Aquarium

- Water quality
- Fish
- Log

Water quality

Units

L	Gallons (US)
1	0.264
3.785	1
6	~1.5
12	~3
20	~5
30	~8
40	~10

Total Ammonia Nitrogen (NH_3/NH_4^+) to PPM

pH	Temperature													
	42.0 (°F)	46.4	50.0	53.6	57.2	60.8	64.4	68.0	71.6	75.2	78.8	82.4	86.0	89.6
	6 (°C)	8	10	12	14	16	18	20	22	24	26	28	30	32
7.0	.0013	.0016	.0018	.0022	.0025	.0029	.0034	.0039	.0046	.0052	.0060	.0069	.0080	.0093
7.2	.0021	.0025	.0029	.0034	.0040	.0046	.0054	.0062	.0072	.0083	.0096	.0110	.0126	.0150
7.4	.0034	.0040	.0046	.0054	.0063	.0073	.0085	.0098	.0114	.0131	.0150	.0173	.0198	.0236
7.6	.0053	.0063	.0073	.0086	.0100	.0116	.0134	.0155	.0179	.0206	.0236	.0271	.0310	.0369
7.8	.0084	.0099	.0116	.0135	.0157	.0182	.0211	.0244	.0281	.0322	.0370	.0423	.0482	.0572
8.0	.0133	.0156	.0182	.0212	.0247	.0286	.0330	.0381	.0438	.0502	.0574	.0654	.0743	.0877
8.2	.0210	.0245	.0286	.0332	.0385	.0445	.0514	.0590	.0676	.0772	.0880	.0998	.1129	.1322
8.4	.0328	.0383	.0445	.0517	.0597	.0688	.0790	.0904	.1031	.1171	.1326	.1495	.1678	.1948
8.6	.0510	.0593	.0688	.0795	.0914	.1048	.1197	.1361	.1541	.1737	.1950	.2178	.2422	.2768
8.8	.0785	.0909	.1048	.1204	.1376	.1566	.1773	.1998	.2241	.2500	.2774	.3062	.3362	.3776
9.0	.1190	.1368	.1565	.1782	.2018	.2273	.2546	.2836	.3140	.3456	.3783	.4116	.4453	.4902
9.2	.1763	.2008	.2273	.2558	.2861	.3180	.3512	.3855	.4204	.4557	.4909	.5258	.5599	.6038
9.4	.2533	.2847	.3180	.3526	.3884	.4249	.4618	.4985	.5348	.5702	.6045	.6373	.6685	.7072
9.6	.3496	.3868	.4249	.4633	.5016	.5394	.5762	.6117	.6456	.6777	.7078	.7358	.7617	.7929
9.8	.4600	.5000	.5394	.5778	.6147	.6499	.6831	.7140	.7428	.7692	.7933	.8153	.8351	.8585
10.0	.5745	.6131	.6498	.6844	.7166	.7463	.7735	.7983	.8207	.8408	.8588	.8749	.8892	.9058
10.2	.6815	.7152	.7463	.7746	.8003	.8234	.8441	.8625	.8788	.8933	.9060	.9173	.9271	.9389

Drop test result * 0.0131 @ 24C, 7.4PH = unionized ammonia.

Dangerous level for fish is 0.05.

Nitrogen Cycle

- Source

1. **Ammonia (NH_3):** Fish produce waste, and uneaten food decays. Both of these create toxic ammonia.
2. **Nitrite (NO_2):** A first type of beneficial bacteria consumes this ammonia and converts it into nitrite. This is where your problem starts. While it's a necessary step, nitrite is *extremely* toxic to fish.
3. **Nitrate (NO_3):** A second type of beneficial bacteria then consumes the nitrite and converts it into nitrate. Nitrate is far less harmful and is managed with regular water changes and live plants.

> **Ammonia (NH_3)** and **Nitrite (NO_2)** are toxic to fish!

> Nitrite poisoning is often called "Brown Blood Disease." It gets this name because nitrite enters a fish's bloodstream and interferes with hemoglobin, the part of the blood that carries

> oxygen. It essentially turns their blood a brownish color and prevents it from transporting oxygen effectively.
> Even if there's plenty of oxygen in the water, a fish suffering from nitrite poisoning is slowly suffocating from the inside. This is why you might see them gasping at the surface, breathing rapidly, or acting very weak. **Any level of nitrite above 0 ppm (parts per million) is stressful and potentially lethal.**

Reducing Nitrite (NO?)

