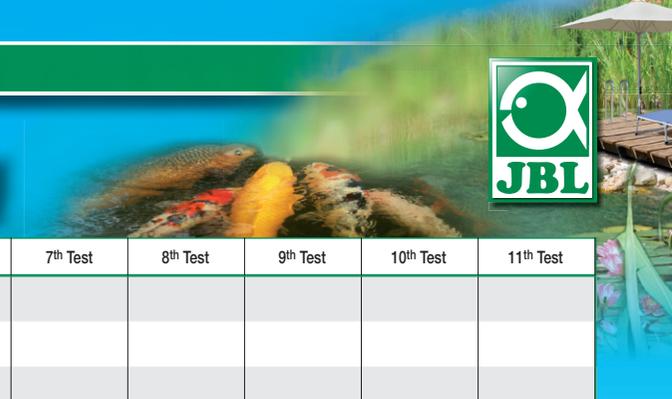


Professional analysis with JBL

Information on the Internet at www.JBL.de

Water analysis



	Required value Fresh Water with Fish	Required value Fresh Water Without / Few Fish	Required value Garden pond	Required value Salt Water	1st Test	2nd Test	3rd Test	4th Test	5th Test	6th Test	7th Test	8th Test	9th Test	10th Test	11th Test
Date, hour															
Site/ aquarium / tap															
Temperature (°C)	23 - 28	23 - 26	4 - 25	24 - 28											
Base measurements, always take															
KH Carbonate hardness (°dKH)	5 - 12	3 - 8	4 - 12	7 - 10											
pH Acidity	6.5 - 7.5	6.0 - 7.0	7.5 - 8.5	7.9 - 8.5											
GH Total hardness (°dGH)	8 - 25	3 - 10	6 - 20												
Fish dying															
NH ₄ Ammonium (mg/l)	< 0.25	< 0.25	< 0.1	0 - 0.25											
NO ₂ Nitrite (mg/l)	0 - 0.2	0 - 0.2	0 - 0.2	0 - 0.2											
Cu Copper (mg/l)	0 - 0.3*	0 - 0.3*	0	0 - 0.3											
O ₂ Oxygen (mg/l)	5 - 8	5 - 10	5 - 20	5 - 10											
Optional measurements for problems															
Algae and plant growth															
Conductivity	150 - 800 µS/cm	150 - 600 µS/cm	250 - 800 µS/cm	49 - 52 mS/cm											
NO ₃ Nitrate (mg/l)	0 - 50	10 - 30	0 - 10	0 - 20											
PO ₄ Phosphate (mg/l)	0 - 0.4	0.1 - 1.5	< 0.05	0 - 0.1											
SiO ₂ Silicic acid (mg/l)	0 - 2.0	0 - 2.0	0 - 2.0	0 - 1.0											
Fe Iron (mg/l)	0.05 - 0.2	0.1 - 0.5	0.05 - 0.1	0.002 - 0.05											
K Potassium (mg/l)	10 - 30	10 - 30	-	-											
Mg Magnesium (mg/l)	5 - 10	5 - 10	-	-											
CO ₂ Carbon dioxide (mg/l)	15 - 35	20 - 35	-	0.04 - 2.5											
Only in marine tanks															
Ca Calcium (mg/l)	-	-	-	400 - 440											
Mg Magnesium (mg/l)	-	-	-	1200 - 1600											
Density at 25°C	-	-	-	1.022 - 1.024											

* only for the treatment of oodinium



JBL Test Sets are expedition-tested.

Note on CO₂

First measure the carbonate hardness (KH) and pH level. In the table adjacent, find the line or column with the carbonate hardness or pH value measured. The resulting CO₂ content is shown at the intersection of the corresponding line or column. The range with sufficient CO₂ content for optimum plant growth and pH level without negative effects for fish is highlighted.

