



1. IDENTIFICATION

Product Name	Perchloroethylene
Other Names	1,1,2,2-Tetrachloroethylene; Ethene, Tetrachloro-; Ethylene tetrachloride; PCE; Tetrachloroethylene
Uses	Manufacture of substance, Use of substance as intermediate, Use in cleaning agents, Distribution of substance, Formulation & (re)packing of substances and mixtures, Heat transfer fluid.
Chemical Family	No Data Available
Chemical Formula	C ₂ Cl ₄
Chemical Name	Perchloroethylene
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

UDS Pty Ltd T/as
Universal Dry Cleaning Solutions
Tel: (02) 9688 2022 Fax: (02) 9688 2044
PO Box 553, Seven Hills NSW 1730
www.universaldrycleaningsolutions.com.au
Email: consumables@udcs.com.au

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) 6

Globally Harmonised System



CLEANING & FINISHING
Solutions



Solutions that work for your business

Safety Data Sheet Perchloroethylene Revision 3, Date 10 Feb 2016

Hazard Classification

Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

Hazard Categories

Carcinogenicity - Category 2
 Long-term Hazard To The Aquatic Environment - Category 2
 Acute Toxicity (Oral) - Category 5
 Acute Toxicity (Inhalation) - Category 4
 Skin Corrosion/Irritation - Category 2
 Serious Eye Damage/Irritation - Category 2A
 Specific Target Organ Toxicity (Repeated Exposure) - Category 2

Pictograms



Signal Word

Warning

Hazard Statements

H303	May be harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe fume/gas/mist/vapours/spray.
P264	Wash ... thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P337 + P313	If eye irritation persists: Get medical advice/attention.
P362	Take off contaminated clothing and wash before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

Response

Storage

Disposal

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

HSNO Classifications

Health
Hazards

6.1E	Substances that are acutely toxic –May be harmful, Aspiration hazard
6.3A	Substances that are irritating to the skin
6.4A	Substances that are irritating to the eye

Environmental Hazards	6.7A	Substances that are known or presumed human carcinogens
	6.9B	Substances that are harmful to human target organs or systems
	9.1A	Substances that are very ecotoxic in the aquatic environment
	9.3B	Substances that are ecotoxic to terrestrial vertebrates
	9.1B	Substances that are ecotoxic in the aquatic environment
	9.2C	Substances that are harmful in the soil environment

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Tetrachloroethylene	No Data Available	127-18-4	100.0 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	General Information: Remove affected person from source of contamination. General first aid, rest, warmth and fresh air. Place unconscious person on the side in the recovery position and ensure breathing can take place. DO NOT INDUCE VOMITING! NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Get medical attention immediately!
Eye	Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.
Skin	Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if any discomfort continues.
Inhaled	Remove victim immediately from source of exposure. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention if any discomfort continues. Perform artificial respiration if breathing has stopped.
Advice to Doctor	Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.
Medical Conditions Aggravated by Exposure	No information available on medical conditions aggravated by exposure to this product.

5. FIRE FIGHTING MEASURES

General Measures	Avoid breathing fire vapours. Keep run-off water out of sewers and water sources. Dike for water control. Keep people away. Isolate fire and deny unnecessary entry.
Flammability Conditions	Product is a non-flammable liquid.
Extinguishing Media	Use fire-extinguishing media appropriate for surrounding materials. Use water to keep fire exposed containers cool and disperse vapours. Do not use water jet as an extinguisher, as this will spread the fire. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.
Hazardous Products of Combustion	Hydrogen chloride (HCl), Phosgene (COCl ₂).
Special Fire Fighting Instructions	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
Personal Protective Equipment	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves) or chemical splash suit.
Flash Point	No Data Available

Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	22

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Avoid accidents, clean up immediately. Slippery when spilt. Personnel involved in the clean up should wear full protective clothing as listed in section 8. Eliminate all sources of ignition. Increase ventilation. Use clean, non-sparking tools and equipment.
Clean Up Procedures	Soak up spilled product using absorbent non-combustible material such as sand or soil. Avoid using sawdust or cellulose. When saturated, collect the material and transfer to a suitable, labelled chemical waste container and dispose of promptly as hazardous waste.
Containment	Stop leak if safe to do so.
Environmental Precautionary Measures	Do not allow product to reach drains, sewers or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Authority.
Evacuation Criteria	Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering.
Personal Precautionary Measures	Do NOT touch damaged containers or spilled material unless wearing appropriate protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling	Do not use in confined spaces without adequate ventilation and/or respirator. Avoid inhalation of vapours/spray and contact with skin and eyes. Do not swallow. Container must be kept tightly closed. Provide good ventilation. Good personal hygiene is necessary. Wash hands and contaminated areas with water and soap before leaving the work site.
Storage	Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. Keep away from heat, sparks and open flame. Keep out of direct sunlight. This product has a UN classification of 1897 and a Dangerous Goods Class 6.1 (Toxic) according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.
Container	Container type/packaging must comply with all applicable local legislation. Store in original packaging as approved by manufacturer. Unsuitable containers: aluminium.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	The following exposure standard has been established by The Australian Safety and Compensation Council (ASCC); Tetrachloroethylene CAS 127-18-4: TWA = 50ppm (340mg/m ³) STEL = 150ppm (1020mg/m ³) NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.
Exposure Limits	No Data Available
Biological Limits	No information available on biological limit values for this product.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Adequate ventilation should be provided so that exposure limits are not exceeded.
Personal Protection Equipment	RESPIRATOR: If ventilation is insufficient, suitable respiratory protection must be provided. Chemical respirator with organic vapour cartridge (AS1715/1716). EYES: Wear approved safety goggles (AS1336/1337).

HANDS: The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material. When prolonged or repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes) is recommended (AS2161).
CLOTHING: Chemical-resistant coveralls, an apron and safety footwear (AS3765/2210).

Work Hygienic Practices

Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly with soap & water if skin becomes contaminated. DO NOT SMOKE IN WORK AREA!

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Chlorinated hydrocarbons.
Colour	Colourless
pH	No Data Available
Vapour Pressure	2.5 kPa (@ 25 °C)
Relative Vapour Density	5.8 Air = 1
Boiling Point	121 °C 760 mmHg
Melting Point	No Data Available
Freezing Point	-22 °C
Solubility	0.015 g/100g Water 20°C
Specific Gravity	1.619
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	1631 Kg/m3
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	166 g/mol
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	2.53
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	0.52 cSt (@ 25 °C)
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	Solubility: Slightly soluble in water. Soluble in: Organic solvents. Volatility Description: Volatile. Critical Temperature (deg C): 347
Potential for Dust Explosion	Product is a liquid.
Fast or Intensely Burning Characteristics	No Data Available
Flame Propagation or Burning Rate of Solid Materials	No Data Available
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No Data Available
Properties That May Initiate or Contribute to Fire Intensity	No Data Available

Reactions That Release Gases or Vapours No Data Available

Release of Invisible Flammable Vapours and Gases No Data Available

10. STABILITY AND REACTIVITY

Chemical Stability Stable under normal temperature conditions and recommended use.

Conditions to Avoid Avoid heat, flames and other sources of ignition. Avoid exposure to high temperatures or direct sunlight.

Materials to Avoid Strong oxidising substances. Strong reducing agents. Avoid contact with metals such as: zinc powders, aluminium powders, magnesium powders, potassium, sodium Amines.

Hazardous Decomposition Products Hydrogen chloride (HCl). Phosgene (COCl₂).

Hazardous Polymerisation No specific reactivity hazards associated with this product. Will not polymerise.

11. TOXICOLOGICAL INFORMATION

General Information

Oral LD50 Rat: >3000 mg/Kg
Dermal LD50 Rabbits: >10000 mg/Kg

Inhalation LC50 Rats/4hr: >20 mg/L - There is no evidence that the material can lead to respiratory hypersensitivity. Has demonstrated the potential for contact allergy in mice

Negative.

