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Waters

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SAFETY DATA SHEET

Issuing Date 14-Mar-2016 **Revision date** 24-Jan-2025 **Revision Number** 1.15

United States

1. Identification

Product identifier

Product Code(s)	**WAT054468**
Product Name	**Styragel Column, HR 6, 5 µm, 7.8 mm X 300 mm, 200K - 10M, THF , 1/pkg**
Synonyms	None
Pure substance/mixture	Substance

Recommended use of the chemical and restrictions on use

Recommended use	For Research and Development purposes only. Must only be handled by technically qualified individuals
Uses advised against	

Details of the supplier of the safety data sheet

Supplier or Manufacturer	Waters Corporation
Contact Point	Global Product Stewardship Department
Supplier Address	34 Maple St, Milford, MA 01757 USA
Company Phone Number	+1-508-482-2000
E-mail	sdsinfo@waters.com
Website	www.waters.com/sds

Emergency telephone number

Emergency Telephone	In case of EMERGENCY call CHEMTREC Day or Night Within USA and Canada: 800-424-9300 International Call Collect: +1-703-527-3887

The following information pertains to the solvent contained within this column.

2. Hazard(s) identification

Classification

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 4
Serious eye damage/eye irritation	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Flammable liquids	Category 2

Hazards not otherwise classified (HNOC)

Not applicable.

Label elements

Danger

Hazard statements

Harmful if swallowed
Harmful in contact with skin
Causes serious eye irritation
Suspected of causing cancer
May cause respiratory irritation
Highly flammable liquid and vapor



Appearance No information available **Physical state** Solid containing liquid **Odor** Ether

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Wear protective gloves/clothing and eye/face protection
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Keep container tightly closed
Ground and bond container and receiving equipment
Use only non-sparking tools
Take action to prevent static discharges
Keep cool

Precautionary Statements - Response
IF exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Call a POISON CENTER or doctor if you feel unwell
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
Wash contaminated clothing before reuse
IF INHALED: Remove person to fresh air and keep comfortable for breathing
IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
Rinse mouth
In case of fire: Use CO2, dry chemical, or foam to extinguish

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other information
No information available.

3. Composition/information on ingredients

Substance

Chemical name	CAS No.	Weight-%	Trade secret
Tetrahydrofuran	109-99-9	100	

4. First-aid measures

Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. IF exposed or concerned: Get medical advice/attention.

Inhalation Remove to fresh air. IF exposed or concerned: Get medical advice/attention.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If symptoms persist, call a physician.

Ingestion Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician.

Self-protection of the first aider Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed

Symptoms May cause redness and tearing of the eyes. Burning sensation.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media
Large Fire Dry chemical. Carbon dioxide (CO_2). Water spray. Alcohol resistant foam. CAUTION: Use of water spray when fighting fire may be inefficient.

Unsuitable extinguishing media Do not scatter spilled material with high pressure water streams.

Specific hazards arising from the chemical Risk of ignition. Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Explosion data
Sensitivity to mechanical impact None.

Sensitivity to static discharge Yes.

Special protective equipment and precautions for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material.

Other information Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapor suppressing foam may be used to reduce vapors. Dike far ahead of spill to collect runoff water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Methods for cleaning up Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

7. Handling and storage

Precautions for safe handling

Advice on safe handling Use personal protection equipment. Avoid breathing vapors or mists. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Use with local exhaust ventilation. Use spark-proof tools and explosion-proof equipment. Keep in an area equipped with sprinklers. Use according to package label instructions. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. In case of insufficient ventilation, wear suitable respiratory equipment.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labeled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers. Store in accordance with the particular national regulations. Store in accordance with local regulations. Keep out of the reach of children. Store locked up.

8. Exposure controls/personal protection

Control parameters

Exposure Limits

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Tetrahydrofuran 109-99-9	TWA: 50 ppm STEL: 100 ppm Sk*	TWA: 200 ppm TWA: 590 mg/m^3 (vacated) TWA: 200 ppm (vacated) TWA: 590 mg/m^3 (vacated) STEL: 250 ppm (vacated) STEL: 735 mg/m^3	IDLH: 2000 ppm TWA: 200 ppm TWA: 590 mg/m^3 STEL: 250 ppm STEL: 735 mg/m^3

Biological occupational exposure limits

Chemical name	ACGIH
Tetrahydrofuran	2 mg/L - urine (Tetrahydrofuran) - end of shift

109-99-9	

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection Tight sealing safety goggles.

