

Application Guide



Tessenderlo KERLEY

GUARANTEED ANALYSIS

Soluble Potash (K ₂ O)	25%
Total Sulfur (S)	17%
17% Combined Sulfur	
0% Free Sulfur	

Derived from potassium thiosulfate.

Plant Nutrient Sources: Soluble Potash - Potassium Thiosulfate, Sulfur - Potassium Thiosulfate

Density:

Density, lbs/gallon @ 60°F	12.2
Volume, gallons/ton	164.0

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.

For further information consult an Material Safety Data Sheet or visit our web site at: www.tkinet.com.

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 contaminated 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. KTS 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 MSDS for handling, safety and first aid information.

GENERAL INFORMATION

KTS is a neutral to basic, chlorine-free, clear liquid solution, containing 25% potash and 17% sulfur. Each gallon of KTS contains 3 LBS of potash (K₂O) and 2.1 LBS of sulfur (S). KTS can be applied by drip, sprinkler or flood irrigation. It may be blended with other fertilizers or applied as a foliar treatment on selected crops. When used as a foliar fertilizer, KTS should first be diluted with water before applying. Blends of KTS should not be acidified below a pH of 6.0.

KTS is compatible with urea and ammonium polyphosphate solutions in any ratio. When blending with UAN solution, a jar test is recommended before mixing large quantities. Potassium reacts with nitrate to form KNO₃ crystals. If this should happen, the addition of water and/or heat should bring it back to a clear solution.

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 KTS, the blend sequence should be as follows: water, pesticide, KTS and/or other fertilizer.

GENERAL APPLICATION AND USE RECOMMENDATIONS: KTS may be applied to a wide variety of ornamental, turf, green house and other agricultural crops. Potassium requirements for most crops increase dramatically during periods of rapid growth and fruit development. Application of KTS should be made based on soil, soil release rate test and/or plant tissue analysis for potassium.

CAUTION: Do Not apply KTS to foliage of crops sensitive (foliar burn) to sulfur.

WARNING: When blending with TRISERT®-CB fertilizer solution, containing boron, boron (B) may cause injury to crops other than those listed on the TRISERT-CB application guide. Consult the TRISERT-CB application guide for further information.

Do Not apply to foliage of any crop when temperatures are above 90°F. Apply KTS early morning or late evening.

When mixing KTS 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 KTS 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 KTS with knife injectors or other types of fertilizer injecting equipment that may cause root pruning.

Sprinkler application of KTS 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°F and humidity less than 30%, fertilizer rates are higher than recommended, irrigation pump breaks down during or immediately after injecting fertilizer, and/or any combination of these conditions.

Crop injury may result from unusual weather conditions, failure to follow label directions, or improper application practices all of which are out of control of the manufacturer or seller. The directions on this label are believed to be reliable and should be followed carefully.

Do not apply KTS foliar with crop oil sprays. Allow at least 10 days before or after an application of crop oil before applying KTS as a foliar.

Do not apply KTS or other thiosulfate fertilizers while chlorinating irrigation system. Thiosulfates will neutralize the chlorine.

Do not mix KTS with acid or acidic fertilizers below a pH of 6.0. KTS will decompose.

Do not use high pressure sprays (greater than 60 psi) when applying KTS over the top of a crop.

SOIL APPLIED:

STARTER FERTILIZER: Apply 1 to 4 gallons of KTS per acre by itself or with other starter fertilizers in a 2"x 2" or a 2"x 0" placement (2 inches to the side of the seed). *See blend chart below.*

POP-UP FERTILIZER: Wheat and other small grains apply 2 to 4 quarts per acre by itself or with other liquid pop-up fertilizers.

Corn and Cotton: Apply 2 to 4 quarts of KTS per acre by itself or with other liquid pop-up fertilizers.

Tomatoes and Other Small Seeded Crops: Apply 2 to 4 quarts of KTS per acre by itself or with other liquid pop-up fertilizers.

SIDEDRESS: KTS may be surface banded or knife injected as a source of potassium and sulfur. Rates may vary between 1 and 10 gallons per acre depending on crop requirement and soil analysis.