Negative.

This substance has been shown to increase the incidence of tumors in certain strains of mice and rats. Other long-term inhalation studies in rats failed to show tumorigenic response. Human data are limited and have not established an association between exposure and cancer. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals. In humans, effects have been reported on the following organs: central nervous system. In animals, effects have been reported on the following organs: central nervous system, kidney, liver. Observations in animals include anesthetic or narcotic effects. Based on physical properties, not likely to be an aspiration hazard.

General Information:

Known or suspected carcinogen for humans.

Health Warnings:

Anaesthetic in high concentrations.

Route of entry:

Ingestion. Inhalation.

Eye/Irritant May cause temporary eye irritation.

Ingestion Gastrointestinal symptoms, including upset stomach. Nausea, vomiting. Central nervous system depression.

Inhalation Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness; nausea or vomiting; headache; unconsciousness.

Skin/Irritant Irritating to skin. May cause sensitisation by skin contact. Skin irritation. Mild dermatitis, allergic skin rash.

Carcinogen Category 3

12. ECOLOGICAL INFORMATION

Ecotoxicity

Fish (Onchorhynchus mykiss (Rainbow trout)) LC50/96hr: 5mg/L

Aquatic Invertebrates (Daphnia magna) EC50/48hr: 8.5mg/L

Aquatic Plants (Chlamydomonas reinhardtii) EC50/72hr: 3.64mg/L

Microorganisms (Nitrosomonas) EC50/24hr: 112mg/L

Not Classified as PBT/vPvB by current EU criteria.

Persistence/Degradability	The product is not readily biodegradable.
Mobility	Adsorption/Desorption: Soil Koc ~ 141 Coefficient Henry's Law Constant 2.11 Pa m ³ /mol
Environmental Fate	Do NOT let product reach waterways, drains and sewers.
Bioaccumulation Potential	Bioconcentration potential is low. Bioaccumulation Factor: BCF 49 <i>Lepomis macrochirus</i> (Bluegill) Partition Coefficient 2.53
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.
Special Precautions for Land Fill	Contact a specialist disposal company or the local waste regulator for advice.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	TETRACHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	1897
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Land Transport (Malaysia)

ADR

Proper Shipping Name	TETRACHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	1897
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	TETRACHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible

UN Number	1897
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name	TETRACHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
ERG	160 Halogenated Solvents
UN Number	1897
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Sea Transport

IMDG Code

Proper Shipping Name	TETRACHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
UN Number	1897
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available
EMS	FA,SA
Marine Pollutant	Yes

Air Transport

IATA DGR

Proper Shipping Name	TETRACHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
UN Number	1897
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	6

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR001551
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National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	204-825-9
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Listed
Korea (KECI)	Listed
Malaysia (EHS Register)	Listed
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Switzerland (Gifliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Listed
USA (TSCA)	Listed

