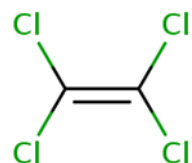


Preliminary Information on Manufacturing, Processing, Distribution, Use, and Disposal:

Tetrachloroethylene (perchloroethylene)

CASRN: 127-18-4



February 2017

Support document
for Docket EPA-HQ-OPPT-2016-0732

This document provides a preliminary public summary of available information collected by EPA's Office of Pollution Prevention and Toxics (OPPT) in the Office of Chemical Safety and Pollution Prevention (OCSPP) on the manufacturing (including importing), processing, distribution in commerce, use, and disposal of this chemical. This is based on existing data available to EPA, including information collected under the Chemical Data Reporting rule, Toxics Release Inventory, information from other Agency databases, other United States Government agencies, publicly available information from states, and a review of published literature. In addition, the document includes information reported to EPA by producers and users of the chemical in the United States and in other countries.

This preliminary use information and any additional use information received in the docket by March 15, 2017 will inform efforts to develop the scope of the chemical risk evaluation required under section 6(b)(4) of the Toxic Substances Control Act, and will inform any risk management efforts following risk evaluation.

Mention of trade names in this document does not constitute endorsement by EPA. To verify products or articles containing this chemical currently in commerce, EPA has identified several examples. Any lists are provided for informational purposes only. EPA and its employees do not endorse any of the products or companies.

This document does not contain confidential business information (CBI).

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Docket: EPA-HQ-OPPT-2016-0732

MANUFACTURING, PROCESSING, DISTRIBUTION, USE AND DISPOSAL

1. Manufacturing (Including Importing)

For the 2016 Chemical Data Reporting (CDR) period, 22 sites reported manufacturing (including importing) perchloroethylene in the United States^{1,2}. The total volume (in lbs.) of perchloroethylene manufactured (including imported) in the United States in 2012 was 387,623,401; in 2013: 381,403,540; in 2014: 355,305,850; in 2015: 324,240,744.

In 1990, about 75 million lbs. of perchloroethylene were imported into the United States. In 2012, about 26.5 million lbs. were imported into the United States.

USITC 2013, cited in <https://www.atsdr.cdc.gov/toxprofiles/tp18-c5.pdf>
United States International Trade Commission - <https://www.usitc.gov/>

For the 2015 Toxics Release Inventory (TRI), 215 facilities reported for perchloroethylene³. Of these, 21 facilities reported manufacture in the United States, 6 reported import, 91 reported processing, and 169 reported other uses (some sites reported in multiple categories)⁴. A total of 1,170,581 lbs. was

¹ Manufacturers (including importers) are required to report under CDR if they meet certain production volume thresholds, generally 25,000 lb or more of a chemical substance at any single site. Reporting is triggered if the annual reporting threshold is met during any of the calendar years since the last principal reporting year. In general, the reporting threshold remains 25,000 lb per site. However, a reduced reporting threshold (2,500 lb) now applies to chemical substances subject to certain TSCA actions. <https://www.epa.gov/chemical-data-reporting/how-report-under-chemical-data-reporting>

² Manufacture in the context of CDR means to manufacture, produce, or import for commercial purposes. Manufacture includes the extraction, for commercial purposes, of a component chemical substance from a previously existing chemical substance or complex combination of chemical substances. (40 CFR 711.3)
https://www.epa.gov/sites/production/files/2015-12/documents/cdr_fact_sheet_importers_final_dec2015_0.pdf

Similarly, the term “manufacture” in the context of TRI means to produce, prepare, compound, or import an EPCRA Section 313 chemical. The term “manufacture” also includes coincidental production of an EPCRA Section 313 chemical (e.g., as a byproduct or impurity) as a result of the manufacture, processing, otherwise use or disposal of another chemical or mixture of chemicals. <https://www.epa.gov/sites/production/files/documents/ry2012rfi.pdf>

