



Liquid Fertilizer



# CaTs

Calcium and Sulfur Nutrition / Soil Amendment  
 0-0-0-10S-6Ca

## CaTs® - Calcium Thiosulfate Solution

Soluble Calcium (Ca)	6%
Total Sulfur (S) derived from Calcium Thiosulfate	10%
Density: pound per gallon at 68°F	10.4
Volume: gallons per ton	192
Pound of calcium per gallon	0.63
Pounds of sulfur per gallon	1.0



# MAXIMIZE WATER EFFICIENCY

## DELIVER 100% SOLUBLE CALCIUM

### GENERAL INFORMATION

CaTs delivers 100% solubilized calcium and thiosulfate-sulfur for use in a fertility program and as a soil amendment. CaTs is a neutral to basic, clear solution, containing 6% calcium (Ca) and 10% sulfur (S). Each gallon of CaTs contains 0.63 pounds of Ca and 1.0 pound of S. CaTs can be applied by drip, sprinkler or flood irrigation, as well as by surface broadcast, banded, or as a foliar treatment on select crops. CaTs is a versatile product that is a solution to multiple problems in the field.

### The Many Uses of CaTs

- Can be used as a fertilizer for the correction of calcium and sulfur deficiency. Calcium requirements for most crops increase during periods of rapid growth and early fruit development. Applications of CaTs can be timed to these specific growth stages.
- An effective soil amendment to improve water infiltration and aid in leaching of harmful soil salts. Because the calcium in CaTs is 100% solubilized, it is a more efficient at displacing sodium than products like gypsum. It can also reduce crusting problems at the soil surface. CaTs may be used throughout the season as well as in dormancy as part of a winter leaching program.
- Recognized by the American Association of Plant Food Control Officials (AAPFCO) as a nitrogen stabilizer. It can be blended with UAN or urea solution in any ratio. When blended with urea based fertilizers and applied to the soil surface, CaTs can reduce ammonia loss due to volatilization.
- Can be used to treat irrigation water derived from snowmelt or rainwater that has a low

mineral content (low electrical conductivity (EC)). This can have a negative effect on water infiltration in many soils, resulting in ponding and/or runoff. CaTs raises the water EC, which in turn improves infiltration.

### The Thiosulfate Advantage

CaTs contains 10% sulfur in the form of thiosulfate ( $S_2O_3^{2-}$ ). Thiosulfate provides unique benefits when applied to cropping systems, including the following:

Thiosulfate is a highly soluble source of sulfur, great for liquid blends. When applied to soils, thiosulfate immediately begins to oxidize to sulfate-sulfur, and in the process can increase the solubility of phosphorous and some micronutrients, including iron, zinc and manganese.

Thiosulfate acts as a nitrification inhibitor when blended with liquid urea and ammonium-based nitrogen fertilizers (including UAN solution). This slows the conversion of ammonium-nitrogen to leachable nitrate-nitrogen. This can help the plant better utilize the applied nitrogen.

Thiosulfate is an acidifier. As a dual calcium source and acidifier, CaTs can be used to help manage high pH soil. It can also release unavailable calcium from calcareous soils (soils high in calcium carbonate) leading to the availability of additional calcium.

**The purpose of this guide is to provide information about CaTs and to make suggestions regarding its use. This guide does not make recommendations about the amount of calcium and sulfur needed for optimum crop production. The rate of each application of CaTs should be made based on a soil test and/or plant tissue analysis for calcium and sulfur, and on the recommendations of a Certified Crop Advisor, Pest Control Advisor or authorized CaTs distributor.**

## SOIL APPLICATION

CaTs may be broadcast sprayed, banded or knife injected as a source of calcium and sulfur and as a soil amendment.

### Broadcast Applications

For applications to improve soil tilth and water infiltration before planting, apply 15 to 40 gallons of CaTs per acre to a fallow field and then incorporate with tillage or irrigation water.

