not to have a duplicate with the Bright Powder item. Instead, it reduces the chance of a critical hit by 15%.



Abilities

- Unaware ignores the launcher's Accuracy stat stage (both positive and negative) if the target has this ability.
- Unaware ignores the target's Evasion stat stage (both positive and negative) if the launcher has this ability
- Compound Eyes increases launcher's accuracy by 1.3.
- Hustle multiplies the launcher's accuracy by 0.8 if it uses a physical attack.
- Tangled Feet multiplies the evasion by 2 if the Pokémon with that ability is in a state of madness.

- Keen Eye protects its owner from drops in its Accuracy and Evasion stats, unless the ability is neutralized or bypassed.
- Accuracy is multiplied by 1.1 if an ally (launcher included) has the Victory Star ability.

Friendship

- If the targeted Pokémon has a friendship equivalent to 4 or more affection's hearts (900/1023), that target's evasion is multiplied by 1.118, which is roughly equivalent to the attacker's accuracy multiplied by 0.9.

Cancellation of evasion increases

- Attacks that double their power on a minimized target no longer have infinite accuracy, but ignore all of the target's dodge increases.
- A target under the effect of Telekinesis has all its evasion increases ignored. This evasion cancellation does not apply if the target was already able to fly or levitate, even without this debuff.
- A target under Odor Sleuth, Foresight or Miracle Eye has all of its evasion increases ignored.
- The Keen Eye ability allows its owner to ignore all of the target's evasion bonuses.
- If the target knows that it will absorb an attack aimed at it ("**Absorbed**" tag activated), all its dodging increases (stat stage, friendship and bonus) are ignored. Nevertheless, the launcher can still miss if its accuracy is below 100%. (That's why the accuracy check will always be done in this case, contrary to the cases of simple immunity where a failure doesn't change anything to the result).
- Paralyzing a Pokémon cancels half of its evasion bonuses. The friendship bonus is not affected.
- Sleeping or freezing a Pokémon will negate all of its evasion bonuses, including the friendship bonus.

Note: Wonder Skin can't be ignored here, as it plays into the affinity modifier.

Final calculation of the accuracy

After taking into account all the multipliers, the accuracy is adjusted by [the haxx smoother](#), multiplied by 655.36 (to go from a percentage to a 65536 base), rounded, then is compared to a random number between 0 and 65535 (inclusive).

- If the attack hits (roll of $d65536 < \text{calculated accuracy}$)
 - it **hits the target** if the affinity modifier is equal or superior to 1
 - it will be **absorbed** if the affinity modifier is negative (positive effect on the target)
 - If the affinity modifier is strictly between 0 and 1, the target has a probability of resistance. This value is weighted by the final percentage of accuracy if it is greater than 100% or by 100 otherwise, then rounded to obtain the resistance threshold. A d100 is then rolled.
- # If the d100 is less than the resistance threshold, the attack **is a hit**.

If not, the target **resists** the attack and the message "*[Target] resisted the attack!*" is displayed.

- If not, the attack **has missed**. The cause of this failure is checked.

- If $d65536 \text{ roll} < \text{calculated accuracy} \times 1.118$ and the targeted Pokémon had a friendship with 4 or more hearts, this is a dodge by friendship (the attack would have hit without this bonus). The friendship evasion sentence "*[Target] hears read [Trainer]'s mind and avoided the move!*" is displayed.

- If the roll of $d65536 < \text{calculated accuracy} \times \text{Evasion stat} \times \text{evasion modifier}$, it means that the attack failed due to an increase in evasion by the target. The classic dodge phrase "*[Target] avoided the attack!*" is displayed.

- If the attack had no launcher (case of Future Sight / Doom Desire), the generic failure sentence "*But it failed!*" is displayed.

- Otherwise, it is the launcher who has aimed badly (the most frequent case). The sentence "*[Attacker] misses its attack!*" is then displayed.