Material Safety Data Sheet

Material Name: SMITHFIELD RECOVERED PERCHLORETHYLENE **ID: 820090**

* * * Section 1 - Chemical Product and Company Identification * * *

Product Use: Cleaning agent. If this product is used in combination with other products, refer to the Material Safety Data Sheet for those products.

THIS PRODUCT IS NOT FOR SALE OR USE IN THE STATE OF CALIFORNIA

Synonyms: Tetrachloroethylene; Tetrachloroethene; Perchloroethene; 1,1,2,2-Tetrachloroethylene

Safety-Kleen Systems, Inc.
2600 North Central Expressway
Building 2, Suite 100
Plano, TX 75024

Phone: 1-800-669-5740

Emergency # 1-800-468-1760
www.safety-kleen.com

Issue Date

February 3, 2014

Supersedes Issue Date

January 17, 2011

Original Issue Date

January 17, 2011

PREPARED BY: Product MSDS Coordinator APPROVED BY: MSDS Task Force

* * * Section 2 - Hazardous Identification * * *

EMERGENCY OVERVIEW

Appearance

Clear, colorless liquid, slight sweet odor.

Signal Word

WARNING!

Health Hazards

May be harmful if inhaled.

May be harmful if swallowed.

May irritate the respiratory tract (nose, throat, and lungs), eyes, and skin.

Suspect cancer hazard. Contains material which may cause cancer. Risk of cancer depends on duration and level of exposure.

Contains material which may cause liver, kidney, and central nervous system damage.

POTENTIAL HEALTH EFFECTS

Inhalation (Breathing)

High concentrations of vapor or mist may be harmful if inhaled. High concentrations of vapor or mist may irritate the respiratory tract (nose, throat, and lungs). High concentrations of vapor or mist may cause nausea, vomiting, headaches, dizziness, loss of coordination, numbness, and other central nervous system effects. High concentrations of vapor or mist may cause liver and kidney damage.

Eyes

May cause irritation. Symptoms include itching, burning, redness and tearing.

Skin

May cause irritation. Not likely to be absorbed through the skin in harmful amounts.

Ingestion (Swallowing)

This product may be harmful if swallowed. May cause throat irritation, nausea, vomiting, central nervous system effects as noted under **INHALATION (BREATHING)**, unconsciousness, coma, and death.

Medical Conditions Aggravated by Exposure

Individuals with pre-existing cardiovascular, liver, kidney, respiratory tract (nose, throat, and lungs), central nervous system, eye, and/or skin disorders may have increased susceptibility to the effects of exposure.

Chronic

Prolonged or repeated inhalation may cause toxic effects as noted under **INHALATION (BREATHING)**. Prolonged or repeated eye contact may cause inflammation of the membrane lining the eyelids and covering the eyeball (conjunctivitis). Prolonged or repeated skin contact may cause drying, cracking, redness, itching, and/or swelling (dermatitis).

Cancer Information

This product contains perchloroethylene CAS 127-18-4 which may cause cancer if inhaled. Risk of cancer depends on duration and level of exposure. For more information, see **SECTION 11: CARCINOGENICITY.** Also see **SECTION 15: CALIFORNIA**.

Environmental Hazards

Toxic to aquatic life.; Toxic to aquatic life. Also see **SECTION 12: ECOLOGICAL INFORMATION**.

* * * Section 3 - Composition / Information on Ingredients * * *

CAS #	Component	Percent
127-18-4	Ethene,tetrachloro-	97-100
1653-19-6	2,3-Dichlorobutadiene-1,3	<3
1330-20-7	Xylenes (o-, m-, p- isomers)	0-0.2

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: F025-Hazardous wastes, Dichlorobuta-1,3-diene (28577-62-0), Xylene (8026-09-3).

* * * Section 4 - First Aid Measures * * *

Inhalation (Breathing)

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Oxygen should only be administered by qualified personnel. Someone should stay with victim. Get medical attention if breathing difficulty persists.

Eyes

If irritation or redness from exposure to vapor develops, move away from exposure into fresh air. Upon contact, immediately flush eyes with plenty of lukewarm water, holding eyelids apart, for 15 minutes. Get medical attention.

Skin

Remove affected clothing and shoes. Wash skin thoroughly with soap and water. Get medical attention if irritation or pain develops or persists. Wash contaminated clothing before reuse. Discard any shoes or clothing items that cannot be decontaminated.

