



Important Instructions for Moss Ball Aquatic Plants

These guidelines were first issued March 5, and the below reflects information updated on April 7. If you have any questions, contact your state's appropriate governing body for aquatic invasive species or your local pet store for expert advice on the tank restarting process.

Guidance to Customers/Hobbyists:

We recommend that you **take the following steps with all moss ball aquatic plant products:**

- Dispose of moss balls using ONE of the following methods, ensuring that the disposal method you choose is in compliance with state laws and animal welfare regulations:
 - Place the moss ball into a sealable plastic bag and freeze for at least 24 hours, OR
 - Place the moss ball in boiling water for at least 1 full minute, OR
 - Submerge the moss ball in chlorine bleach, diluted to one cup of bleach per gallon of water, OR Submerge the moss ball in undiluted white vinegar for 20 minutes.
- Once step 1 is complete, place the moss ball and any of its packaging in a sealed plastic bag and dispose in the trash.
- If vinegar, boiling water, or bleach was used, the liquid can be disposed down a household drain—never down a storm drain where it could enter and damage local waterways.

If the moss ball was placed in an aquarium, please take these additional steps:

- Move invertebrates out of main system into separate isolation tank
- Purchase KCL; product options, available at Home Improvement Retailer:
 - Nature's Own Water Softener Pellets/Cubes
 - Morton Potassium Chloride Water Softener Pellets
 - Diamond Crystal Potassium Chloride Water Softening Pellet
 - Potash organic plant food
- Target KCl concentration is 200ppm (3/4 teaspoon per 10 gallons)
- The dose should be ramped up over three days to reach the target concentration (1/4 teaspoon per 10 gallons per day)
- Maintain exposure for 96 hours (4 days) at target concentration
- After four days, conduct a series of water changes over several days conducted to dilute KCl
- Change all filter media
- Add commercially available aquarium bacteria starter to replace all the beneficial bacteria that were removed during this process
- Clean the aquarium and accessories using one of the following methods, ensuring that the disposal method you choose is in accordance with manufacturer recommendations:
 - Boiling Method:
 - Use water that is 140 degrees F to flush and coat all accessory surfaces, OR
 - Disinfection Method:
- Make a disinfection solution using 1/3 cup of bleach per gallon of water.
- Soak the rocks and décor in the bleach water solution for 15 minutes.
- Rinse off all items prior to setting up the aquarium.

Guidance to Retailers:

- Place a moratorium on the purchase and sale of all moss balls until a method of testing and treatment can be established to ensure a clean trade.

Inline Planted Aquatic Holding System

- Dispose of moss balls using ONE of the following methods, ensuring that the disposal method you choose is in compliance with state laws and animal welfare regulations:
 - Place the moss ball into a sealable plastic bag and freeze for at least 24 hours, OR
 - Place the moss ball in boiling water for at least 1 full minute, OR
 - Submerge the moss ball in chlorine bleach, diluted to one cup of bleach per gallon of water, OR Submerge the moss ball in undiluted white vinegar for 20 minutes.
- Once step 1 is complete, place the moss ball and any of its packaging in a sealed plastic bag and dispose in the trash.
- If vinegar, boiling water, or bleach was used, the liquid can be disposed down a store drain—never down a storm drain where it could enter and damage local waterways.
- Register block for fish and invertebrates
- Fish and invertebrate replenishment deactivated
- Convert LSS to a closed system (water is circulated but automatic water changes are deactivated to avoid draining potentially contaminated water down the drain)
 - Monitor water quality
 - Manual water changes if concern for increased nitrates
 - Wastewater bleached prior to disposal
- Move invertebrates out of main system into separate isolation tank
- Purchase KCL; product options, available at Home Improvement Retailer:
 - Nature's Own Water Softener Pellets/Cubes
 - Morton Potassium Chloride Water Softener Pellets
 - Diamond Crystal Potassium Chloride Water Softening Pellet
 - Potash organic plant food
- Provide safety, handling, and storage of potassium chloride (make SDS available)
- Target KCl concentration is 200ppm
 - Calculations were based on average weight of 10-one cup weights (~225g/cup)
- The dose was ramped up over three days to reach the target concentration
- Exposure time was 96 hours (4 days) at target concentration
- After four days, a series of water changes over several days conducted to dilute KCl
- Replace all filter media
- LSS maintenance and revert to open system
- Inventory adjustments
- Register block removed
- Replenishment reactivated