16. OTHER INFORMATION

Related Product Codes

PECHLO0200, PECHLO0400, PECHLO0500, PECHLO0600, PECHLO0700, PECHLO0800, PECHLO0900, PECHLO1000, PECHLO1001, PECHLO1002, PECHLO1003, PECHLO1004, PECHLO1005, PECHLO1006, PECHLO1007, PECHLO1008, PECHLO1009, PECHLO1010, PECHLO1011, PECHLO1012, PECHLO1013, PECHLO1014, PECHLO1015, PECHLO1016, PECHLO1017, PECHLO1018, PECHLO1019, PECHLO1020, PECHLO1021, PECHLO1022, PECHLO1023, PECHLO1100, PECHLO1101, PECHLO1102, PECHLO1103, PECHLO1200, PECHLO1300, PECHLO1400, PECHLO1500, PECHLO1600, PECHLO1700, PECHLO1701, PECHLO1800, PECHLO1900, PECHLO2000, PECHLO2001, PECHLO2002, PECHLO2100, PECHLO2200, PECHLO2300, PECHLO3000, PECHLO3001, PECHLO3100, PECHLO4000, PECHLO5000, PECHLO7700, PECHLO8000, PECHLO1705, PECHLO1801, PECHLO1802, PECHLO1803, PECHLO1804, PECHLO1805, PECHLO1806, PECHLO1807, PECHLO1808, PECHLO1809, PECHLO1810, PECHLO1811, PECHLO1812, PECHLO1813, PECHLO1814, PECHLO1815, PECHLO1816, PECHLO1817, PECHLO1818, PECHLO1819, PECHLO1820, PECHLO1821, PECHLO1822, PECHLO1823, PECHLO1824, PECHLO1707, PECHLO1825, PECHLO2700, PECHLO2202, PECHLO0902, PECHLO3011, PECHLO3012, PECHLO3010, PECHLO3020, PECHLO3021, PECHLO0901, PECHLO6000, PECHLO9000, PECHLO9001

Revision

3

Revision Date

10 Feb 2016

Key/Legend

< Less Than
 > Greater Than
AICS Australian Inventory of Chemical Substances
atm Atmosphere
CAS Chemical Abstracts Service (Registry Number)
cm² Square Centimetres
CO2 Carbon Dioxide
COD Chemical Oxygen Demand
deg C (°C) Degrees Celcius
EPA (New Zealand) Environmental Protection Authority of New Zealand
deg F (°F) Degrees Fahrenheit
g Grams
g/cm³ Grams per Cubic Centimetre

g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
Immiscible Liquids are Insoluble in each other.
InHg Inch of Mercury
InH₂O Inch of Water
K Kelvin
kg Kilogram
kg/m³ Kilograms per Cubic Metre
lb Pound
LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or L Litre
m³ Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m³ Milligrams per Cubic Metre
Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH₂O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Health and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppmv/2h Parts per Million per 2 Hours
ppmv/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight



universaldrycleaningsolutions

The following specification is the latest revision (as at 16 Jan 2018) and supersedes all previous specifications for this product code.

Specification Details					
Product Code	PECHLO0900	CAS Number	127-18-4	Shelf Life	730 Day
Product	Perchloroethylene - PERSTABIL				
Pack Size	330 kg net Drums				
Customer Name	Uds Pty Limited T/A Universal Drycleaning Solutions				
Sales Order	4194782				
Revision	6 (on 10/01/2018)				
Authorised By	Damien Barrett Quality Assurance Manager	Notes	Change to format - creditor.		

Specifications				
Description	Unit	Typical	Guaranteed	Method
Appearance: clear without suspended matter			Conforms	Visual test (ASTM D 3741/B)
Molecular Mass: 165.8				
Purity, without stabilizers	% w/w		Min 99.9	Gas chromatography (MOP 602958)
Moisture, H ₂ O	mg/kg		Max 30	Karl Fischer (ASTM D3401)
Colour	APHA		Max 15	Colorimetry (ASTM D2108)
Non-volatile residue	mg/kg		Max 30	Gravimetry (ASTM D2109)
Alkalinity, NaOH	mg/kg		Max 30	Titrimetry (ASTM D2989)
Acid acceptance, NaOH	g/kg		Max 0.3	Titrimetry (ASTM D2942)
Density range (d ₂₅ /25)			1.616 - 1.621	Oscillating U-tube (ASTM D2111/C)
Odour: no foreign odour			Passes Test	Odour measurement (ASTM D4494)
Cu corr., wt loss, Flask	mg		Max 10	ASTM D3316
Cu corr., wt loss, Soxhlet	mg		Max 20	ASTM D3316
Cu corr., wt loss, Condenser	mg		Max 20	ASTM D3316
Cu corr., wt loss, Acid (HCl)	ml		Max 15	ASTM D3316
Complies with ASTM D4081-00 (2011), "Standard Specification for Drycleaning Grade Perchloroethylene"				