Ingestion (Swallowing)

Do NOT induce vomiting. Immediately get medical attention. Call 1-800-468-1760 for additional information. If spontaneous vomiting occurs, keep head below hips to avoid breathing the product into the lungs. Never give anything by mouth to an unconscious person.

Notes to Physicians

Treat symptomatically and supportively. Do not administer Adrenaline (epinephrine) or similar drugs following product overexposure. Increased sensitivity of the heart to such drugs may be caused by overexposure to product. Administration of gastric lavage and/or activated charcoal slurry, if warranted, should be performed by qualified medical personnel. Treatment may vary with condition of victim and specifics of incident. Call 1-800-468-1760 for additional information.

* * * Section 5 - Fire Fighting Measures * * *

Hazardous Combustion Products

Product itself does not burn, but may decompose upon heating to produce phosgene, halogenated compounds, hydrogen chloride gas, carbon monoxide, and unidentified organic compounds.

Conditions of Flammability

Product will not burn.

Extinguishing Media

Carbon dioxide, regular foam, dry chemical, water spray, or water fog.

Protective Equipment For Firefighting

A positive-pressure, self-contained breathing apparatus (SCBA) and full-body protective equipment are required for fire emergencies.

Fire Fighting Equipment/Instructions

Keep storage containers cool with water spray.

NFPA Ratings: Health: 2 **Fire:** 0 **Reactivity:** 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Fire and Explosion Hazards

Heated containers may rupture. "Empty" containers may retain residue and can be dangerous. Product is not sensitive to mechanical impact or static discharge.

* * * Section 6 - Accidental Release Measures * * *

Do not touch or walk through spilled product. Stop leak if you can do it without risk. Wear protective equipment and provide engineering controls as specified in **SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Ventilate area and avoid breathing vapor or mist. Contain spill away from surface water and sewers. Contain spill as a liquid for possible recovery, or sorb with compatible sorbent material and shovel with a clean, spark proof tool into a sealable container for disposal.

Additionally, for large spills: Dike far ahead of liquid spill for collection and later disposal.

There may be specific federal regulatory reporting requirements associated with spills, leaks, or releases of this product. Also see **SECTION 15: REGULATORY INFORMATION.**

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Keep away from sparks or flame. Use clean tools. Do not breathe vapor or mist. Use in a well ventilated area. Avoid contact with eyes, skin, clothing, and shoes.

Shipping and Storing

Keep container tightly closed when not in use and during transport. Store containers in a cool, dry place. Do not pressurize, cut, weld, braze, solder, drill, or grind containers. Empty product containers may retain product residue and can be dangerous.

See **SECTION 14: TRANSPORTATION INFORMATION** for Packing Group information.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Exposure Guidelines

Component Exposure Limits

Ethene,tetrachloro- (127-18-4)

ACGIH: 25 ppm TWA
100 ppm STEL

OSHA Final: 100 ppm TWA
200 ppm Ceiling

OSHA Vacated: 25 ppm TWA; 170 mg/m3 TWA

Xylenes (o-, m-, p- isomers) (1330-20-7)

ACGIH: 100 ppm TWA
150 ppm STEL

OSHA Final: 100 ppm TWA; 435 mg/m3 TWA

OSHA Vacated: 100 ppm TWA; 435 mg/m3 TWA
150 ppm STEL; 655 mg/m3 STEL

Engineering Controls

Provide general ventilation needed to maintain concentration of vapor or mist below applicable exposure limits. Where adequate general ventilation is unavailable, use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below applicable exposure limits.

Personal Protective Equipment: Respiratory

Use NIOSH-certified, air-supplied respirators (self-contained breathing apparatus or air-line) respiratory protective equipment when concentration of vapor or mist exceeds applicable exposure limits. Selection and use of respiratory protective equipment should be in accordance in the USA with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4. Consult a qualified Industrial Hygienist or Safety Professional for respirator selection guidance.

Personal Protective Equipment: Eyes/Face

Where eye contact is likely, wear chemical goggles; contact lens use is not recommended.

Personal Protective Equipment: Skin

Where skin contact is likely, wear laminate or equivalent protective gloves; use of natural rubber (latex) or equivalent gloves is not recommended.