Hand protection Wear suitable gloves. Impervious gloves.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron. Antistatic boots.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection.

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Solid containing liquid
Appearance	No information available
Color	No information available
Odor	Ether
Odor threshold	No information available

Property	**Values**	**Remarks • Method**
pH	7	
Melting point / freezing point	No data available	None known
Initial boiling point and boiling range	66 °C / 150.8 °F	None known
Flash point	-17 °C / 1.4 °F	
Evaporation rate	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapor pressure	No data available	None known
Relative vapor density	No data available	None known
Relative density	0.89	
Water solubility	Soluble in water	
Solubility(ies)	No data available	None known
Partition coefficient	no data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature		None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known

Other information

Explosive properties	No information available
Oxidizing properties	No information available
Softening point	No information available
Molecular weight	No information available
VOC content	No information available
Liquid Density	No information available
Bulk density	No information available

10. Stability and reactivity

Reactivity No information available.

Chemical stability Stable under normal conditions.

Possibility of hazardous reactions None under normal processing.

Conditions to avoid Heat, flames and sparks.

Incompatible materials None known based on information supplied.

Hazardous decomposition products None known based on information supplied.

11. Toxicological information

Information on likely routes of exposure

Product Information

Inhalation Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract.

Eye contact Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components). May cause redness, itching, and pain.

Skin contact Specific test data for the substance or mixture is not available. May cause irritation. Prolonged contact may cause redness and irritation. May be absorbed through the skin in harmful amounts. Harmful in contact with skin. (based on components).

Ingestion Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed. (based on components).

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms May cause redness and tearing of the eyes. Coughing and/ or wheezing. May cause redness and tearing of the eyes.

Acute toxicity

Numerical measures of toxicity
No information available

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Tetrahydrofuran 109-99-9	= 1650 mg/kg (Rat)	> 2000 mg/kg (Rat)	> 14.7 mg/L (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation May cause skin irritation.

Serious eye damage/eye irritation Classification based on data available for ingredients. Causes serious eye irritation.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity Contains a known or suspected carcinogen. Classification based on data available for ingredients. Suspected of causing cancer.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Tetrahydrofuran 109-99-9	A3	Group 2B	-	X

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)
A3 - Animal Carcinogen
IARC (International Agency for Research on Cancer)
Group 2B - Possibly Carcinogenic to Humans
Occupational Safety and Health Administration of the US Department of Labor
X - Present

Reproductive toxicity No information available.

STOT - single exposure May cause respiratory irritation.

STOT - repeated exposure No information available.

Target organ effects Respiratory system, Eyes, Central nervous system.

Aspiration hazard No information available.

Other adverse effects No information available.

Interactive effects No information available.

12. Ecological information

Ecotoxicity

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Tetrahydrofuran 109-99-9	-	LC50: 1970 - 2360mg/L (96h, Pimephales promelas) LC50: 2700 - 3600mg/L (96h, Pimephales	-	-

		promelas)		

Persistence and degradability No information available.

Bioaccumulation

Component Information

Chemical name	Partition coefficient
Tetrahydrofuran 109-99-9	0.45

Other adverse effects No information available.

13. Disposal considerations

Disposal methods

Waste from residues/unused products Should not be released into the environment. Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

US EPA Waste Number U213

California Hazardous Waste Status This product contains one or more substances that are listed with the State of California as a hazardous waste.

14. Transport information

DOT

UN number or ID number UN3175
Proper shipping name Solids containing flammable liquid, n.o.s.
Transport hazard class(es) 4.1
Packing group II
Reportable Quantity (RQ) (Tetrahydrofuran: RQ (kg)= 454.00) Tetrahydrofuran: RQ (lb)= 1000.00
Reportable quantity (kg) (calculated) Tetrahydrofuran: RQ (kg)= 454.00
Reportable quantity (lbs) (calculated) Tetrahydrofuran: RQ (lb)= 1000.00
Special Provisions 47, IB6, IP2, T3, TP33
DOT Marine Pollutant NP
Description UN3175, Solids containing flammable liquid, n.o.s. (Tetrahydrofuran), 4.1, II
Emergency Response Guide Number 133