- Perform a 50% water change
- Add a detoxifier
- Increase aeration
- Stop feeding fish for 24-48 hours

Sustain low level:

- Regularly replace water
- Add aquarium salt with water changes - promote gill function
- Good filtration system - clear out all waste and pollutants from the tank; raising oxygen levels in the tank and providing living space for nitrifying bacteria to thrive.
- Add nitrification bacteria

The Typical Cycling Pattern

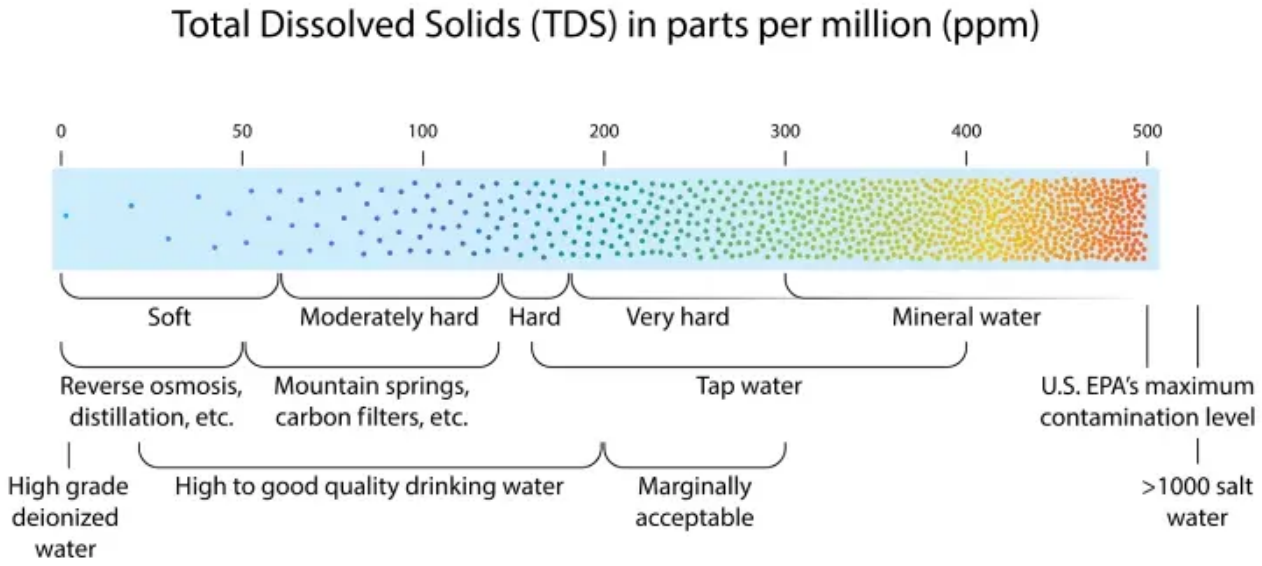
- Source: https://www.shrimpkeepers.com/parameters/nitrite/

1. **Week 1-2**: Ammonia (NH_3) rises, no nitrite (NO_2)
2. **Week 2-4**: Ammonia-eating bacteria establish, ammonia drops, nitrite (NO_2) SPIKES
3. **Week 4-6**: Nitrite-eating bacteria establish, nitrite (NO_2) drops, nitrate (NO_3) rises
4. **Week 6+**: Cycle complete - both ammonia (NH_3) and nitrite (NO_2) at 0

> Adding ammonia and bacteria to aquarium without fish can speed up the process.

General hardness

- https://waternitylab.com/water-hardness-dh-to-ppm/



- **dH** or ***d****egree of* ***H****ardness* (also referred to as the ***d****egree of* ***G****eneral* ***H****ardness* (**dGH**) or German degree) is a unit of water hardness equal to **10 mg/L of calcium oxide** (CaO).
- **PPM** or ***P****art* ***P****er* ***M****illion* is a unit of water hardness equal to **1 mg/L of calcium carbonate** ($CaCO_3$).

