

Application Guide



THIO-CAL

GUARANTEED ANALYSIS

Soluble Calcium (Ca)	6%
Combined Sulfur (S)	10%

Plant Nutrient Sources:

Soluble Calcium: Calcium Thiosulfate,
Sulfur: Calcium Thiosulfate

Density:

Lbs. per Gallon @ 60°F	10.43
Gallons per Ton	191.75

PRECAUTIONARY STATEMENTS

Avoid prolonged or repeated contact with eyes, skin and clothing. Chemical goggles or a full face shield should be worn. To protect skin wear appropriate protective equipment, such as rubber or plastic aprons, rubber gloves and boots. Avoid breathing mist or vapor. Keep containers closed. Wash thoroughly after handling. May cause gastrointestinal distress if swallowed.

FIRST AID

In case of contact with eyes, immediately flush eyes with water for at least 15 minutes. Seek immediate medical attention if irritation occurs. In case of skin contact, flush skin with water. If irritation occurs, seek immediate medical attention. Remove and wash clothing before reuse. If swallowed, give large amounts of water and induce vomiting by touching back of throat with finger unless unconscious. Seek immediate medical attention.

HANDLING AND STORAGE

Minimize skin exposure. Store mini-bulks and smaller containers out of the sun in an area of moderate temperature. Do not reuse containers. Avoid containers, piping or fittings made of copper-containing alloys or galvanized metal. Do Not store at temperatures below 15 °F, as crystallization may occur. Calcium thiosulfate may be stored in plastic, fiberglass or stainless steel vessels. Dispose of containers in accordance with local regulations and requirements.

IN CASE OF SPILL

Contain spill and maximize recovery. Keep spill out of water sources. Exercise caution in area of spill for slippery conditions. Dispose of spilled material in accordance with regulatory requirements.

PHYTOTOXICITY

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.

Before handling this product, consult the Material Safety Data Sheet for handling, safety and first aid information.

GENERAL INFORMATION

Thio-cal is a neutral to basic, chloride - free, clear solution, containing 6% calcium and 10% thiosulfate sulfur. Each gallon of Thio-cal contains .63 pound of calcium (Ca) and 1.0 pound of thiosulfate sulfur (S). Thio-cal may be applied by drip, sprinkler, or flood irrigation. It may be blended with other fertilizers or applied as a foliar treatment on selected crops.

Thio-cal should first be diluted with water before applying. Blends of Thio-cal should not be acidified below a pH of 6.0.

Thio-cal may be used as a fertilizer for the correction of calcium deficiency and as a soil amendment.

Thio-cal is an effective water soluble source of calcium and thiosulfate sulfur which aids in the correction of these nutrient deficiencies in crops.

As a soil amendment Thio-cal may be used to improve water infiltration and aid in leaching of harmful soil salts.

Thio-cal is compatible with most fertilizer solution. Thio-cal is not compatible with phosphate, sulfate and ammonium thiosulfate fertilizers. In absence of specific recommendations and data, a jar test is recommended before mixing large quantities. The addition of water to the mixture may be helpful to maintain blend stability.

When blending with micronutrients and pesticides, trial blends should be conducted before beginning large scale mixing.

When mixing other liquid fertilizers and/or pesticides with Thio-cal, the blend sequence should be as follows: water, pesticides, Thio-cal and/or other fertilizer.

APPLICATION AND USE GUIDELINES

Thio-cal may be applied to a wide variety of ornamental, turf, greenhouse, and other agricultural crops. Calcium requirement for most crops increases during periods of rapid growth and early fruit development. Application of Thio-cal should be made based on soil, fruit and/or plant tissue analysis for calcium.

SOIL APPLICATION

Thio-cal may be broadcast, banded or knife injected as a source of calcium and sulfur. Rates may vary between 20 to 40 gallons per acre. Thio-cal is not compatible with phosphate fertilizers. Preplant treatment, apply 30 to 40 gallons of Thio-cal per acre via the irrigation water.

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

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

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

Young Trees and/or Trees on Sandy or Light Soils:

Apply 15 to 20 gallons per acre, irrigate after application. Example: A ten acre orchard at 20 gallons per acre would require 200 gallons applied in a 4 foot band.

