



pHirst (pronounce first) **Water Treatment Additive** is a turf management tool that improves irrigation water quality by neutralizing the bicarbonates, thus improving the soil structure and turf quality.

pHirst is a urea-sulfuric acid product that is produced under a unique process. The end product is a high quality clear liquid material with a ratio of 15% urea and 49% sulfuric acid. A corrosion inhibitor for metal is added during the manufacturing process. MCDS is the "generic" name for this product ratio of nitrogen to sulfuric acid equivalent.

Benefits

pHirst is produced with only the "highest quality" raw materials. The sulfuric acid used in the production of **pHirst** is a "virgin" acid. This simply means that it has not been used in any industrial process that contributes to the addition of "heavy metals". Not only is the acid virgin it also meets U.S. standards for "heavy metals" content. A corrosion inhibitor is also added to **pHirst**. This helps where the product comes in contact with metal such as bulk delivery tankers and in other areas such as stainless steel storage tanks or irrigation delivery systems.

Benefits:

- Improves water penetration
- Increases effectiveness of alkaline sensitive fungicides
- Eliminates mineral deposits in irrigation lines, fences and pavement
- Solubilizes nutrients bound at high pH ranges
- Oxygenates soil profile to help reduce black layer
- Saves money
- Amends sodic soils
- Increases the water's ability to leach salts
- Keeps the harmful salts in effluent water more soluble
- Decreases surface sealing or crusting
- Decreases hand watering
- Minimizes the need to apply wetting agents

■ **Weight per gallon: 12.70 lbs. (5.8 kg)**

■ **pH: <1**

■ **Common Name: MCDS (MonoCarbamide Dihydrogen Sulfate) is an outstanding water treatment product with soil amendment qualities and also works as an anticrustant.**



**PLANT
FOOD
COMPANY, INC.**

The Liquid Fertilizer Experts

pHirst Urea-Sulfuric Acid

**Acidifies water.
Destroys bicarbonates.
Frees soil bonded Calcium and Magnesium.**

Directions for Use:

The amount of **pHirst Urea-Sulfuric Acid** to be injected into an irrigation source is dependent on the levels of bicarbonates, pH and salts. To determine the exact rate, a titration test of the irrigation source is required. Consider injecting **pHirst Urea-Sulfuric Acid** into an irrigation source when the bicarbonate level of the irrigation water is 120 ppm or higher and/or the SAR (Sodium Absorption Ratio) is > 6.0. As a guideline, 1 gallon of **pHirst Urea-Sulfuric Acid** will treat 10,000 - 20,000 gallons of irrigation water. For example, a water source that had a bicarbonate level is in the high 200 ppm range, than 1 gallon of **pHirst** may treat only 10,000 gallons of irrigation water.

Production Method: The production of **pHirst** is unique; it is not simply a process of mixing urea and sulfuric acid. This exothermic process requires an expertise in chemistry, using a temperature over time "strip chart". The strip chart provides an exact method of timing the heat of reaction and the entire process, which is essential in producing a quality material.

The ratios of nitrogen to sulfuric acid equivalents play an important role. The ratio of 15:49 is designed for use on turf and ornamental. Every gallon contains 15% urea and 49% sulfuric acid.

Typical Properties of pHirst Urea-Sulfuric Acid

Crystallization temperature, degrees F	42° +/-3
Crystallization temperature, degrees C	5.5° +/-1.5
Viscosity, cps	49
Specific Gravity	1.52
Pounds per gallon	12.70
Gallons per ton	158
pH (10% solution)	<1
Only "virgin" acid is used in the product of pHirst . pHirst contains a corrosion inhibitor.	

Exposure Prevention – Protective Equipment: The use of suitable protective equipment to prevent physical contact with the product or its mist will reduce the risk of exposure. Each employee or individual should be provided with appropriate safety equipment and should be trained to use the equipment properly along with safe handling practices. Chemical splash-shielded goggles and a full-face shield must be worn. Wear suitable protective equipment to protect skin, such as synthetic rubber or non-nylon plastic apron, gloves, pants and boots. **pHirst** will damage clothing made of nylon, cotton, leather or natural rubber. READ AND REVIEW SDS before use.

Safety Equipment: A quick-drench shower and eyewash should be available near the transfer site and employees should wear a full-face shield, as well as impervious clothing. Shoes and contaminated clothing should be washed prior to reuse.

Available Container Sizes:

275 gal (1040.99 L) Tote

Store above 32° F. Do not allow to freeze.

PHIRST

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