	Carbonate hardness and carbon dioxide							
	mg CO ₂ at carbonate hardness (°d)							
	KH2	KH4	KH6	KH8	KH10	KH12	KH14	KH16
pH 8,0	1	2	2	3	4	5	6	6
pH 7,8	1	3	4	5	6	8	9	10
pH 7,6	2	4	6	8	10	12	14	16
pH 7,4	3	6	10	13	16	19	22	25
pH 7,2	5	10	15	20	25	30	35	40
pH 7,0	8	16	24	32	40	48	56	64
pH 6,8	13	25	38	51	63	76	89	101
pH 6,6	20	40	60	80	100			
pH 6,4	32	64	95					

■ recommended range



↑ Increasing levels - your measurement levels were below the recommended levels

↓ Reducing levels - your measurement levels were above the recommended levels

Parameter	Fresh Water with Fish	Fresh Water Without / Few Fish	Garden pond	Salt Water
Temperature	JBL ProTemp S Heater-Stat	JBL ProTemp S Heater-Stat	Pond heater.	JBL ProTemp S Heater-Stat
KH Carbonate hardness	JBL AquaDur Malawi/Tanganjika See: JBL Aqua-Dur Malawi/Tanganjika.	JBL AquaDur, Lake Malawi / Tanganyika: JBL AquaDur Malawi / Tanganyika	JBL StabilPond.	JBL CalciuMarin, calcium reactor.
pH Acidity	JBL AquaDur, JBL, pH Plus, strong water surface movement, less CO ₂ supply, aeration.	JBL AquaDur, JBL pH-Plus.	Seldom necessary. pH stabilizing with JBL StabiloPond usually sufficient!	JBL pH-Plus, however carbonate hardness (KH) increase with JBL CalciuMarin usually sufficient!
GH Total hardness	JBL AquaDur	JBL Mg Macroelements	JBL StabiloPond.	Unnecessary
NH₄ Ammonium	Unnecessary	Unnecessary	Unnecessary.	Not appropriate
NO₂ Nitrite	Not appropriate as nitrite is toxic!	Not appropriate as nitrite is toxic!	Not appropriate as nitrite is toxic!	Not appropriate as nitrite is toxic!
Cu Copper	JBL Oodinol Plus 250, but only for treatment of diseases! Do not use for invertebrate animals	JBL Oodinol Plus 250, but only for treatment of diseases! Do not use for invertebrate animals	Not appropriate as harmful to micro-organisms and invertebrates.	JBL Oodinol Plus 250, but only for treatment of diseases. Do not use for invertebrate animals or coral aquariums.
O₂ Oxygen	Aeration with ProSilent a, plants Oxidators, filter spray bars, water surface movement, JBL OxyTabs.	Aeration with ProSilent a, plants Oxidators, filter spray bars, water surface movement, JBL OxyTabs.	Aeration with JBL PondOxiSet, JBL OxyPond, Oxidators, increase surface water movement.	Aeration, protein skimmers, O ₂ reactor, filter spray bars, movement of water surface, macro-algae.
Conductivity/ Density*	JBL AquaDur, JBL AquaDur Malawi/Tanganjika.	JBL AquaDur, JBL AquaDur Malawi/Tanganjika.	JBL StabiloPond.	Addition of sea salt.
NO₃ Nitrate	Unnecessary	JBL NPK Macroelements, N Macroelements.	Not required.	Normally not appropriate. Regulate by reducing skimmer efficiency if required.
PO₄ Phosphate	Unnecessary	JBL NPK Macroelements, P Macroelements.	Not appropriate	Not appropriate
SiO₂ Silicic acid	Not appropriate	Not appropriate	Not appropriate	Not appropriate
Fe Iron	JBL Ferropol or JBL FerroTabs	JBL Fe + Microelements.	JBL Ferropol.	JBL TraceMarin 3.
CO₂ Carbon dioxide	JBL ProFlora CO ₂ fertiliser system, JBL ProFlora Bio, slight movement of water surface.	JBL ProFlora CO ₂ fertilizer system, JBL ProFlora Bio, less movement of water surface	Slight movement of water surface.	JBL ProFlora CO ₂ system with pH-control unit.
Ca Calcium	JBL AquaDur	JBL AquaDur	Sufficient Ca usually available in form of carbonate hardness (KH). Otherwise proceed as for increasing total hardness (GH).	JBL CalciuMarin, calcium reactor, limewater.
Mg Magnesium	JBL AquaDur, JBL Mg Macroelements.	JBL AquaDur, JBL Mg Macroelements	Sufficient Mg usually available in form of total hardness (GH). Otherwise proceed as for increasing GH.	JBL MagnesiumMarin.
K Potassium	JBL K Macroelements.	JBL K Macroelements.		