SOIL AMENDMENT

Thio-cal may be broadcast or band applied to the soil surface to reduce crusting problems and improve water infiltration. For band application, apply at the rate of one gallon per acre per inch of band width. (An 8 inch band would require an 8 gallon per acre rate).

Preplant treatment, apply 20 to 40 gallons of Thio-cal per acre via the irrigation water.

Thio-cal may be used as a soil amendment during the growing season to reduce the harmful effects of sodium. Thio-cal may be applied with the irrigation water or directly to the soil before irrigation. Rate of application is dependent on severity of the sodium problem. Contact a Tricard representative for additional information.

IRRIGATION AND WATER TREATMENT

Irrigation water derived from snowmelt or rainwater may contain low levels of salts (low electrical conductivity, E.C.). While this is good for crops, it can have a negative effect of water infiltration in many soils, resulting in puddling and/or runoff. Crops become moisture stressed during periods of high temperatures due to lack of deep moisture and/or shallow root system. Application of Thio-cal can: 1) improve water infiltration 2) increase deep moisture and 3) reduce moisture stress. Application rates are dependent on field conditions. For additional information contact a Tricard representative.

FERTIGATION

Thio-cal may be applied through most irrigation systems. Apply Thio-cal in the middle of 1/3 of the irrigation set.

OVERHEAD IRRIGATION

Apples:

5 to 10 gallons per acre per application. Repeat as needed to achieve calcium tissue levels desired.

Young Tree and Vine Crops:

3 to 8 gallons per acre per application. Repeat as required.

Mature Tree and Vine Crops:

5 to 10 gallons per acre per application. Repeat as required.

Potatoes:

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

10 gallons per acre beginning after third leaf stage. Apply 2 to 3 times with at least 1 week intervals.

Alfalfa:

10 gallons per acre applied after the first cutting and again after the third cutting.

Other crops:

5 to 10 gallons per acre per application. Repeat as required.

Ornamentals:

Apply one quart of Thio-cal per 1000 square feet in the irrigation water to growing plants. Rinse off any contact with foliage immediately.

Turf:

Apply Thio-cal in the irrigation water at 30 to 40 ounces per 1000 square feet. Apply as needed during the growing season as indicated by soil and tissue testing.

FLOOD AND FURROW

Row Crops:

Apply 10 to 15 gallons per acre per application with the irrigation water to improve water infiltration and to reduce runoff. Apply as needed during the growing season.

Tree Crops:

Apply 10 to 15 gallons per acre per application with the irrigation water to improve water infiltration and to reduce runoff. Apply as needed during the growing season.

FOLIAR APPLICATION

Apply in sufficient volume to achieve good plant coverage, usually 20 gallons per acre for row crops.

Field Crops

Alfalfa:

2 gallons per acre per application. Apply on stubble of previous cutting.

Dry Peas:

1 gallon per acre per application at 1/10th bloom stage.

Lentils:

1 gallon per acre per application at 1/10th bloom stage.

Onions:

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:

1/2 to 1 gallon per acre per application. Repeat applications as required. Do Not apply foliar to corn.

Tree Crops

For calcium related disorders, begin applications starting at petal fall.

Apples (Gala and Red Delicious):

Apply 2 to 3 quarts/100 gallons per acre. Apply 4 to 6 times during the growing season.

Asian):

Apply 2 to 4 quarts/100 gallons per acre. Begin application at petal fall and continue through the season for 4 to 6 times.

Cherries:

Apply 2 to 3 quarts/100 gallons per acre beginning at petal fall. Apply every 7 to 10 days up to four times or at the beginning and during a rainfall to reduce cracking.

Do Not apply Thio-cal with a crop oil spray. Allow at least 5 days before or 7 days after an oil spray before applying Thio-cal as a foliar.

Combination of other fertilizers and pesticides with Thio-cal may increase the chances of foliar burn. It is beyond the capability of Tricard to test all combinations of foliar fertilizers and/or pesticides. The dealer/grower should do his own test plot before beginning large scale applications. When mixing with unfamiliar products, always do a jar test to check for compatibility.