³ A facility must report to the TRI program if it meets all three of the following criteria: 1) is in a specific industry sector, 2) employs 10 or more full-time equivalent employees, and 3) manufactures, processes, or otherwise uses a [TRI-listed chemical](#) in quantities above applicable threshold levels for a given chemical in a given year. <https://www.epa.gov/toxics-release-inventory-tri-program/basics-tri-reporting>

⁴ The term “process” in the context of CDR and TRI means the preparation of a chemical substance or mixture, after its manufacture, for distribution in commerce—
(A) in the same form or physical state as, or in a different form or physical state from, that in which it was received by the person so preparing such substance or mixture, or
(B) as part of an article containing the chemical substance or mixture.
<http://uscode.house.gov/view.xhtml?path=/prelim@title15/chapter53&edition=prelim>

reported as released to air, water, land, or offsite with 65,049,746 lbs. of total produced waste reported.

Manufacturing Process

Perchloroethylene was first commercially produced in the United States in 1925 via a four-step process using acetylene and chlorine as raw materials (IARC 1979). By 1975, only one United States plant was using this process because of the high cost of acetylene.

Currently, the majority of perchloroethylene produced in the United States is made by one of three processes:

- Direct chlorination of certain hydrocarbons: This process involves the reaction of chlorine with a hydrocarbon such as methane, ethane, propane, or propylene at high temperatures, with or without a catalyst. A chlorinated derivative of a hydrocarbon may also be used. The reaction forms a crude product, which can be purified to yield a marketable grade of perchloroethylene. This is easier and more economical than the acetylene process. In addition, the hydrocarbon wastes from other processes can subsequently be used as feedstocks for this process. However, large quantities of hydrogen chloride can be produced.
- Chlorination of ethylene dichloride: This process involves noncatalytic chlorination of ethylene dichloride or other C2 chlorinated hydrocarbons.
- Oxychlorination: The oxychlorination of ethylene via ethylene dichloride process is widely used to coproduce trichloroethylene and perchloroethylene. The product mix can be varied by adjusting the ratio of ethylene dichloride to chlorine. The buildup of hydrogen chloride is controlled by oxidation of the hydrogen chloride that is formed. The reaction involves the simultaneous oxychlorination/ dehydrochlorination with either chlorine or anhydrous hydrogen chloride as the chlorine source.

Sources:

<https://www.atsdr.cdc.gov/ToxProfiles/tp18-c5.pdf>

IARC (1979) - <https://monographs.iarc.fr/ENG/Monographs/vol1-42/mono20.pdf>

[EPA, Occupation Exposure and Environmental Release Assessment of Tetrachloroethylene.](#)

“Oxyhydrochlorination, perchlorination, and/or dehydrochlorination of hydrocarbons or chlorinated hydrocarbons such as 1,2 dichloroethane, propylene, propylene dichloride, 1,1,2-tri-chloroethane, and acetylene.” WHO; Environmental Health Criteria Document No. 31: Tetrachloroethylene (127-18-4). Available from, as of September 20, 2010:

<http://www.inchem.org/pages/ehc.html>

Perchloroethylene is produced in the following grades: purified, technical, U.S. Pharmacopoeial (USP), spectrophotometric, and dry cleaning. The dry cleaning and technical grades meet specifications for

The term “otherwise use” under TRI means any use of an EPCRA Section 313 chemical, including an EPCRA Section 313 chemical contained in a mixture or other trade name product or waste, that is not covered by the terms manufacture or process. See the definition of “otherwise use” for additional details on applicability of otherwise use with regard to disposal, stabilization, and treatment for destruction. https://www.epa.gov/sites/production/files/2016-01/documents/ry_2015_tri_reporting_forms_and_instructions.pdf

technical grade, differing only in the amount of stabilizer added to prevent decomposition. Stabilizers, which include amines or mixtures of epoxides and esters, are added to prevent decomposition.