### Banded Applications

Apply at the rate of 1 gallon per acre per inch of band width (an 8 inch band would require an 8 gallon per acre rate). Avoid windy conditions where concentrated solutions can contact the plant foliage.

CaTs can be used in a program to reduce problems related to calcium disorders in tree fruit. Soil application of CaTs should be used (and is more effective) in conjunction with a foliar calcium program.

### Apples, Pears, Apricots, Cherries, Peaches, Filberts:

Producing trees (at least 5 years old) on sandy loam soil – apply 20 to 30 gallons per acre in a 4 foot band under the drip line. Irrigate after application.

### Young Trees, Vine Crops or Planted to Sandy Soils:

Apply 15 to 20 gallons per acre. Irrigate after application.

### Sidedress Applications

CaTs can be soil injected or deep banded by itself or with nitrogen. Rates will vary depending on region and crop requirement. Follow soil and tissue analysis recommendations to apply the proper amount of calcium and sulfur. Do not apply CaTs with knife injectors or other types of fertilizer injecting equipment that may cause root pruning.

**Row Crops (Corn, Cotton, Soybeans):** 3 to 15 gallons per acre for soil injection on medium to fine textured soils and 3 to 10 gallons per acre on sandy soils; avoid pruning roots. For surface banding or dribble application, 3 to 10 gallons per acre on medium to fine textured soils and 3 to 5 gallons per acre on sandy soils.

**Vegetable Crops:** 3 to 12 gallons per acre for soil injection on medium to fine textured soils and 3 to 8 gallons per acre on sandy soils; avoid pruning roots. For surface banding or dribble application, 3 to 12 gallons per acre on medium to fine textured soils and 3 to 8 gallons per acre on sandy soils.

**Permanent Crops (Trees and Vines):** 5 to 12 gallons per acre for soil injection on medium to fine textured soils and 5 to 10 gallons per acre on sandy soils; avoid pruning roots. For surface banding or dribble application, 5 to 12 gallons per acre on medium to fine textured soils and 5 to 10 gallons per acre on sandy soils.

## FERTIGATION

Fertigation is the practice of injecting soluble fertilizers through irrigation systems using water as a nutrient delivery system to the crop.

Before injecting CaTs into an irrigation system, make sure that the irrigation system is in good condition and provides uniform distribution to the field. The injection of CaTs should be done slowly and should last at least as long as it takes irrigation water to travel from the point of injection to the last emitter or sprinkler in the field. The injection of CaTs should be done with a fertilizer injection pump and should be done over a 1 to 4 hour time period. Rapid injection of CaTs may lead to uneven distribution and may cause crop damage. For additional information about injection of nutrients into an irrigation system, consult with a local agronomist and review University of California publication 21620 “Fertigation with Micro-irrigation,” or University of Florida Bulletin #250 “Injection of Chemicals Into Irrigation Systems: Rates, Volumes, and Injection Periods.”

Rates will vary depending on region and crop requirement. Follow soil and tissue analysis recommendations to apply the proper amount of calcium and sulfur. When applying CaTs through irrigation systems, use the following precautions:

- Use caution when applying CaTs to crops that are experiencing heat or moisture stress. As temperatures increase, CaTs applications should be split among several irrigations at lower rates per application.
- Avoid applications to new plantings until crop is well established.

- Do not apply CaTs while chlorinating irrigation system. Thiosulfates will neutralize chlorine.
- When applying CaTs into systems where acids are also injected, ensure that the irrigation water pH is above 6.0 and the acid is well mixed into the water before injecting CaTs.

All rates listed are for established crops on medium to fine textured soils. For sandy soils, suggested rates should be reduced by 50%.

### Flood and Furrow

**Vegetable and Row Crops:** Apply 5 to 20 gallons per acre per application with irrigation water to improve water infiltration and to reduce runoff. Apply as needed during the growing season.