DRIP IRRIGATION

Young Tree and Vine Crops:

4 to 8 gallons per acre per application during the growing season. Allow 10 to 14 days between applications.

Mature Trees and Vine Crops:

5 to 10 gallons per acre per application. Repeat two to three times during the growing season or as needed. Allow 10 to 14 days between applications.

Vegetable and Row Crops:

3 to 5 gallons per acre per application. Repeat 4 to 5 times during the growing season as needed.

CAUTION (APPLICATION)

Do Not apply Thio-cal to foliage of crops sensitive (foliar burn) to sulfur such as corn.

Do Not mix with acids or acidic fertilizers below a pH of 6.0.

Be sure to check other manufacturers' labels concerning dormant oil treatment spray guidelines and foliar nutrient applications containing sulfur.

Do Not apply Thio-cal foliar with crop oil sprays. Allow at least 5 days before or 7 days after an application of crop oil before applying Thio-cal as a foliar.

Do Not apply Thio-cal or other thiosulfate fertilizers while chlorinating irrigation system. Thiosulfates will neutralize chlorine.

Do Not apply to foliage of any crop when temperatures are above 90 degrees. Apply Thio-cal in the early morning or late evening.

When mixing Thio-cal or any liquid fertilizer with pesticides, always keep agitators running during filling and spraying operations. Failure to maintain agitation may cause separation of products resulting in uneven spray application.

Pop Up Fertilizers - Many crops are sensitive to salts during germination. When soil moisture is low, delayed crop emergence and/or phytotoxicity may occur when fertilizer is placed too close to the seed. Do Not use Thio-cal in pop up fertilizer when soil moisture is limited; soil salinity is above an electrical conductivity of 2; or when irrigation is delayed such that germination may be affected.

Do Not apply Thio-cal with knife injectors or other types of fertilizer injecting equipment that may cause root pruning.

Sprinkler application of Thio-cal and other liquid fertilizers over an established crop may cause foliar injury to a crop if: injection period is short enough to cause an excessive amount of fertilizer to accumulate on the leaves; temperatures are above 90 degrees and humidity less than 30%; fertilizer rates are higher than recommended; irrigation pump break down during or immediately after injecting fertilizer; and/or any combination of these conditions.

EXAMPLES OF BLENDS WITH THIO-CAL

Product	Pounds/Ton	Analysis
Thio-cal	1,600	0-0-9-8S-4.8Ca
KCl (Dry 62%).....	290	
Water	110	
Thio-cal	1,000	4.5-0-0-5S-8.5Ca
CN-9	1,000	
Thio-cal	1,667	7-0-0-8S-5Ca
Urea (Dry).....	304	
Water	29	

Tricard warrants only that this product conforms to the product description on the application guide. Tricard makes no representation or warranty or guarantee, whether expressed or implied, and disclaims any warranty of fitness for a particular purpose of merchantability, or of product performance. Tricard does not authorize any agent or representative to make any such representation, warranty or guarantee. Tricard maximum liability for breach of its warranty or for use of this product, regardless of the form of action, shall not exceed the purchase price of the product. Buyer and user acknowledge and assume all risks and disposal liability resulting from handling, storage, use and disposal of the product, whether in accordance with directions or not. 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. Some states 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 is subject to the terms and conditions of seller's sales invoice for this product.

TECHNICAL DATA - THIO-CAL

6% Calcium and 10% Sulfur

Plant Nutrient Content Wt. %

Soluble Calcium (Ca)	6.0
Total Sulfur (S).....	10.0
10% Combined Sulfur	

Typical Properties

Specific Gravity.....	1.25
pH.....	7.0 - 8.0
Appearance.....	Clear, Colorless
Salting Out Temperature, °F	32

Formulation and Application Factors, 60 °F.

Density, lbs/gallon.....	10.43
Volume, gallons/ton.....	191.75
Pounds, Ca per gallon.....	.63
Pounds, S per gallon	1.04

Plant Nutrient Source

Calcium Thiosulfate CaS₂O₃

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