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A/C No.FSU3168652001 Order No.014266 -Our Ref. 1150521851/3150759861

Dear Customer,

According to Article 31 of Regulation (EC) No 1907/2006 of the European Parliament concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), Fisher Scientific UK Limited is required to provide customers with a safety data sheet (SDS) in accordance with Annex I of Regulation (EU) No 453/2010.

In order to fulfil this requirement, the relevant safety data sheet (SDS) is sent to you on the first occasion that your organization purchases the chemical. Subsequent orders will receive a safety data sheet (SDS) if a new revision is available or 12 months has passed since you last received an SDS.

In compliance with paragraph 8, Article 31 of Regulation (EC) No 1907/2006, Fisher Scientific UK Limited is able to supply safety data sheets free of charge on paper and electronically. If you are not the appropriate person to receive this information, or if any contact details that we have are incorrect, please contact our Customer Service Department on 01509 555500 (UK) or 01 885 5854 (Ireland). We now have the ability to send safety data sheets via email, if you wish to change delivery method please contact us at the e-mail address below.

MSDS enclosed for:
FSUT0601 Tetrachloroethylene

Yours sincerely,

Compliance Department, Fisher Scientific
e-mail: European.RA@thermofisher.com



SAFETY DATA SHEET

Creation Date 10-Dec-2009

Revision Date 29-Jan-2013

Revision Number 11

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Identifier
Product Description: Tetrachloroethylene
Reach Registration Number 01-2119475329-28
Cat No. T/0601/25, T/0601/PB17, T/0601/17, T/0601/21RSS, T/0601/24RSS, T/0601/25RSS, T/0601/34RSS, T/0601/27RSS
Synonyms Perchloroethylene

Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Laboratory chemicals
Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
 Fisher Scientific UK
 Bishop Meadow Road
 Loughborough, Leicestershire,
 LE11 5RG, United Kingdom
 Tel: 01509 231166
E-mail address begel.sdsdesk@thermofisher.com

Emergency Telephone Number

Tel: 01509 231166
 Chemtrec US: (800) 424-9300
 Chemtrec EU: 001 (202) 483-7616

SECTION 2. HAZARDS IDENTIFICATION
Classification of the substance or mixture
REGULATION (EC) No 1272/2008

Skin Corrosion/irritation	Category 2
Skin Sensitization	Category 1
Carcinogenicity	Category 2
Specific target organ toxicity - (single exposure)	Category 3
Chronic aquatic toxicity	Category 2

Classification according to EU Directives 67/548/EEC or 1999/45/EC

For the full text of the R-phrases and H-Statements mentioned in this Section, see Section 16

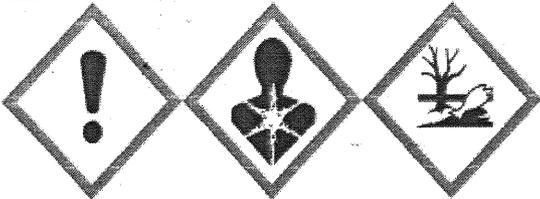
Symbol(s) Xn - Harmful
 N - Dangerous for the environment
R-phrases R38 - Irritating to skin
 R40 - Limited evidence of a carcinogenic effect
 R43 - May cause sensitization by skin contact
 R67 - Vapors may cause drowsiness and dizziness
Risk Combination Phrases R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Tetrachloroethylene

Revision Date 29-Jan-2013

SECTION 2. HAZARDS IDENTIFICATION

Label Elements


Signal Word
Warning
Hazard Statements

H351 - Suspected of causing cancer
H411 - Toxic to aquatic life with long lasting effects
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H336 - May cause drowsiness or dizziness

Precautionary Statements - EU (§28, 1272/2008)

P281 - Use personal protective equipment as required
P273 - Avoid release to the environment
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

Other Hazards

No information available.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	EC-No.	Weight %	CAS-No	67/548/EEC Classification	CLP Classification - Regulation (EC) No 1272/2008	REACH No.
Tetrachloroethylene 127-18-4	EEC No. 204-825-9	>95	127-18-4	Carc.Cat.3; R40 N; R51-53 Xi;R38 R43 R67	Carc. 2 (H351) Skin Irrit. 2 (H315) Skin Sens. 1 (H317) STOT SE 3 (H336) Aquatic Chronic 2 (H411)	01-2119475329-28