To avoid prolonged or repeated contact where spills and splashes are likely, wear appropriate chemical-resistant face shield, boots, apron, whole body suits, or other protective clothing.

Personal Protective Equipment: Personal Hygiene

Use good personal hygiene. Wash thoroughly with soap and water after handling product and before eating, drinking, or using tobacco products. Clean affected clothing, shoes, and protective equipment before reuse. Discard leather articles, such as shoes, saturated with this product.

Other Personal Protective Equipment

Where spills and splashes are likely, facilities storing or using this product should be equipped with an emergency eyewash and shower, both equipped with clean water, in the immediate work area.

* * * Section 9 - Physical & Chemical Properties * * *

Appearance/Odor :	Clear, colorless liquid slightly sweet odor	**pH:**	Not applicable
Boiling Point:	250ºF (121ºC)	**Melting Point:**	-2ºF (-19ºC)
Solubility (H2O):	Insoluble	**Specific Gravity:**	1.59 (water = 1)
Density:	13.5 LB/US gal (1620 g/l)	**Octanol/H2O Coeff.:**	2.53-2.88 @ 68ºF (20ºC)
Evaporation Rate:	2.8 (butyl acetate = 1)	**Molecular Weight:**	165.8
Odor Threshold:	50 ppm	**Auto Ignition Temperature:**	Not applicable
LFL:	Not applicable	**Flash Point:**	Not applicable
UFL:	Not applicable	**Viscosity:**	Not available
Vapor Pressure:	14 mm Hg at 68ºF (20ºC)	**Flammability Class:**	Not applicable
Vapor Density:	5.2 (air = 1)		
Freezing Point:	-2ºF (-19ºC)		

* * * Section 10 - Chemical Stability & Reactivity Information * * *

Stability

Stable under normal temperatures and pressures. Avoid heat, sparks or flame when not in use.

Incompatibility

Avoid acids, alkalies, oxidizing agents, or reactive metals.

Reactivity

Polymerization is not known to occur under normal temperature and pressures. Not reactive with water.

Hazardous Decomposition Products

None under normal temperatures and pressures. See also **SECTION 5: HAZARDOUS COMBUSTION PRODUCTS**.

Conditions To Avoid

Avoid heat, sparks or flame when not in use.

* * * Section 11 - Toxicological Information * * *

Toxicity Data

Component Analysis - LD50/LC50

Ethene,tetrachloro- (127-18-4)

Dermal LD50 Mouse 2800 mg/kg; Inhalation LC50 Rat 4000 ppm 4 h; Oral LD50 Rat 2629 mg/kg

2,3-Dichlorobutadiene-1,3 (1653-19-6)

Inhalation LC50 Rat 2.08 mg/L 4 h; Oral LD50 Rat 222 mg/kg

Xylenes (o-, m-, p- isomers) (1330-20-7)

Inhalation LC50 Rat 47635 mg/L 4 h; Oral LD50 Rat 4300 mg/kg

Acute Effects

High concentrations of vapor or mist may be harmful if inhaled, irritate the respiratory tract (nose, throat, and lungs), cause nausea, vomiting, headaches, dizziness, loss of coordination, numbness, and other central nervous system effects and/or cause liver and kidney damage., May eye cause irritation., Symptoms include itching, burning, redness and tearing., May cause skin irritation., Not likely to be absorbed through the skin in harmful amounts., This product may be harmful if swallowed., Ingestion may cause throat irritation, nausea, vomiting, central nervous system effects, unconsciousness, coma, and death.

Repeated Dose Effects

Prolonged or repeated inhalation may cause toxic effects as noted under Acute Effects., Prolonged or repeated eye contact may cause inflammation of the membrane lining the eyelids and covering the eyeball (conjunctivitis). Prolonged or repeated skin contact may cause drying, cracking, redness, itching, and/or swelling (dermatitis).,

Based on best current information, there is no known human sensitization associated with this product., Perchloroethylene has demonstrated experimental effects of reproductive toxicity, teratogenicity and mutagenicity.

Component Carcinogenicity

Ethene,tetrachloro- (127-18-4)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
OSHA: Present (select carcinogen)
NIOSH: potential occupational carcinogen
NTP: Reasonably Anticipated To Be A Human Carcinogen (Suspect Carcinogen)
IARC: Monograph 106 [in preparation]; Monograph 63 [1995]; Supplement 7 [1987] (Group 2A (probably carcenogenic to humans))

Xylenes (o-, m-, p- isomers) (1330-20-7)

ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))

Target Organ Effects

Contains material which may cause liver, kidney, and central nervous system damage.