Fresh Water with Fish	Fresh Water Without / Few Fish	Garden pond	Salt Water
Cooling unit, JBL Cooler, movement of water surface.	Cooling unit, JBL Cooler, movement of water surface.	Floating plants, increase surface water movement.	Cooling unit, JBL Cooler, water surface movement.
Addition of JBL pH-Minus in stages. Mixing with reverse osmosis or de-ionised water.	Addition of JBL pH Minus in stages, mixing with reverse osmosis or deionized water.	Seldom necessary, but if necessary mix with clean rain water or add JBL pH Minus.	Water change, seldom needed however.
Addition of JBL pH-Minus, CO ₂ , filtering with peat granulate (JBL Tormec).	Addition of JBL pH Minus in stages, adding CO ₂ , filtering with peat pellets (JBL Tormec).	JBL StabiloPond.	Addition of CO ₂ and maintenance of KH of 7-10° GKH!
Mixing with reverse osmosis or de-ionised water.	Mixing with reverse osmosis or deionized water.	Mixing with clean rainwater.	Unnecessary
Immediate measure for ammonia poisoning: reduce pH value to 6.5. Filter bacteria (JBL FilterStart / Denitrol)	Immediate measure for ammonia poisoning: reduce pH value to 6.5. Filter bacteria (JBL FilterStart / Denitrol)	Add JBL BactoPond and JBL OxyPond.	Drastic water change and pH reduction to 7, protein skimmer, filter bacteria (JBL FilterStart/Denitrol).
Water change, JBL ClearMec plus. Filter bacteria (JBL FilterStart / Denitrol)	Water change, JBL ClearMec plus. Filter bacteria (JBL FilterStart / Denitrol)	Add JBL BactoPond and JBL OxyPond.	Water change, increase filter activity, addition of filter bacteria (JBL FilterStart/ Denitrol), protein skimmer.
Water change, water conditioner JBL Biotopol.	Water change, water conditioner JBL Biotopol.	JBL Biotopond, do not introduce water via materials containing copper such as a rain gutter.	Water change until Cu test reaches 0.
Unnecessary as there can never be too much oxygen!	Unnecessary as there can never be too much oxygen!	Unnecessary as there can never be too much oxygen!	Unnecessary as there can never be too much oxygen!
Mixing with reverse osmosis or deionized water.	Mixing with reverse osmosis or deionized water.	Addition of clean rainwater.	Addition of osmosis or de-ionised water.
Water change, JBL NitratEX, JBL BioNitrat EX, JBL ClearMec plus.	Water change, JBL NitratEX, JBL BioNitrat EX, JBL ClearMec plus.	Seldom necessary, water change.	JBL BioNitrat EX with activated carbon downstream, macro-algae cultures, protein skimmer.
JBL PhosEx Ultra, JBL PhosEx rapid, fast-growing plants, water change.	JBL PhosEx Ultra, JBL PhosEx rapid, fast-growing plants, water change.	JBL PhosEx Pond Filter, JBL PhosEx Pond Direct, fast-growing plants, water change.	JBL PhosEX ultra, water change, macro-algae cultures, JBL BioNitrat EX with active charcoal downstream.
JBL SilicatEX, heavy alkaline ion-exchanging resin (MP600)	JBL SilicatEX, heavy alkaline ion-exchanging resin (MP600)	JBL SilicatEX always along with JBL StabiloPond, KH check regularly.	JBL SilicatEX, heavy alkaline ion-exchanging resin (MP600)
Water change, JBL Biotopol.	Water change, JBL Biotopol.	Water change with low iron content water.	Water change.
Aeration with JBL ProSilent a, increase water surface movement.	Aeration with JBL ProSilent a, increase water surface movement.	Aeration, increase water surface movement.	Aeration, increase water surface movement.
Mixing with reverse osmosis or deionized water.	Mixing with reverse osmosis or deionized water.	Not required.	Water change.
Mixing with reverse osmosis or deionized water.	Mixing with reverse osmosis or deionized water.	Not required.	Water change.
Mixing with reverse osmosis or deionized water.	Mixing with reverse osmosis or deionized water, water change.		