PPM = dGH × 17.848

dH	PPM
1.0	18
3.0	54
5.0	90
7.0	125
9.0	160

Fish

Species	Min aquarium size [L]	pH	°C	dGH	Size [cm]
Neon tetra	40	6-7.5	22-26	1-10	4
Ember tetra	40	6-7.5	22-28	4-10	2-3
Corydoras - black venezuela, albino	60	6-7.5	18-26	3-10	6-7
Dwarf shrimp (neocaridina) - yellow	20	6.5-7.5	22-26	4-10	5
Dwarf shrimp (neocaridina) - blue	20	6.5-7.5	22-28	4-8	4
Dwarf shrimp (neocaridina) - blue jelly	20	6.8-7.8	20-29	3-10	2
~~Dwarf shrimp - red bee, black bee~~	~~20~~	~~6-7.5~~	~~20-24~~	~~4-6~~	4
Assassin snail (Anentome helena)	40	6.5-7.5	21-28	2-15	3
Siamese Algae Eaters	80	6.5-7.5	24-28	5-15	10
Adolfo's Corydoras	60	6-7.5	22-26	3-10	5-6
Min/Max	**80**	**6.8-7.5**	**24-24**	**4-8**	**10**

Log

Id	Fish	Introduced	Perished
~~1~~	~~Neon tetra~~	2026-01-09	2026-01-11
~~2~~	~~Neon tetra~~	2026-01-09	2026-01-20
~~3~~	~~Neon tetra~~	2026-01-09	2026-01-21
~~4~~	~~Neon tetra~~	2026-01-09	2026-01-28
5	Neon tetra	2026-01-09	
~~6~~	~~Pleco Bulldog~~	~~2026-01-09~~	2026-01-18
7	Neon tetra	2026-01-17	
8	Neon tetra	2026-01-17	
9	Neon tetra	2026-01-17	
~~10~~	~~Ember tetra~~	2026-01-17	2026-01-27
~~11~~	~~Ember tetra~~	2026-01-17	2026-01-30
12	~~Ember tetra~~	2026-01-17	2026-03-13
~~13~~	~~Ember tetra~~	~~2026-01-17~~	2026-03-25
~~14~~	~~Ember tetra~~	~~2026-01-17~~	2026-03-25
15	Ember tetra	2026-01-17	
16	Assassin snail	2026-01-17	
17	~~Dwarf shrimp yellow~~	2026-01-17	2026-03-18
18	Dwarf shrimp blue	2026-01-17	
19	Dwarf shrimp red bee	2026-01-17	

Id	Fish	Introduced	Perished
20	~~Dwarf shrimp black bee~~	2026-01-17	2026-03-10
21	Corydoras black	2026-01-17	
~~22~~	~~Corydoras albino white~~	2026-01-17	2026-01-29
23	Corydoras albino ping	2026-01-17	
24	Blue jelly shrimp	2026-03-10	
25	Blue jelly shrimp	2026-03-10	
26	Blue jelly shrimp	2026-03-10	
27	Blue jelly shrimp	2026-03-10	
28	Assassin snail	2026-03-10	
29	Assassin snail	2026-03-10	
30	Assassin snail	2026-03-10	
31	Siamese Algae Eaters	2026-04-17	
32	Siamese Algae Eaters	2026-04-17	
33	Siamese Algae Eaters	2026-04-17	
34	Albino Corydoras	2026-04-17	
~~35~~	~~Adolfo's Corydoras~~	~~2026-04-17~~	2026-04-18

2025-12-27 - Started aquarium.

2025-12-29 - First plants added

2026-01-09 - Added 5x neon tetras and pleco buldog.

2026-01-11 - Lost neon tetra (1).

2026-01-17 - Added 3x neon tetras, 5x ember tetras, 4x shrimp (blue, yellow, red and black), 3x corydoras (2x albino, black)

2026-01-18 - Noticed white spots on neon tetras.

2026-01-18 - Lost pleco bulldog (6).

2026-01-20 - Lost neon tetra (2).

2026-01-21 - Lost neon tetra (3).

2026-01-21 - Start for white spot treatment. Ember tetras got white spots.

2026-01-23 - Treatment done. No white spots, fins a bit damaged on some neon tetra.

2026-01-24 - 25% water change and bacteria added.

2026-01-25 - Noticed eggs in yellow ship.

2026-01-26 - Nitrite (NO_2) 2 mg/l

2026-01-26 - 50% (50% RO, 50% tap) water change and bacteria added.

2026-01-11 - Lost ember tetra (10). Found stuck behind filter.

2026-01-27 - Nitrite (NO_2) 0.5 mg/l; added CO2 for plants.

2026-01-28 - Lost neon tetra (28). Found stuck behind filter.