Sources:

<https://www.atsdr.cdc.gov/ToxProfiles/tp18-c5.pdf>

IARC (1979) - <https://monographs.iarc.fr/ENG/Monographs/vol1-42/mono20.pdf>

<https://www.atsdr.cdc.gov/ToxProfiles/tp.asp?id=265&tid=48>

Manufacturing processes for perchloroethylene have changed over time. In 1993, the manufacture of perchloroethylene via reaction of a hydrocarbon having three or less carbon atoms with a partially chlorinated hydrocarbon, chlorine gas, and carbon tetrachloride at 500–700°C was proposed in a patent. The introduction of carbon tetrachloride to the reaction in a closed system (as opposed to it being formed in the reaction) was to monitor and prevent carbon tetrachloride production in the manufacturing of perchloroethylene (Hoshino et al. 1993).

A 2008 Dow document states that Dow produced “perchloroethylene by a direct chlorination (‘Per Tet’ or perchlorination) process. The perchlorination process involves the reaction of chlorine with ethylene dichloride (EDC) and various C1-C3 chlorocarbons to produce perchloroethylene and the co-product carbon tetrachloride. Adjusting the reaction conditions allows the producer to operate the PerTet plant to make essentially 100% perchloroethylene or 100% carbon tetrachloride, or a mixture of both. The reaction forms a crude product, which is purified by distillation to yield perchloroethylene. Using EDC as a feedstock, the reaction is as follows: $3 \text{ C}_2\text{H}_4\text{Cl}_2 + 11\text{Cl}_2 \rightarrow 2 \text{ CCl}_4 + 2 \text{ C}_2\text{Cl}_4 + 12 \text{ HCl}$ ”

http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_096d/0901b8038096dbc7.pdf?filep ath=productsafety/pdfs/noreg/233-00398.pdf&fromPage=GetDoc

2. Processing

Based on publicly available information reported to CDR, TRI, and other sources, processing of perchloroethylene includes:

Table 1. NAICS codes of industries processing perchloroethylene

NAICS	NAICS Title
221112	Fossil Fuel Electric Power Generation
314999	All Other Miscellaneous Textile Product Mills
324110	Petroleum Refineries
324121	Asphalt Paving Mixture and Block Manufacturing
324191	Petroleum Lubricating Oil and Grease Manufacturing
325110	Petrochemical Manufacturing
325120	Industrial Gas Manufacturing
325211	Plastics Material and Resin Manufacturing
325212	Synthetic Rubber Manufacturing
325220	Artificial and Synthetic Fibers and Filaments Manufacturing
325510	Paint and Coating Manufacturing
325520	Adhesive Manufacturing
325611	Soap and Other Detergent Manufacturing

NAICS	NAICS Title
325612	Polish and Other Sanitation Good Manufacturing
325613	Surface Active Agent Manufacturing
326121	Unlaminated Plastics Profile Shape Manufacturing
326150	Urethane and Other Foam Product (except Polystyrene) Manufacturing
327310	Cement Manufacturing
327910	Abrasive Product Manufacturing
327992	Ground or Treated Mineral and Earth Manufacturing
332119	Metal Crown, Closure, and Other Metal Stamping (except Automotive)
332215	Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing
332721	Precision Turned Product Manufacturing
332811	Metal Heat Treating
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring
332992	Small Arms Ammunition Manufacturing
333992	Welding and Soldering Equipment Manufacturing
335991	Carbon and Graphite Product Manufacturing
336411	Aircraft Manufacturing
336611	Ship Building and Repairing
339992	Musical Instrument Manufacturing
541380	Testing Laboratories
562211	Hazardous Waste Treatment and Disposal

Perchloroethylene is mentioned in 17,776 patents

<https://pubchem.ncbi.nlm.nih.gov/compound/31373#section=Patents>

3. Products and Articles

EPA has identified the following types of products currently in commerce. This list is provided for informational purposes only. EPA and its employees do not endorse any of the products or companies.