Sensitization

Based on best current information, there is no known human sensitization associated with this product.

Mutagenicity

Perchloroethylene has demonstrated experimental effects of mutagenicity.

Reproductive Toxicity

Perchloroethylene has demonstrated animal effects of reproductive toxicity. Xylene has demonstrated animal effects of reproductive toxicity.

Teratogenicity

Perchloroethylene has demonstrated experimental effects of teratogenicity.

Toxicologically Synergistic Products

Based on best current information, there are no known toxicologically synergistic products associated with this product.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

Toxic to aquatic life.

Component Analysis - Ecotoxicity - Aquatic Toxicity

Ethene,tetrachloro- (127-18-4)

Duration/Test/Species	Concentration/Conditions	Notes
96 Hr LC50 Pimephales promelas	12.4 - 14.4 mg/L [flow-through]	
96 Hr LC50 Pimephales promelas	8.6 - 13.5 mg/L [static]	
96 Hr LC50 Lepomis macrochirus	11.0 - 15.0 mg/L [static]	
96 Hr LC50 Oncorhynchus mykiss	4.73 - 5.27 mg/L [flow-through]	
96 Hr EC50 Pseudokirchneriella subcapitata	>500 mg/L	
48 Hr EC50 Daphnia magna	6.1 - 9.0 mg/L [Static]	

2,3-Dichlorobutadiene-1,3 (1653-19-6)

Duration/Test/Species	Concentration/Conditions	Notes
96 Hr LC50 Brachydanio rerio	10.1 mg/L	

Xylenes (o-, m-, p- isomers) (1330-20-7)

Duration/Test/Species	Concentration/Conditions	Notes
96 Hr LC50 Pimephales promelas	13.4 mg/L [flow-through]	
96 Hr LC50 Oncorhynchus mykiss	2.661 - 4.093 mg/L [static]	
96 Hr LC50 Oncorhynchus mykiss	13.5 - 17.3 mg/L	
96 Hr LC50 Lepomis macrochirus	13.1 - 16.5 mg/L [flow-through]	
96 Hr LC50 Lepomis macrochirus	19 mg/L	
96 Hr LC50 Lepomis macrochirus	7.711 - 9.591 mg/L [static]	
96 Hr LC50 Pimephales promelas	23.53 - 29.97 mg/L [static]	
96 Hr LC50 Cyprinus carpio	780 mg/L [semi-static]	
96 Hr LC50 Cyprinus carpio	>780 mg/L	
96 Hr LC50 Poecilia reticulata	30.26 - 40.75 mg/L [static]	
48 Hr EC50 water flea	3.82 mg/L	
48 Hr LC50 Gammarus lacustris	0.6 mg/L	

Persistence/Degradability

Vapor-phase tetrachloroethylene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals.

Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 0.0177 atm-cu m/mole. Biodegradation is expected to occur slowly in soils under both aerobic and anaerobic conditions.

Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant.

Direct photolysis is not expected to be an important environmental fate process since this compound only absorbs light weakly in the environmental UV spectrum.

Hydrolysis is not expected to be an important environmental fate process.

Bioaccumulation/Accumulation

Measured BCF values of 26-77 in fish suggest bioconcentration in aquatic organisms is low to moderate.

Mobility in Environmental Media

If released to air, a vapor pressure of 18.5 mm Hg at 25 deg C indicates tetrachloroethylene will exist solely as a vapor in the ambient atmosphere.

If released to soil, tetrachloroethylene is expected to have moderate mobility based upon Koc values in the range of 200-237.

If released into water, tetrachloroethylene is not expected to adsorb to suspended solids and sediment in water based upon the Koc data.

Other Adverse Effects

No additional information available.

* * * Section 13 - Disposal Considerations * * *

Disposal Instructions

Dispose in accordance with federal, state, provincial, and local regulations. Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste. Contact Safety-Kleen regarding proper recycling or disposal.

US EPA Waste Number & Descriptions

U210 Based on available data, this information applies to the product as supplied to the user. Processing, use, or contamination by the user may change the waste code applicable to the disposal of this product.