2026-01-29 - Nitrite (NO_2) 1 mg/l; PH 7.2, temperature 23.4 C^o. Ammonia 0.0021 PPM (0.25*0.0083).

2026-01-29 - Changed 10% water.

2026-01-29 - Lost corydoras albino white (29).

2026-01-29 - Changed 50% of water.

2026-01-29 - Tested Nitrite (NO_2) 0.25 mg/l.

2026-01-30 - Lost ember tetra (11). Found stuck behind filter.

2026-01-30 - Replaced 10% water. Nitrite (NO_2) 0.25 mg/l.. Added carbon; carbon oxide < 15 mg/l. Filter clean.

2026-01-31 - Water tests are clear with 0 level of Nitrite (NO_2).

2026-02-02 - Nitrite (NO_2) 0.25 mg/l.. Replaced 25% of water. Added salt (for 8 liters); primer with ammonia and nitrite binder (for 20 liters).

2026-02-03 - Added air pump to the aquarium.

2026-02-03 - Nitrite (NO_2) 0.25 mg/l.. Replaced 25% of water. Added bacteria and binder.

2026-02-03 - Tested zero Nitrite (NO_2).

2026-02-04 - Tested zero Nitrite (NO_2).

2026-02-05 - Nitrite (NO_2) 0.25 mg/l.. Replaced 25% of water. Added bacteria and binder.

2026-02-05 - Tested zero Nitrite (NO_2).

2026-02-07 - Nitrite (NO_2) 0.25 mg/l.. Replaced 25% of water. Added bacteria and binder.

2026-02-07 - Replaced filter with JBL i80. Using sponge + ceramic filters. Added pieces of old filter sponge.

2026-02-07 - Tested zero Nitrite (NO_2). Tested 0.003 Ammonia (NH_3/NH_4).

2026-02-11 - Nitrite (NO_2) 0.25 mg/l.. Replaced 25% of water. Added binder.

2026-02-12 - Tested zero Nitrite (NO_2). Low CO^2, added carbon.

2026-02-17 - Tested zero Nitrite (NO_2).

2026-02-28 - Tested zero Nitrite (NO_2). High (50) Nitrate (NO_3). Low CO^2 - added carbon. Replaced 25% of water. Cleaned water filter.

2026-02-28 - Setup of hospital aquarium using 25% of water form the main one. Added bacteria.

2026-03-10 - Dwarf shrimp black bee (20) perished.

2026-03-10 - Added 4 blue jelly shrimps to Hospital aquarium. Added 3 Assassins snail to main aquarium.

2026-03-11 - Hospital aquarium tests zero ammonia; but 0.5 Nitrite (NO_2). Added 2 liters of RO water, bacteria starter and binder.

2026-03-13 - Ember tetra (12) perished.

2026-03-13 - Test panel: pH 7.5, Nitrite 0.25 (NO_2), Ammonia 0 (NH_3), Nitrate 40 (NO_3), KH 12, GH 14.

2026-03-13 - Replaced 25% of water with RO water.

2026-03-18 - Dwarf shrimp yellow (17) perished.

2026-03-18 - Test panel: pH 7.0, KH 9, GH 9.

2026-03-25 - Ember 13 and 14 perished.

2026-03-26 - 25% water change. All stats nominal.

2026-04-10 - 25% water change. Moved two Neons to hospital for treatment (Esha) of white spot (mouth) on one of them.

2026-04-17 - Set up new hospital for two tetras for curation for cotton wool.

2026-04-17 - Added new fish to hospital: 3x Siamese Algae Eaters (31, 32, 33), one Albino (34) and one Adolfo's (35) Corydoras.

2026-04-17 - Adolfo's Corydoras having issues swimming and staying upright. Damage on top fin.

2026-04-17 - Hospital is testing low for CO^2. GH <7, KH 6, PH 7.2.

2026-04-17 - Main is testing high on NO^3 50. GH >7, KH 15, PH 7.4.

2026-04-18 - Adolfo's Corydoras (35) perished.

2026-04-21 - Low level of Ammonia in secondary hospital. 30% water change.

2026-04-23 - Very high level 1.0 NO^2 in hospital. Replacing 30% of water. Slow filter flow; filter cleanup.

2026-04-23 - Elevated NO^3 level in main. Replaced 25% of water and cleaned the filter.

2026-04-24 - Ammonia level in secondary hospital slightly elevated (0.0025). In main hospital still elevated NO^2 at 0.25. Small water change in both.