**Tree and Vine Crops:** Apply 5 to 20 gallons per acre per application with irrigation water to improve water infiltration and to reduce runoff. Apply as needed during the growing season.

### Sprinkler/Center Pivot

Application of CaTs through solid-set sprinklers should be followed by additional irrigation time to reduce the possibility of fertilizer injury to the crop. Always apply CaTs in a full irrigation set and if possible, avoid application during the midday when temperatures are high.

When applying CaTs at recommended rates through a center pivot, the product is diluted with enough water that foliar burn is not normally a problem.

**Young Tree and Vine Crops:** Apply 3 to 8 gallons per acre per application. Apply every 2-3 weeks.

**Mature Tree and Vine Crops:** Apply 5 to 15 gallons per acre per application, once every 2-3 weeks.

**Potatoes:** Apply 5 to 15 gallons per acre per application beginning at hooking stage. Apply a second application when the potatoes are about golf ball size.

**Onions:** Apply 5 to 12 gallons per acre beginning after third leaf stage. Apply once every 2-3 weeks.

**Alfalfa:** Apply 5 to 15 gallons per acre after the first cutting and again after the third cutting.

**Other crops:** Apply 5 to 10 gallons per acre per application, allowing 2-3 weeks between applications.

### Drip Irrigation/Micro-Sprinklers

**Young Tree and Vine Crops:** Apply 4 to 8 gallons per acre per application during the growing season. Allow 2 – 3 weeks between applications.

**Mature Trees and Vine Crops:** Apply 5 to 15 gallons per acre per application. Allow 2 – 3 weeks between applications.

**Vegetable and Row Crops:** Apply 3 to 10 gallons per acre per application. Allow 2-3 weeks between applications.

## FOLIAR FERTILIZER APPLICATION

Suggested foliar application rates for certain crops are listed. For crops not listed, contact a Tessenderlo Kerley Representative or your local CaTs dealer. CaTs may be applied by ground or air. Rate recommendations listed below are for CaTs only. The addition of other products to the spray mix is the responsibility of the applicator and should be tested on the crop in a small area before applying to the entire field. If used improperly, CaTs can cause foliar burn. Use the following precautions when foliar applying CaTs:

- Do not apply CaTs to the foliage of any crop when temperatures are, or will be, above 90°F.
- If possible, apply early in the morning or late in the evening.
- Use caution when applying fertilizer to crops experiencing heat or moisture stress. Crops should be well-watered before applying any fertilizer.
- Do not apply CaTs foliarly with crop oil sprays and silicon adjuvants. Allow at least 14 days before or after an application of crop oil before applying CaTs as a foliar.
- Do not use high-pressure sprays (greater than 60 psi) when applying CaTs over the top of a crop.
- Apply with a sufficient volume to achieve good plant coverage, usually 20 to 30 gallons per acre for row crops.

### Field Crops

**Alfalfa:** Apply 2 to 4 gallons per acre per application. Apply on stubble of previous cutting.

**Dry Peas and Lentils:** Apply 1 to 1.5 gallon per acre per application at 1/10th bloom stage.

**Onions:** Apply 6 to 8 gallons per acre after the 3rd leaf stage when crop is well established. Apply 2 to 4 times during the season.

**Other Crops:** Apply 1/2 to 1 gallon per acre per application. Repeat applications as required.

### Permanent Crops

**Apples, Pears, and Cherries:** Apply 2 to 4 quarts per acre in 100 gallon per acre spray volume. Begin applications at petal fall and continue through the season for 4 to 6 applications appropriately spaced through the growing season.

**Mature Trees and Vine Crops:** Apply 2 to 3 quarts per acre in 100 gallon per acre spray volume. Repeat as needed allowing at least 2 weeks between applications.