SAFETY DATA SHEET

Tetrachloroethylene

Revision Date 29-Jan-2013

For the full text of the R-phrases and H-Statements mentioned in this Section, see Section 16

SECTION 4. FIRST AID MEASURES

Description of first aid measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.
Ingestion	Do not induce vomiting. Obtain medical attention.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Obtain medical attention.
Notes to Physician	Treat symptomatically

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable Extinguishing Media

Substance is nonflammable; use agent most appropriate to extinguish surrounding fire..

Extinguishing media which must not be used for safety reasons

No information available.

Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors. Containers may explode when heated.

Advice for fire-fighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

Environmental precautions

Should not be released into the environment.

Tetrachloroethylene

Revision Date 29-Jan-2013

Methods and material for containment and cleaning up

- Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE
Precautions for Safe Handling

Use only under a chemical fume hood. Wear personal protective equipment. Ensure adequate ventilation. Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing.

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from sunlight.

Specific End Uses
SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION
Control parameters
Exposure limits
Component

Tetrachloroethylene

European Union	The United Kingdom	France	Belgium	Spain
	STEL: 100 ppm 15 min STEL: 689 mg/m ³ 15 min TWA: 50 ppm 8 hr TWA: 345 mg/m ³ 8 hr	VME: 50 ppm 8 heures. VME: 335 mg/m ³ 8 heures.	TWA: 25 ppm 8 uren TWA: 172 mg/m ³ 8 uren STEL: 100 ppm 15 minuten STEL: 695 mg/m ³ 15 minuten	VLA-EC: 100 ppm 15 minutos VLA-EC: 689 mg/m ³ 15 minutos VLA-ED: 25 ppm 8 horas VLA-ED: 172 mg/m ³ 8 horas

Component

Tetrachloroethylene

Italy	Germany	Portugal	The Netherlands	Finland
	Skin	STEL: 100 ppm 15 minutos TWA: 25 ppm 8 horas		TWA: 10 ppm 8 tunteina TWA: 70 mg/m ³ 8 tunteina

Component

Tetrachloroethylene

Austria	Denmark	Switzerland	Poland	Norway
Skin STEL: 200 ppm 15 Minuten STEL: 1380 mg/m ³ 15 Minuten TWA: 50 ppm 8 Stunden TWA: 345 mg/m ³ 8 Stunden	TWA: 10 ppm 8 timer TWA: 70 mg/m ³ 8 timer Skin	Skin STEL: 100 ppm 15 Minuten STEL: 690 mg/m ³ 15 Minuten MAK: 50 ppm 8 Stunden MAK: 345 mg/m ³ 8 Stunden	NDSCh: 480 mg/m ³ 15 minutach TWA: 60 mg/m ³ 8 godzinach	TWA: 6 ppm 8 timer TWA: 40 mg/m ³ 8 timer STEL: 12 ppm 15 minutter. STEL: 60 mg/m ³ 15 minutter. Skin



SAFETY DATA SHEET

Tetrachloroethylene

Revision Date 29-Jan-2013

Component

Tetrachloroethylene

Bulgaria	Croatia	Ireland	Cyprus	Czech Republic
TWA: 120.0 mg/m ³	TWA: 50 ppm 8 satima. TWA: 345 mg/m ³ 8 satima. STEL: 100 ppm 15 minutama. STEL: 689 mg/m ³ 15 minutama.	TWA: 25 ppm 8 hr. TWA: 170 mg/m ³ 8 hr. STEL: 150 ppm 15 min STEL: 1000 mg/m ³ 15 min		TWA: 250 mg/m ³ 8 hodinách. Potential for cutaneous absorption Ceiling: 750 mg/m ³