SOME EXAMPLES OF STARTER FERTILIZER BLENDS

Blend	Products	Pounds per Ton
6-21-6-4S	10-34-0	1235
	KTS	480
	Water	285
7-25-6-4S	10-34-0	1470
	KTS	480
	Water	50
10-13-5-3S	UAN 32	388
	10-34-0	765
	KTS	400
	Water	447

Always do a jar test before making large quantities. When blending KTS and UAN 32 always have as much water in the blend as either one of these products.

FOLIAR FERTILIZER APPLICATION

Application rates are only for the crops listed below. For recommendations regarding crops not listed, contact your local fluid fertilizer dealer or your Tessengerlo Kerley representative. KTS may be applied by ground or air. It is recommended that the addition of 2 to 4 quarts of either TRISERT®-NB (26-0-0), TRISERT-CB (26-0-0-0.5B) or N-SURE® (28-0-0) be applied with the KTS. TRISERT-CB, TRISERT-NB and N-SURE are Tessengerlo Kerley's triazone based slow-release liquid nitrogen fertilizers that improve the foliar absorption of KTS.

By air, apply 2 to 4 quarts of KTS per acre in 3 to 10 gallons of water spray solution. For ground application, apply 2 to 4 quarts of KTS per acre. Unless otherwise specified, apply these rates of KTS along with either TRISERT-CB, TRISERT-NB or N-SURE in enough water to provide adequate coverage.

Cotton: Begin treatments the second week of bloom, apply 6 to 8 quarts per acre of KTS by ground applicator every 7 to 10 days for 3 or 4 applications.

Potatoes: Begin at tuber initiation, apply second application at golf ball size and third application at tuber bulking.

Small Grains: Apply KTS at tillering to early boot stage.

Canola: Apply 2 to 3 gallons/acre at bolting.

Alfalfa: Apply at crown green up or on regrowth after cutting.

Rice: Apply 1 to 1.5 gallons/acre at panical initiation.

Peas and Lentils: Apply during late bud to 10% bloom.

Tomatoes: Begin at fruit set, apply every 7 to 14 days.

Soybeans: 1 to 1.5 gallons/acre at bloom.

Sugar Beets: 1 to 2 gallons/acre at row closing.

Apples, Apricots, Almonds, Citrus, Pecans: Apply KTS at 2 to 6 quarts per acre in a minimum of 100 gallons of water spray solution. Begin application at first full leaf and apply as needed during the growing season. For concentrated sprays of less than 100 gallons per acre, reduce the rate of KTS to stay within the recommended solution ratio (i.e., 50 gallons of water per acre equals 1 to 3 quarts of KTS per acre).

Vinifera Vines: Begin 2 weeks after bloom. Apply 2 to 4 quarts of KTS per acre in a minimum of 50 gallons of water. Repeat treatment in 7 to 10 days. Do not apply foliar to Concord grapes.

Recommendations listed are for KTS and TRISERT application only. The addition of other products to the spray mix is the responsibility of the applicator and not of TKI.

FERTIGATION

FLOOD AND FURROW IRRIGATION: Trees and Vines: Apply 10 to 15 gallons of KTS per acre per application beginning at full leaf, schedule as needed.

Vegetable and Row Crops: Apply 10 to 15 gallons of KTS per acre per application; make second application based on crop requirements.

SPRINKLER /CENTER PIVOT IRRIGATION: Trees (Under): Apply 5 to 15 gallons per acre per application every 10 to 14 days based on crop requirements.

Trees (Overhead): Apply 3 to 5 gallons per acre per application every 10 to 14 days based on crop requirements.

Vines: Apply 3 to 5 gallons per acre per application every 10 to 14 days based on crop requirements.

Vegetable and Row Crops: Beginning at the 3rd to 4th leaf stage, apply 3 to 5 gallons per acre per application every 7 to 10 days based on crop requirements. After injection, allow enough irrigation time to rinse the plants of any residual fertilizer.

DRIP IRRIGATION: Young Trees: 3 to 10 gallons per acre during the season when roots are actively growing.

Vines: Application of KTS can be made about any time through the growing period. Potassium requirement is highest at the beginning and through fruit development. Apply from 5 to 15 gallons per acre as required according to tissue test.

Mature Trees and Vines: 5 to 15 gallons per acre per application.