### BLENDING WITH CATS

CaTs blends easily with many liquid nitrogen fertilizers including liquid urea and UAN Solutions. CaTs is not compatible with any phosphate, sulfate or ammonium thiosulfate fertilizer. Use the following precautions when blending fertilizers with CaTs:

- Always do a jar test before blending large quantities.
- Do not mix CaTs with acid or acidic fertilizers below a pH of 6.0.
- When mixing pesticides with CaTs, always ensure compatibility first with a jar test. The blend sequence should be as follows: water, then pesticide, followed by CaTs and/or other fertilizers. To avoid separation of products, always keep agitators running during filling and spraying operations.
- Micro-nutrient blends should be jar tested first before mixing with CaTs. In most situations, micro-nutrients must be chelated to a neutral pH. Strongly acidic and/or weak chelates do not blend well with CaTs.

For more information about the compatibility and blending of CaTs visit [tessenderlokerley.com/compatibility](http://tessenderlokerley.com/compatibility) or contact a Tessenderlo Kerley representative.

### pH AND CROP PRODUCTIVITY

Soil pH has a direct effect on nutrient availability as well as soil microbial activity. A low soil pH can indicate the presence of high levels of toxic ions such as manganese, iron and/or aluminum, while a high pH can indicate the presence of free lime in the soil. Most crops do best with a soil pH between 6.0 and 7.5 for optimum nutrient uptake. Periodic testing of soils is the only way to determine soil pH and the appropriate course of action to maintain soils at their full productive potential. Minimize or avoid applications of CaTs if the pH of the soil is below 6.0 and there is no liming program in place.

### APPLICATION PRECAUTIONS

The directions on this guide are believed to be reliable and should be followed carefully. Crop injury may result from unusual weather conditions, failure to follow application guide recommendations, or improper application practices, all of which are out of control of the manufacturer or seller. Plant and leaf injury may occur on some crops when certain weather and growing conditions are present. The user assumes all risks of use and handling.

The recommendations in this guide are for CaTs only; the addition of other fertilizers at or near the same time could increase the chance of phytotoxicity to the crop. When working with an unfamiliar blend formulation or application method, always do a small test plot before treating the whole field.

The application of CaTs for purposes other than those listed on this application guide is not recommended. For information on safety and handling, consult a Safety Data Sheet (SDS) or visit our website at [tessenderlokerley.com/CaTs](http://tessenderlokerley.com/CaTs)



# TECHNICAL DATA

## CaTs

### Plant Nutrient Content Weight %

Calcium (Ca)	6
Total Sulfur (S)	10

### Typical Properties

Specific Gravity	1.25
pH	6.5 - 8.0
Appearance	Colorless
Salt-Out Temperature	32°F

See SDS for additional information on safety and handling at:  
[tessenderlokerley.com/CaTs](https://tessenderlokerley.com/CaTs)

Keep out of reach of children. Use caution when handling.



### Warranty and Limitation of Damages

TessenderloKerley, Inc. (TKI) warrants only that this product conforms to the product description in the Application Guide. Except as warranted by this description, TKI makes no representation or warranty or guarantee, whether expressed or implied, of fitness for a particular purpose of merchantability, or of product performance. TKI does not authorize any agent or representative to make any such representation, warranty or guarantee. To the extent consistent with applicable law, TKI's maximum liability for breach of its warranty or for use of this product, regardless of the form of action, shall be limited to the purchase price of this product. To the extent consistent with applicable law, buyer and user acknowledge and assume all risks and disposal liability resulting from handling, storage, use and disposal of this product. If buyer does not agree with or accept these warranty and liability limitations, buyer may return the unopened container to the place of purchase for full refund. Buyer's use of this product shall constitute conclusive evidence of buyer's acknowledgment and acceptance of the forgoing limitations. Some jurisdictions do not allow the exclusion of implied warranties or the limitation of certain damages, so the above may not apply. The purchase, delivery, acceptance and use of this product by the buyer are subject to the terms and conditions of seller's sales invoice for this product.

### Contact Information

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