Table 2. List of products containing Perchloroethylene

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
Aerosol Buffing Solution (Xtra Seal)	Tire buffer/cleaner	90-100%	http://www.31inc.com/Content/Images/Product/MSD/MSD_14-102.PDF
Electric Motor Cleaner	Electric motor cleaner	NA	http://agchem.net/wp-content/uploads/2013/02/N4835-ELECTRIC-MOTOR-CLEANER_NC.pdf
273 Electric Motor Cleaner	Electric motor cleaner	95-99%	http://chestertondocs.chesterton.com/Lubricants/ts273a_EN.pdf
Brake Cleaner	Automotive - Brake cleaner	>10-<20%	http://abccompounding.com/sds/4574.pdf
ACM™ Gutter/Narrow Seam Sealant, Aluminum Gray	Sealant	50.60%	http://www.acm-metals.com/pdf/safety-data-sheets/sealants/AWGSML-Narrow-Seam-Sealant-Alum-Gray.pdf

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
ACM™ Gutter/Narrow Seam Sealant, White	Sealant	50%	http://www.acm-metals.com/pdf/safety-data-sheets/sealants/GC330101-Narrow-Seam-Sealant-White.pdf
DFB XTRA	Dry cleaning detergent	30-40%	http://www.fabricleansupply.com/msds/0415.pdf
Tiger	Dry cleaning detergent	30-60%	http://www.fabricleansupply.com/msds/0421.pdf
Renew	Dry cleaning additive	<50%	http://www.nsfarrington.com/nsfarrDocs/Adco%20Renew.pdf
Silk Restorer, "Silk Magic"	Dry cleaning additive	NA	http://www.nsfarrington.com/nsfarrDocs/Silk%20Restorer.pdf
Fashion Finish Synthetic	Dry cleaning additive	50-55%	http://www.fabricleansupply.com/msds/0386.pdf
Laidlaw Leveling Agent	Dry cleaning spotting agent	>75%	http://www.nortonsupply.com/msds/laidlaw/leveling-agent.pdf
AAT-197 Adhesive Remover (non-flammable)	Cleaning solvent	99-100%	http://www.aatglue.com/197-Adhesive-Remover.html
CT134 Rubber Roller Restorer	Hardened rubber roller treatment	35%	http://www.shopadvantusch.com/MSDS/CT134.pdf
Parts Master Brake & Parts Cleaner #1733	Automotive - Brake cleaner	NA	http://www.bumpertobumper.com/sds-pdfs/parts-master-chemicals/Chemical-Brake-and-Parts-Cleaner-Non-Flamable-Blue-1733.pdf
Nonflammable Gas Mixture: Cis-1,2-Dichloroethylene / Methane / Nitrogen / Perchloroethylene / Trans-1,2-Dichloroethylene / Trichloroethylene / Vinyl Chloride	Synthetic/analytical chemistry	0.0001 - 0.0999%	http://airgas.com/msds/017393.pdf
Blast Away	Aerosol	90-100%	http://specialtyproductsusa.com/site/wp-content/uploads/BLAST-AWAY.pdf
Grease Gun A	High pressure, non-melt red grease	10-30%	http://specialtyproductsusa.com/site/wp-content/uploads/GREASE-GUN-A-SDS.pdf
Slick	Lubricant	25-35%	http://specialtyproductsusa.com/site/wp-content/uploads/SLICK-SDS.pdf
Solid Wax	Wax, stone wax	50-100%	https://www.braxton-bragg.com/file/BBraxton_MSDS/14328-14329_Akemi_Solid_Wax_MSDS.pdf
Superkleen 200	Industrial spot remover	0-10%	http://albatross-usa.com/MSDS/8201.pdf
AlbaChem® Superkleen® S.P.I.F.®	Industrial spot remover	0-10%	http://albatross-usa.com/MSDS/1070.pdf
Expert Premium 303	Industrial spot remover	10-30%	http://albatross-usa.com/MSDS/1210.pdf
Albachem Spot Lifter II	Industrial spot remover	0-10%	http://albatross-usa.com/MSDS/eng1674.pdf
Spot Lifter-2	Spotting agent	NA	http://www.allopar.com/2015/05/14/allop-ar-spot-lifter-2/
Rapid Solv	Degreaser and Cleaner	45-55%	http://www.americanindustries.com/images/RAPID_SOLV_2-SDS_2254.09_2016-07-12.pdf
Orko	Lubricant	10-30%	http://www.americanindustries.com/images/ORKO_2-SDS_1659.03_2015-08-05.pdf
Probe	Lubricant	60-80%	http://www.americanindustries.com/images/PROBE_2-SDS_1612.11_2015-04-06.pdf

