



## TECHNICAL FACT SHEET

INDUSTRIAL

# NFURIC

SLTEC NFuric is an acidic product effective for lowering high soil pH caused by sodium bicarbonates, and it's commonly used in both irrigation and direct soil treatments to reclaim alkaline or sodic soils.



[www.sltecindustrial.com](http://www.sltecindustrial.com)

Product Code	Product Name	Analysis % (w/v)	pH Range	Specific Gravity (kg/L)	Application Type
SI0018	NFuric 24	Nitrogen: 22.8% as Urea: 22.8% Sulphur: 24.3% as Sulphate: 24.3% Copper: 0.045%	Less than 1.0	1.51 – 1.52	Water Treatment pH Adjustment Decalcification Crop Desiccation
SI0022	NFuric 28	Nitrogen: 15.4% as Urea: 15.4% Sulphur: 27.6% as Sulphate: 27.6% Copper: 0.045%	Less than 1.0	1.51 – 1.52	Water Treatment pH Adjustment Decalcification

## Why Sodium Bicarbonates Raise Soil pH

### When soils or irrigation water are high in sodium bicarbonate ( $\text{NaHCO}_3$ ):

- The bicarbonate neutralizes natural soil acids, raising soil pH (often above 8.0).
- Sodium disperses clay particles, damaging soil structure and reducing infiltration.
- Nutrients like phosphorus, iron, and zinc become unavailable.

## How NFuric Acid Works to Fix This

### NFuric acid is a stabilized form of sulfuric acid that reacts with:

1. Bicarbonates → releasing  $\text{CO}_2$  gas and lowering alkalinity.
2. Free lime ( $\text{CaCO}_3$ ) in calcareous soils → releasing calcium, which displaces sodium on soil particles.

### Result:

- Soil pH drops.
- Calcium replaces sodium (especially if free lime is present or gypsum is applied).
- Sodium is leached out with irrigation water.

## Application Strategy for Soil pH Reduction

### 1. Soil Testing is Mandatory

#### Test for:

- Soil pH.
- Exchangeable sodium percentage (ESP).
- Sodium adsorption ratio (SAR).
- Bicarbonate and carbonate levels.

This tells you if acid alone is enough or if you also need gypsum ( $\text{CaSO}_4$ ) to supply calcium.

### 2. Direct Soil Application (NFuric)

- Can be sprayed or applied via irrigation (drip, flood, or sprinkler).

- Reacts with bicarbonates and lowers soil pH over time.
- Typical rates: 50 to 200 L/Ha, depending on pH and bicarbonate load.
- Apply multiple small doses rather than a large single dose for safety and effectiveness.

### 3. Follow with Leaching Irrigation

#### After application:

- Irrigate deeply to flush displaced sodium out of the root zone.
- Good drainage is essential — install tile drains if needed.

### Safety & Handling

- Always wear PPE (gloves, goggles).
- Avoid contact with skin, plants, and equipment.
- Use acid-rated injection systems if fertigating.

### Optional Enhancements

- Combine with gypsum if the soil lacks calcium.
- Use organic matter or humic/fulvic acids to buffer pH and improve structure.

### Summary

Problem	Solution via NFuric
High soil pH from bicarbonate	Reacts to release CO <sub>2</sub> , lowers pH
Excess sodium	Combine with Ca (gypsum or free lime), leach with water
Poor infiltration	Improved after sodium removal

Using NFuric acid (a non-fuming, safer form of sulfuric acid) is a common practice to treat high sodium bicarbonate levels in irrigation water or soil. Sodium bicarbonates are problematic because they:

- Raise soil pH.
- Lead to sodium buildup, which damages soil structure and reduces water infiltration.

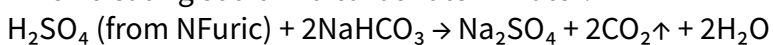
### How NFuric Works

NFuric acid neutralizes bicarbonates in water and soil by converting them into carbon dioxide and water, while also releasing free sulphur that helps replace sodium ions with calcium or magnesium.

### The Chemical Reaction (Simplified)



When treating sodium bicarbonate in water:



#### This:

- Lowers alkalinity.
- Reduces sodium hazard.
- Improves soil permeability and nutrient uptake.

### Benefits of NFuric Treatment

1. Removes bicarbonates from irrigation water.
2. Improves soil infiltration and reduces crusting.
3. Lowers soil pH, especially helpful in calcareous or sodic soils.
4. Increases calcium availability (if paired with gypsum or calcium-containing amendments).
5. Enhances fertilizer efficiency by freeing up tied-up nutrients.

### Cautions & Best Practices

- Always test water and soil before application (check EC, pH, SAR, and bicarbonate levels).
- Proper dosing is critical. Overuse can acidify soil too much or harm plants.
- Use appropriate personal protective equipment (PPE) when handling.
- Can be injected into irrigation lines (fertigation systems) or applied directly to soil.

### Typical Rates (For Irrigation Water)

- It often takes 4 Litres of NFuric to neutralize around 100 ppm of bicarbonate in 100,000 L of water, but this varies by NFuric concentration.
- Always consult the product label or an agronomist for precise calculations.

