Eight Step Procedure for Calculating N-pHURIC Application Rate

Step 1		
1,000 gpm (water delivered per minute)	x 60 min (1 hour)	= 60,000 gph (water delivered per hour to the crop)
Step 2		
60,000 gph	÷ 326,000 gal/acre ft (1 acre ft = 326,000 gal)	= 0.18 acre ft/hr (% of acre ft of water per hour)
Step 3		
0.18 acre ft/hr	x 35 gal N-pHURIC acre feet (rate of N-pHURIC/ acre ft from demand curve)	= 6.47 gal N-pHURIC (delivered to field)
Step 4		
6.47 gal N-pHURIC/hr	x 8 hrs (total hours of irrigation)	= 51.8 gal N-pHURIC (delivered to field)
Step 5		
51.8 gal N-pHURIC	÷ 20 acres (total hours of acres)	= 2.6 gal N-pHURIC (applied per acre)
Step 6 How much nitrogen and sulfur was applied to the crop for this eight hour irrigation?		
2.6 gal N-pHURIC/acre	x 1.9 lbs nitrogen/gal in 15/49	= 4.9 lbs N/acre
2.6 gal N-pHURIC/acre	x 2.0 lbs sulfur/gal in 15/49	= 5.2 lbs S/acre
Step 7 How much nitrogen and sulfur would be applied to the crop for this eight hour irrigation?		
2.6 gal N-pHURIC/acre	x 1.9 lbs nitrogen/gal in 15/49	= 4.9 lbs N/acre
2.6 gal N-pHURIC/acre	x 2.0 lbs sulfur/gal in 15/49	= 5.2 lbs S/acre
Step 8		
87.5 gal N-pHURIC	x 1.9 lbs nitrogen	= 166 lbs N/acre
87.5 gal N-pHURIC	x 2.0 lbs sulfur	= 175 lbs S/acre

The objective of a continuous maintenance treatment is to improve the quality of the irrigation water. The following procedures are used for a continuous treatment:

- Lower pH to approximately 6.0 to 6.5.
- Maintain this pH at all times when water is being applied.

It is important to note that the use of N-pHURIC on a continuous basis will reduce the problem of precipitate build-up that leads to the need for a shock treatment. Another important consideration is that reducing water pH to 6.5 will increase the effectiveness of chlorine used to kill algae.

Shock treatment to clean out a low volume system is a one-time application or whenever your system becomes plugged. When using a shock treatment the following procedures are used:

- Lower pH to approximately 2.5 - 3.0.
- Maintain this pH for approximately three to six hours, or longer in severe situations.
- Open the ends of the lines and flush with untreated water following the N-pHURIC injection.
- Treat on an annual basis or whenever the system becomes plugged.

In both situations it is important to obtain a buffer demand curve for your specific irrigation source. It is also highly recommended to check the pH of your treated water by testing a sample from the end of the line using a pH test strip or hand-held pH meter. Failure to take these precautions could cause damage to your irrigation system.

While you are treating your water to continuously neutralize the bicarbonate or to clean the system with a shock treatment, remember that for each gallon of N-pHURIC 15/49 applied, you are also providing your crop with 1.9 lbs of nitrogen and 2.0 lbs of sulfur. Therefore, be sure to proportionally reduce your standard nitrogen and sulfur program accordingly.

Storage, handling, application and irrigation equipment can be damaged by N-pHURIC if it is not constructed of the proper material. Consult the N-pHURIC reference manual or your fertilizer dealer before applying N-pHURIC.

IND/AG

P.O. Box 1168

Fresno, CA 93715

Customer Service:

1.866.211.4496

N-pHURIC

LOW VOLUME IRRIGATION SYSTEMS

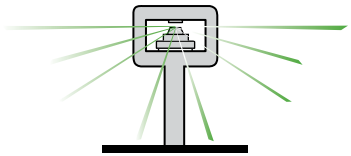
N-pHURIC® ONE CHOICE. MANY SOLUTIONS.™

ingredients for growth

WHAT IS N-pHURIC®?