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
LP-650 (A) Silicone	Lubricant	>80%	http://www.americanindustries.com/images/LP-650_A_2-SDS_1643.04_2015-04-06.pdf
Pull Out 2	Dry cleaning spot remover	16-26%	http://www.american-niagara.com/assets/images/SDS/SDS-PULL%20OUT%202.pdf
Oil Spotter	Dry cleaning spotting agent	100%	http://www.american-niagara.com/assets/images/SDS/SDS-OIL%20SPOTTER-2015.pdf
M.C. 250 (Triple Blend; Knox Out)	Dry cleaning spotting agent	10-20%	http://www.american-niagara.com/assets/images/SDS/SDS-MC-250%202015.pdf
AMERIMAX® SeamerMate® Professional Grade Permanent Gutter Seal Gray	Sealant	>50-<75%	http://www.homedepot.com/catalog/pdfimages/ef/ef514f3d-2e47-4d05-8089-fbe122799797.pdf
AMERIMAX® SeamerMate® Professional Grade Permanent Gutter Seal White	Sealant	>25-<50%	http://www.homedepot.com/catalog/pdfimages/89/893e8fbc-731b-458a-b8f4-96a506c4e701.pdf
Black Zero Rust Primer	Non flat coating	10.20%	http://sealandprotect.com/docs/AR-62.SDS_2016.pdf
Blue Zero Rust Primer	Non flat coating	10.63%	http://sealandprotect.com/docs/AR-68.SDS_2016.pdf
Gray Zero Rust Primer	Non flat coating	10.27%	http://sealandprotect.com/docs/AR-61.SDS_2016.pdf
Green Zero Rust Primer	Non flat coating	9.18%	http://sealandprotect.com/docs/AR-70.SDS_2016.pdf
Red Zero Rust Primer	Non flat coating	10.20%	http://sealandprotect.com/docs/AR-60.SDS_2016.pdf
Safety Red Zero Rust Primer	Non flat coating	10.00%	http://sealandprotect.com/docs/AR-72.SDS_2016.pdf
Safety Yellow Zero Rust Primer	Non flat coating	9.97%	http://sealandprotect.com/docs/AR-71.SDS_2016.pdf
Tan Zero Rust Primer	Non flat coating	8.79%	http://sealandprotect.com/docs/AR-95.SDS_2016.pdf
Yellow Zero Rust Primer	Non flat coating	8.80%	http://sealandprotect.com/docs/AR-63.SDS_2016.pdf
AST Super Dry II	Degreaser	60-100%	http://www.antiseize.com/PDFs/m17073.pdf
Cool-Cut	Cutting tool coolant	90-100%	https://www.antiseize.com/PDFs/m17050.pdf
AST Brake Cleaner	Automotive - Brake cleaner	90-100%	http://www.antiseize.com/PDFs/m53095.pdf
Cleaner - Degreaser, Non Flammable (Aerosol)	Cleaner and degreaser	30-60%	https://www.pts-tools.com/MSDS/LK70M05120.pdf
Penetrating Lube	Lubricant	60-100%	http://www.pts-tools.com/MSDS/LK70M25500.pdf
NAPA Mac's Brake and Brake Parts Cleaner	Automotive - Brake cleaner	>90-<100%	http://ebpaving.com/wp-content/uploads/2013/09/Macs-Brake.pdf
Pyroil Brake Parts Cleaner	Automotive - Brake cleaner	91.78%	https://partimages.genpt.com/partimages/726028.pdf
Service Pro Non-Flammable Brake Cleaner - SP4820	Automotive - Brake cleaner	89-93%	http://ebpaving.com/wp-content/uploads/2013/09/Service-Pro-Non-Flammable-Brake-Cleaner.pdf
Prep-A-Lube	High pressure, non-melt red grease	10-30%	http://www.atcointernational.com/DSN/wwwatco-intlcom/Content/Documents/SDS%20Sheets/Prep-A-Lube%20-%205400.pdf