Vegetable and Row Crops: 3 to 5 gallons per acre per application two to four times during the growing season.

DIRECTIONS FOR USE TURF GRASSES

LAWN CARE PROGRAM

KTS may be applied as a spray application on all turf grasses; cool, transitional and warm season. KTS should be applied as a dilute solution via hand gun or spray boom application and may be injected through the irrigation system. It is recommended that KTS be *tank mixed* with N-SURE based slow-release nitrogen solutions containing triazone when making handgun and spray boom applications for increased efficiencies and safety. Apply with sufficient water to achieve adequate plant coverage especially during periods of low humidity and high temperature, to achieve the maximum benefit of *foliar* fertilization.

APPLICATION: Initiate application in spring when first green up appears and repeat as needed during the active growing season. Apply in 1½ to 4 gallons of spray solution per 1000 square feet.

COOL, TRANSITIONAL AND WARM SEASON GRASSES:

Rates may vary from 1/4 to 1 LB of potash (11 to 43 fluid ounces) per 1000 square feet in 4 to 6 applications at 8 to 12 week intervals for a total application rate of 1¼ to 6 LBS of potassium per 1000 square feet per year. It is recommended that KTS be applied in conjunction with ¼ to 1 LB (10 to 40 fluid ounces) of nitrogen supplied from N-SURE based slow-release nitrogen fertilizer solutions to aid in the absorption of the potassium and sulfur by the plant.

FERTIGATION: KTS may be injected during each irrigation at rates of 11 to 22 fluid ounces (1/4 to ½ LB of K₂O) per 1000 square feet. Rates will vary in accordance with the irrigation schedule. Use the lower rate in more frequent waterings.

GOLF COURSE PROGRAM

FAIRWAYS: KTS may be used as the sole potassium source in fairway fertilization with the additional benefit of sulfur to aid in more efficient nitrogen utilization. KTS may also be combined with N and P₂O₅ sources to supply the desired fertilizer blend for proper fairway nutrition. It is recommended that the applications be split to coincide with the nutritional demands of the cultivars present and the cultural program of the superintendent. Suggested rates will vary from 3 to 6 LBS of potash (1 to 2 gallons of KTS) per 1000 square feet per growing season.

TEE AND GREEN: For the spoon feeding of tees and greens apply 1/4 LB of K₂O (11 fluid ounces of KTS) in 2 to 4 gallons of total spray solution per 1000 square feet every 14 days. Application may be made in conjunction with the turf protection chemical program. In the absence of published data, a jar test is recommended to ensure compatibility. Irrigation is recommended following application.

FERTIGATION: KTS and blends with this fertilizer solution may be injected during each irrigation utilizing the current technology and equipment available to the golf course superintendent. It is recommended that rates be in accordance with soil testing data and with the equipment manufacturers' recommendations.

KTS may be applied either as a foliar feed or injected through the irrigation system. It may be applied as a sole source potash and sulfur or blended with N and P₂O₅ sources to provide a desired N:P:K blend with sulfur. Blends with KTS should not be acidified below a pH of 6.0 for prolong periods of storage.

KTS is compatible with N-SURE based slow release nitrogen solutions, urea and ammonium polyphosphate solution in any ratio. When blending with UAN solution, a jar test is recommended to ensure compatibilities. Potassium reacts with nitrate to form KNO₃ crystals. If this should occur, the addition of water and/or heat should bring the blend back to a clear solution.

In the absence of specific information concerning the mixing with micro nutrients and/or crop protection chemicals, it is recommended that a jar test be conducted to ensure compatibility.

KTS gives the turf professional a completely soluble potassium and sulfur product that allows immediate plant utilization through both root uptake and foliar feeding. KTS may be applied throughout the growing season to correct potassium deficiencies and aid in increasing drought

resistance, winter hardiness and overcoming the stress associated with insect and disease pressures.

ORNAMENTALS TREES AND SHRUBS

DEEP ROOT FEEDING: Deep root feeding applications may be made in either the spring or fall. In the spring, apply KTS after the frost is out of the ground, but before the tree has opened all its leaves. In the fall, wait until the tree has dropped most of its leaves or until the soil temperature has reached 50°F or less.