Component

Tetrachloroethylene

Estonia	Gibraltar	Greece	Hungary	Iceland
TWA: 10 ppm 8 tundides. TWA: 70 mg/m ³ 8 tundides. STEL: 25 ppm 15 minutites. STEL: 170 mg/m ³ 15 minutites.		STEL: 150 ppm STEL: 1000 mg/m ³ TWA: 50 ppm TWA: 335 mg/m ³	STEL: 50 mg/m ³ 15 percekben. TWA: 50 mg/m ³ 8 órában. potential for cutaneous absorption	TWA: 10 ppm 8 klukkustundum. TWA: 70 mg/m ³ 8 klukkustundum. TWA: 20 ppm 8 klukkustundum. Skin notation Ceiling: 20 ppm Ceiling: 140 mg/m ³ Ceiling: 40 ppm

Component

Tetrachloroethylene

Latvia	Lithuania	Luxembourg	Malta	Romania
TWA: 10 mg/m ³	TWA: 10 ppm TWA: 70 mg/m ³ STEL: 25 ppm STEL: 170 mg/m ³			TWA: 7 ppm 8 ore TWA: 50 mg/m ³ 8 ore STEL: 14 ppm 15 minute STEL: 100 mg/m ³ 15 minute

Component

Tetrachloroethylene

Russia - TWA	Slovak Republic	Slovenia	Sweden	Turkey
TWA: 10 mg/m ³ STEL: 30 mg/m ³ vapor	Potential for cutaneous absorption	TWA: 50 ppm 8 urah TWA: 345 mg/m ³ 8 urah Potential for cutaneous absorption STEL: 200 ppm 15 minutah STEL: 1380 mg/m ³ 15 minutah	STV: 25 ppm 15 minuter STV: 170 mg/m ³ 15 minuter LLV: 10 ppm 8 timmar. LLV: 70 mg/m ³ 8 timmar.	

Biological limit values

Component

Tetrachloroethylene

European Union	United Kingdom	France	Spain	Germany
		Perchloroethylene: 1 mg/L blood prior to shift Trichloroacetic acid: 7 mg/L urine end of workweek	Perchloroethylene: 5 ppm alveolar air start of last shift of workweek end-cut of exhaled air Perchloroethylene: 0.5 mg/L blood start of last shift of workweek Trichloroacetic acid: 3.5 mg/L urine end of workweek	Tetrachloroethene: 1 mg/L whole blood before beginning of next shift

Tetrachloroethylene
Revision Date 29-Jan-2013
Component
Tetrachloroethylene

Austria	Switzerland	Poland	Norway	Ireland
	Tetrachloroethene: 1 mg/L whole blood before subsequent shift Trichloroacetic acid: 7 mg/L urine end of shift, and after several shifts (for long-term exposures)			

Component
Tetrachloroethylene

Bulgaria	Gibraltar	Latvia	Luxembourg	Romania
				Trichloroethanol: 300 mg/g creatinine urine end of work week

Component
Tetrachloroethylene

Slovak Republic	Turkey
Tetrachloroethylene: 1 mg/L blood before the next work shift Tetrachloroethylene: 9.5 ppm air before the next work shift	

Derived No Effect Level (DNEL) No information available.
Predicted No Effect Concentration (PNEC) No information available.

Exposure controls
Engineering Measures

Use only under a chemical fume hood Ensure adequate ventilation, especially in confined areas Ensure that eyewash stations and safety showers are close to the workstation location

Personal protective equipment
Eye Protection

Safety glasses with side-shields

Hand Protection

Protective gloves

Skin and body protection

Long sleeved clothing

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice

Environmental exposure controls

No information available.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES
Physical State

Liquid

Appearance

Colorless

Odor

sweet

pH

No information available.

Vapor Pressure

18 mbar @ 20 °C

Viscosity

0.89 mPa.s at 20 °C

Boiling Point/Range

120 - 122°C / 248 - 251.6°F @ 760 mmHg



SAFETY DATA SHEET

Tetrachloroethylene

Revision Date 29-Jan-2013

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Melting Point/Range	-22°C / -7.6°F
Decomposition temperature	> 150°C
Flash Point	No information available.
Autoignition Temperature	No information available.
Evaporation Rate	(Ether = 1.0)
Water Solubility	0.15 g/l (20°C)
Specific Gravity	1.625
Molecular Formula	C2 Cl4
Molecular Weight	165.83

SECTION 10. STABILITY AND REACTIVITY

ReactivityChemical Stability

Decomposes slowly on exposure to water.