N-pHURIC is a unique acid fertilizer formulated by reacting urea and sulfuric acid in a carefully controlled manufacturing process. This means that you get the benefits of sulfuric acid in a form that is much more benign to handle. The three formulations of N-pHURIC, 10/55, 15/49 and 28/27, differ in the percentage of nitrogen and sulfuric acid equivalent.

MICRO JET IRRIGATION SYSTEM



USES OF N-pHURIC IN LOW VOLUME IRRIGATION SYSTEMS

There are two separate uses for N-pHURIC in low volume irrigation systems:

1. Maintenance treatment of water high in potentially damaging salts such as the carbonate-bicarbonate complex.
2. Shock treatment for cleaning clogged lines and emitters.

Because N-pHURIC is acidic, the materials used to construct the irrigation system should be acid compatible, particularly when the pH drops below 5.0.

While both uses provide nitrogen and sulfur nutrition, each objective requires a distinctly different approach. Because N-pHURIC is acidic, the materials used to construct the irrigation system should be acid compatible, particularly when the pH drops below 5.0. Consult the N-pHURIC equipment brochure or reference manual for specific information related to material compatibility.

MAINTENANCE TREATMENT OF WATER IN LOW VOLUME IRRIGATION SYSTEMS

The objective of a continuous water treatment is to reduce the amount of potentially harmful salts, such as the carbonate-bicarbonate complex. These salts in the irrigation water can cause the precipitation of insoluble salts which can build up and eventually clog low volume irrigation systems. Continuous application of these harmful salts to the soil can also lead to negative consequences, such as the breakdown of soil structure which decreases water and air penetration into the soil. Eventually this will decrease crop productivity.

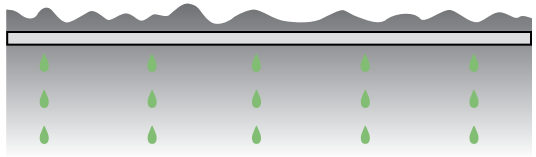
To determine how much N-pHURIC is needed for continuous treatment, obtain an N-pHURIC buffer demand curve. Because you are treating the irrigation water and not a given area of land, you need to know how much N-pHURIC is required to reduce your water source to a specific pH on a continuous basis. We generally recommend that water pH should be reduced to between 6.0 and 6.5. At this pH range between 50 to 65 percent of the bicarbonate is neutralized. Lowering the pH even further will continue to neutralize greater amounts of bicarbonate.

Your buffer demand curve will tell you how much N-pHURIC should be applied per acre foot of water to lower your water pH to a specific level. Now you need to determine the volume of water being delivered to the field per hour. These numbers can then be plugged into a simple formula that will then tell you how much N-pHURIC to apply on a per hour basis to obtain your desired pH.

SHOCK TREATMENT FOR CLEANING LOW VOLUME IRRIGATION SYSTEMS

The second distinctive use of N-pHURIC is for cleaning low volume systems that have been clogged by precipitates in the water. In addition to the problem of bicarbonate, excessive iron, silicates and other dissolved solids can build up in low volume irrigation systems resulting in plugged emitters and uneven water distribution. These precipitates may also promote the build-up of bacterial slimes and algae which pose additional problems.

BURIED TAPE IRRIGATION SYSTEM



To clean out low volume irrigation systems that have become plugged, the pH of the water should be lowered to approximately 2.5 - 3.0. Again, a buffer demand curve will tell you how many gallons of N-pHURIC per acre foot of your specific water source should be applied to reduce the pH to this level. Depending on the severity of the problem, the pH should be held at this level for three to six hours. Occasionally, in very severe cases, this pH must be maintained for a longer period. Following the N-pHURIC treatment, the ends of the lines should be opened and flushed with untreated water to remove any remaining particulate matter.

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