Suggested rates of application are 1 to 3 LBS of K₂O per 1000 square feet (43 to 128 ounces of KTS). Inject the KTS based fertilizer solution 8 to 12 inches deep on a grid pattern 2 to 3 feet apart so the area below the tree canopy plus one third of the area outside the canopy will be treated. When mixing KTS with phosphorous and nitrogen sources, a desirable N:P₂O₅:K₂O analysis might range from a 1:2:3 to a 3:1:1 blend.

FERTIGATION: KTS and blends with this fertilizer solution may be injected during each irrigation utilizing the current technology and equipment available to the professional applicator. It is recommended that rates be in accordance with soil testing data and with the equipment manufacturers' recommendations.

FOLIAR SPRAYS: KTS may be used in a foliar tree and shrub feeding program and applied in conjunction with a turf protection chemical program. It is recommended that N-SURE based slow-release nitrogen be included in this foliar application to enhance the absorption of potassium by the plant. In the absence of specific data when used in conjunction with turf protection chemicals, it is recommended that a simple jar test be made to determine compatibility of all ingredients prior to mixing. KTS will help stimulate new growth, aid recovery from insect and disease damage, and enhance color.

A suggested rate of application of KTS is 1 gallon per 100 gallons of spray solution. For concentrated sprays of less than 100 gallons reduce the rate of KTS to stay within the recommended solution ratio. For example, use 2 quarts when using a mixture of 50 gallons of spray solution. CAUTION should be exercised by the professional applicator before applying KTS and blends including this product to sensitive trees and shrubs. It is recommended that applicators complete their own trials in absence of specific data.

FERTIGATION: KTS and N:P:K blends containing KTS may be injected through the irrigation system utilizing the current technology and equipment available to the arborist. Rates may vary due to needs of specific varieties.

Refer to the following table when varying the rates of potash and sulfur when using KTS.

KTS	K ₂ O	S
fl. oz. per 1000 Ft ²	pounds per 1000 Ft ²	
11	0.26	0.18
22	0.52	0.36
32	0.75	0.53
43	1.00	0.71

When mixing KTS and N-SURE Pro 30-0-0 slow-release nitrogen solution the following approximate analysis will result. When applying any of the below combinations, use a minimum of 1½ gallons of spray solution per 1000 square feet and/or sufficient carrier to achieve adequate coverage for effective plant utilization.

RATIO (v/v)				APPROXIMATE ANALYSIS
KTS	:	N-Sure Pro 30-0-0 = (50% SRN)	=	
1	:	1	=	14-0-13
2	:	1	=	9-0-17
3	:	1	=	7-0-19
4	:	1	=	5-0-20
5	:	1	=	4-0-21

(above also contains sulfur)

TECHNICAL DATA INFORMATION

KTS 0-0-25+17S

Plant Nutrient Content Wt. %

Soluble Potash (K ₂ O)	25.0
Total Sulfur (S)	17.0
17% Combined Sulfur	
0% Free Sulfur	

Typical Properties

Specific Gravity	1.46
pH	7.0 to 8.2
Appearance	Clear, Colorless
Salting-Out Temperature, °F	<15

Formulation and Application Factors, 60°F.

Density, lbs/gallon	12.2
Volume, gallons/ton	164.0
Pounds K ₂ O per gallon	3.0
Pounds S per gallon	2.1

Plant Nutrient Source

Potassium Thiosulfate	K ₂ S ₂ O ₃
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KTS MIXING PROCEDURES:

- Add ½ of water to spray tank, begin circulating.
- Add recommended amount of KTS or other N and P sources.
- Add compatible micronutrients.
- Add flowable materials.
- Add emulsifiables.
- Add any soluble powders and/or water soluble fertilizers. All should be pre dispersed in water before adding to the spray tank solution.
- Complete filling of spray tank to desired volume and continue circulating prior to and during spray application.
- Flush all spray and nurse equipment after usage.

For additional information on N-SURE based slow-release nitrogen solutions, ask your vendor for a current application guide on these products.

CAUTION (APPLICATION):

- Do not apply KTS to the foliage of plants sensitive (foliar burn) to sulfur.
- Do not apply to foliage of any plant when temperatures are above 90°F.
- When mixing KTS or any liquid fertilizer with pesticides, always maintain vigorous agitation during filling and spraying operations.

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