Possibility of Hazardous Reactions

Hazardous Polymerization	No information available
Hazardous Reactions	No information available.

Conditions to Avoid

Incompatible products, Excess heat, Exposure to moist air or water.

Incompatible Materials

Strong acids, Strong oxidizing agents, Strong bases, Metals.

Hazardous Decomposition Products

Chlorine. Hydrogen chloride gas. Phosgene.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on Toxicological EffectsAcute Toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation (Dust)
Tetrachloroethylene	2629 mg/kg (Rat)		4000 ppm (Rat) 4 h

Tetrachloroethylene
Revision Date 29-Jan-2013
Chronic Toxicity
Carcinogenicity
Component
Tetrachloroethylene

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

IARC	UK
Group 2A	

Sensitization

No information available.

Mutagenic Effects

Mutagenic effects have occurred in humans.

Reproductive Effects

Experiments have shown reproductive toxicity effects on laboratory animals

Developmental Effects

Developmental effects have occurred in experimental animals

Teratogenicity

Teratogenic effects have occurred in experimental animals.

Target Organs

Central nervous system (CNS) Eyes Respiratory system Skin Kidney Liver Blood

Other Adverse Effects

Tumorigenic effects have been reported in experimental animals. See actual entry in RTECS for complete information

Endocrine Disruptor Information
Component
Tetrachloroethylene

EU - Endocrine Disruptors Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Group II Chemical		

SECTION 12. ECOLOGICAL INFORMATION
Toxicity
Ecotoxicity effects

Do not empty into drains

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Tetrachloroethylene	500 mg/L EC50 > 96 h	8.6-13.5 mg/L LC50 96 h 4.73-5.27 mg/L LC50 96 h 11.0-15.0 mg/L LC50 96 h 12.4-14.4 mg/L LC50 96 h	EC50 = 100 mg/L 24 h EC50 = 112 mg/L 24 h EC50 = 120.0 mg/L 30 min	6.1 - 9.0 mg/L EC50 48 h

Persistence and degradability

No information available

Bioaccumulative potential

No information available.

Component	log Pow
Tetrachloroethylene	2.88

Mobility in soil

SAFETY DATA SHEET



Tetrachloroethylene

Revision Date 29-Jan-2013

Results of PBT and vPvB assessmentOther adverse effects

No information available

SECTION 13. DISPOSAL CONSIDERATIONSWaste treatment methodsWaste from Residues / Unused Products

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification

Contaminated Packaging

Empty containers should be taken to local recyclers for disposal

SECTION 14. TRANSPORT INFORMATIONIMDG/IMO

UN-No	UN1897
Hazard Class	6.1
Packing Group	III
Proper Shipping Name	TETRACHLOROETHYLENE

ADR

UN-No	UN1897
Hazard Class	6.1
Packing Group	III
Proper Shipping Name	TETRACHLOROETHYLENE

IATA

UN-No	UN1897
Hazard Class	6.1
Packing Group	III
Proper Shipping Name	TETRACHLOROETHYLENE

SECTION 15. REGULATORY INFORMATIONSafety, health and environmental regulations/legislation specific for the substance or mixtureInternational Inventories

Component	EINECS	ELINCS	NLP	TSCA	DSL	NDSL	PICCS	ENCS	CHINA	AICS	KECL
Tetrachloroethylene	204-825-9	-		X	X	-	X	X	X	X	X



Tetrachloroethylene

Revision Date 29-Jan-2013

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List
PICCS - Philippines Inventory of Chemicals and Chemical Substances
ENCS - Japan Existing and New Chemical Substances
CHINA - China Inventory of Existing Chemical Substances
AICS - Inventory of Chemical Substances
KECL - Existing and Evaluated Chemical Substances

Chemical Safety Assessment**SECTION 16. OTHER INFORMATION****Full text of R-phrases referred to under sections 2 and 3**

R38 - Irritating to skin
R40 - Limited evidence of a carcinogenic effect
R43 - May cause sensitization by skin contact
R67 - Vapors may cause drowsiness and dizziness
R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Revision Date 29-Jan-2013

Revision Summary

Reason for revision (M)SDS sections updated, 1, 2, 3, 16.

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer

The information provided on 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

End of Safety Data Sheet