TDG

UN number or ID number UN3175
UN proper shipping name Solids containing flammable liquid, n.o.s.
Transport hazard class(es) 4.1
Packing group II
Special Provisions 16, 56
Description UN3175, Solids containing flammable liquid, n.o.s. (Tetrahydrofuran), 4.1, II

MEX

UN number or ID number	UN3175
UN proper shipping name	Solids containing flammable liquid, n.o.s.
Transport hazard class(es)	4.1
Packing group	II
Technical Name	Tetrahydrofuran
Description	UN3175, Solids containing flammable liquid, n.o.s. (Tetrahydrofuran), 4.1, II
Special Provisions	216, 274

ICAO (air)

UN number or ID number	UN3175
UN proper shipping name	Solids containing flammable liquid, n.o.s.
Transport hazard class(es)	4.1
Packing group	II
Description	UN3175, Solids containing flammable liquid, n.o.s. (Tetrahydrofuran), 4.1, II
Special Provisions	A46

IATA

UN number or ID number	UN3175
UN proper shipping name	Solids containing flammable liquid, n.o.s.
Transport hazard class(es)	4.1
Packing group	II
Technical Name	Tetrahydrofuran
Description	UN3175, Solids containing flammable liquid, n.o.s. (Tetrahydrofuran), 4.1, II
Special Provisions	A46
ERG Code	3L

IMDG

UN number or ID number	UN3175
UN proper shipping name	Solids containing flammable liquid, n.o.s.
Transport hazard class(es)	4.1
Packing group	II
EmS-No.	F-A, S-I
Special Provisions	216, 274
Marine pollutant	NP
Description	UN3175, Solids containing flammable liquid, n.o.s. (Tetrahydrofuran), 4.1, II, (-17°C c.c.)

RID

UN number or ID number	UN3175
UN proper shipping name	Solids containing flammable liquid, n.o.s.
Transport hazard class(es)	4.1
Packing group	II
Classification code	F1
Special Provisions	216, 274, 601
Description	UN3175, Solids containing flammable liquid, n.o.s. (Tetrahydrofuran), 4.1, II

ADR

UN number or ID number	UN3175
UN proper shipping name	Solids containing flammable liquid, n.o.s.
Transport hazard class(es)	4.1
Packing group	II
Classification code	F1
Tunnel restriction code	(E)
Special Provisions	216, 274, 601
Description	UN3175, Solids containing flammable liquid, n.o.s. (Tetrahydrofuran), 4.1, II, (E)

ADN

UN number or ID number	UN3175
UN proper shipping name	Solids containing flammable liquid, molten
Transport hazard class(es)	4.1
Packing group	II
Classification code	F1

Special Provisions	216, 274, 601, 800
Description	UN3175, Solids containing flammable liquid, molten (Tetrahydrofuran), 4.1, II
Ventilation	VE01, VE03
Equipment Requirements	PP, EX, A

15. Regulatory information

International Inventories

TSCA Contact supplier for inventory compliance status.

Chemical name	CAS No.	Inventory Listing Status	Commercial Activity Designation
Tetrahydrofuran	109-99-9	Present	Active

DSL/NDSL	Contact supplier for inventory compliance status.
EINECS/ELINCS	Contact supplier for inventory compliance status.
ENCS	Contact supplier for inventory compliance status.
IECSC	Contact supplier for inventory compliance status.
KECL	Contact supplier for inventory compliance status.
PICCS	Contact supplier for inventory compliance status.
AIIC	Contact supplier for inventory compliance status.

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AIIC - Australian Inventory of Industrial Chemicals

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	Reportable Quantity (RQ)
Tetrahydrofuran	1000 lb	-	RQ 1000 lb final RQ

109-99-9			RQ 454 kg final RQ

US State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals:.

Chemical name	California Proposition 65
Tetrahydrofuran - 109-99-9	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Tetrahydrofuran 109-99-9	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA	**Health hazards** 2	**Flammability** 3	**Instability** 0	**Special hazards** -
HMIS	**Health hazards** 2 *	**Flammability** 3	**Physical hazards** 0	**Personal protection** X

Chronic Hazard Star Legend ** = Chronic Health Hazard*

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	Sk*	Skin designation

Key literature references and sources for data used to compile the SDS
Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
National Institute of Technology and Evaluation (NITE)
Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine’s PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
World Health Organization

Issuing Date	14-Mar-2016
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Revision Note	No information available.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

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