* * * Section 14 - Transportation Information * * *

Emergency Response Guide Number

160 Reference *.North American Emergency Response Guidebook*

DOT **Shipping Name:** Tetrachloroethylene

UN/NA #: UN1897 **Hazard Class:** 6.1 **Packing Group:** III

TDG **Shipping Name:** Tetrachloroethylene

UN/NA #: UN1897 **Hazard Class:** 6.1 **Packing Group:** III

IATA Information

No Classification Assigned.

IMDG Information

No Classification Assigned.

* * * Section 15 - Regulatory Information * * *

Volatile Organic Compounds (As Regulated)

<3 WT%; <0.4 LB/US gal: <48 g/l as per 40 CFR Part 51.100(s)

Vapor Pressue = 14 mm Hg @ 20°C

Non-photochemically reactive

SARA Sections 311/312

Immediate (Acute) Health Hazard

Delayed (Chronic) Health Hazard

SARA 302/304

Component Analysis

Based on the ingredient(s) listed in SECTION 3, this product does not contain any "extremely hazardous substances" listed pursuant to Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) Section 302 or Section 304 as identified in 40 CFR Part 355, Appendix A and B.

SARA Section 313

Component Analysis

This product contains a "toxic" chemical subject to the requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372.

Ethene,tetrachloro- (127-18-4)	0.1 % de minimis concentration
Xylenes (o-, m-, p- isomers) (1330-20-7)	1.0 % de minimis concentration

CERCLA

Component Analysis

Based on the ingredient(s) listed in SECTION 3, this product contains the following "hazardous substance" listed under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) in 40 CFR Part 302, Table 302.4 with the following reportable quantities (RQ):

Ethene,tetrachloro- (127-18-4)	100 lb final RQ; 45.4 kg final RQ
Xylenes (o-, m-, p- isomers) (1330-20-7)	100 lb final RQ; 45.4 kg final RQ

TSCA

All the components of this product are listed on, or are automatically included as "naturally occurring chemical substances" on, or are exempted from the requirement to be listed on, the TSCA Inventory.

Component Analysis

Component	CAS #	TSCA
Ethene,tetrachloro-	127-18-4	Yes
2,3-Dichlorobutadiene-1,3	1653-19-6	Yes
Xylenes (o-, m-, p- isomers)	1330-20-7	Yes

State Regulations

THIS PRODUCT IS NOT FOR SALE OR USE IN THE STATE OF CALIFORNIA

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	MA	MN	NJ	PA	CA
Ethene,tetrachloro-	127-18-4	Yes	Yes	Yes	Yes	Yes
2,3-Dichlorobutadiene-1,3	1653-19-6	No	Yes	No	No	Yes
Xylenes (o-, m-, p- isomers)	1330-20-7	Yes	Yes	Yes	Yes	Yes

Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS #	
Ethene,tetrachloro-	127-18-4	DOT regulated marine pollutant

Canadian Regulations

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all information required by the CPR.

Component Analysis

Component	CAS #	CAN
Ethene,tetrachloro-	127-18-4	DSL
2,3-Dichlorobutadiene-1,3	1653-19-6	NSL
Xylenes (o-, m-, p- isomers)	1330-20-7	DSL

Canadian WHMIS Information

D1B,D2A,D2B

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Ethene,tetrachloro- (127-18-4)

1 %

Canadian Environmental Protection Act (CEPA)

All the components of this product are listed on, or are automatically included as "substance occurring in nature" on, or are exempted from the requirements to be listed on, the Canadian Domestic Substances List (DSL).

* * * Section 16 - Other Information * * *

Label/Other Information

No additional information available.

Revision Information

Regulatory update, updated to ANSI Z400.1-2004 format. This MSDS has been revised in the following sections: Section 1 (Dates/Address), Section 2 and Section 3 (Switched), Section 5 (Fire Fields), Section 8 (Exposure Limits added), Section 10 (Fields updated), Section 11 (Toxicology fields updated), Section 12 (Ecotoxicity , fields updated), Section 16 (Revision Information).

Disclaimer

User assumes all risks incident to the use of this product. To the best of our knowledge, the information contained herein is accurate. However, Safety-Kleen assumes no liability whatsoever for the accuracy or completeness of the information contained herein. No representations or warranties, either expressed or implied, or merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to the information or the product to which the information refers. The data contained on this sheet apply to the product as supplier to the user.

End of Sheet 820090