Free-standing Plant Tank

- Dispose of moss balls using ONE of the following methods, ensuring that the disposal method you choose is in compliance with state laws and animal welfare regulations:
 - Place the moss ball into a sealable plastic bag and freeze for at least 24 hours, OR
 - Place the moss ball in boiling water for at least 1 full minute, OR

- Submerge the moss ball in chlorine bleach, diluted to one cup of bleach per gallon of water, OR Submerge the moss ball in undiluted white vinegar for 20 minutes.
- Once step 1 is complete, place the moss ball and any of its packaging in a sealed plastic bag and dispose in the trash.
- If vinegar, boiling water, or bleach was used, the liquid can be disposed down a store drain—never down a storm drain where it could enter and damage local waterways.
- Move invertebrates out of main system into separate isolation tank
- Purchase KCl; product options, available at Home Improvement Retailer:
 - Nature’s Own Water Softener Pellets/Cubes
 - Morton Potassium Chloride Water Softener Pellets
 - Diamond Crystal Potassium Chloride Water Softening Pellet
 - Potash organic plant food
- Target KCl concentration is 200ppm (3/4 teaspoon per 10 gallons)
- The dose should be ramped up over three days to reach the target concentration (1/4 teaspoon per 10 gallons per day)
- Maintain exposure for 96 hours (4 days) at target concentration
- After four days, conduct a series of water changes over several days conducted to dilute KCl
- Change all filter media
- Add commercially available aquarium bacteria starter to replace all the beneficial bacteria that were removed during this process
- Closely monitor weekly water test results and any aquatic life loss and address any concerns immediately.
- Add plant food.

Guidance to Suppliers:

- Place a moratorium on the importation, purchase and sale of all moss balls until a method of testing and treatment can be established to ensure a clean trade.
- Dispose of all moss balls using ONE of the following methods, ensuring that the disposal method you choose is in compliance with state laws and animal welfare regulations:
 - Place the moss ball into a sealable plastic bag and freeze for at least 24 hours, OR
 - Place the moss ball in boiling water for at least 1 full minute, OR
 - Submerge the moss ball in chlorine bleach, diluted to one cup of bleach per gallon of water, OR Submerge the moss ball in undiluted white vinegar for 20 minutes.
 - Once step 2 is complete, place the moss ball and any of its packaging in a sealed plastic bag and dispose in the trash.
 - If vinegar, boiling water, or bleach was used, the liquid can be disposed down a household drain—never down a storm drain where it could enter and damage local waterways.
- If tanks are used to consolidate moss balls, clean the system in accordance with the guidance to retailers.

References:

https://www.reabic.net/journals/mbi/2018/4/MBI_2018_Luoma_etal.pdf
https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=21056

Annex A
Water Softener Salt Dosage Guide

Desired KCl concentration	200			
Volume of water (gal)	Volume (L)	Grams	KCl to add (tablespoons)	Round up (tablespoons)
10	37.8	7.56	0.54	0.75
15	56.7	11.34	0.81	1
20	75.6	15.12	1.08	1.25
30	113.4	22.68	1.62	1.75
55	207.9	41.58	2.97	3
75	283.5	56.7	4.05	4.25
100	378	75.6	5.4	5.5
125	472.5	94.5	6.75	6.75
150	567	113.4	8.1	8.25
175	661.5	132.3	9.45	9.5
			KCl (cups)	Round up (cups)
200	756	151.2	0.672	0.75
225	850.5	170.1	0.756	1
250	945	189	0.84	1
275	1039.5	207.9	0.924	1
300	1134	226.8	1.008	1.25
325	1228.5	245.7	1.092	1.25
350	1323	264.6	1.176	1.25
375	1417.5	283.5	1.26	1.5
400	1512	302.4	1.344	1.5
500	1890	378	1.68	1.75
1000	3780	756	3.36	3.5

Annex B
 Potash Plant Food Dosage Guide
 *Double click on table to input values

Calculations for Zebra mussel treatment with Potassium Chloride (KCl)			
Commercial potash (Potassium chloride, KCl)			
Enter percent active ingredient (KCl) ---->		60	
Enter aquarium size in gallons ----->		20	
grams potash needed		25.33333	