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
Super Degreasing Solvent	Degreaser	<9%	http://www.atlanticchemical.com/docs/msds/SDS.pdf
SAF-T-SOLV	Carpet spot remover	>90%	http://www.baneclene.com/msds/saftsolv.pdf
Cutting Tool Coolant	Cutting tool coolant	78%	http://www1.mscdirect.com/MSDS/MSDS00054/45657236-20130924.PDF
C-139 De Aqua Lube (Aerosol)	Penetrating lubricant	NA	http://www.batonrougeindustries.com/files/56_C-139msds.pdf
Special Preparation for Polishing	Marble polish	80-90%	https://www.regentstoneproducts.com/msds/bellinzoni/Bellinzoni_Black_Wax.pdf
1420 Berryman Brake Parts Cleaner	Automotive - Brake cleaner	10-15%	http://www1.mscdirect.com/MSDS/MSDS00009/08099897-20150710.PDF ; https://www.berrymanproducts.com/assets/5C-4-1420-R04.pdf
1401, 1405, 1455 Brake Parts Cleaner	Automotive - Brake cleaner	10-15%	https://www.berrymanproducts.com/assets/5C-4-pour-1401-1405-1455-SDS.pdf
1401, 1405, 1415, 1455 Brake Parts Cleaner	Automotive - Brake cleaner	5-15%	https://www.berrymanproducts.com/assets/5C-4-1401-1405-1415-1455-R03.pdf
0901, 0905, 0955 Berryman Professional Chem-Dip Carburetor & Parts Cleaner	Carburetor cleaner	2-5%	https://www.berrymanproducts.com/assets/2AA-E-0901-0905-0955-SDS-1.pdf
BG Brake & Contact Cleaner (Aerosol)	Automotive - Brake cleaner	60-100%	http://www.bgfleming.com/products/msds/402.pdf
Penetrating Lubricant Aerosol	Lubricant	40-60%	http://msdsdigital.com/system/files/PENETRATING%20LUBRICANT%20AEROSOL-BA180.pdf
C K Punch It	Heavy duty engine degreaser	26-45%	http://ckeinc.com/wp-content/uploads/2016/08/CK-Punch-It-SDS-6901-A20.pdf
C K Preserve	Penetrating lubricant	51-89%	http://ckeinc.com/wp-content/uploads/2016/08/C-K-Preserve-SDS-6869-A16.pdf
Husky 1229 Vandalism Mark & Stain Remover	Cleaner	NA	http://canberracorp.com/sites/files/msds/husky_1229_vndlsn_stn_rmvr.pdf
SAF-SOL	Degreaser	NA	https://www.certifiedlabs.in/MSDS/SAF-SOL.pdf
SAF-SOL 20/20 Aerosol	Degreaser	NA	http://www.staffelectric.com/wp-content/uploads/2012/02/11-SAF-SOL-20-20.pdf
Champion Brake Parts Cleaner	Automotive - Brake cleaner	>90%	http://championbrands.com/MSDS/4126.pdf
4126	Automotive - Brake cleaner	50-70%	http://championbrands.com/MSDS/4126AN-D%20SDS.pdf
Champion's Choice Penetrating Oil and Demoisturant	Penetrating oil and demoisturant	60-65%	http://www.chaseproducts.com/msds/4385159.pdf
Tetrachloroethene	Laboratory chemicals	100	http://cdn.chemservice.com/product/msdsnew/External/English/N-13532%20English%20SDS%20US.pdf
CLP Volatiles Mixture #3	Laboratory chemicals	0.20%	http://cdn.chemservice.com/product/msdsnew/External/English/M-CLPVOL3M5%20English%20SDS%20US.pdf
Blast It	High pressure cleaning solvent	NA	http://www.chemaxmil.com/TXMAS/MSDS/MSDS-A114-Blast-It.pdf

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
Dielectric Encapsulator	Moisture and condensation displacer	NA	http://www.chemaxmil.com/TXMAS/MSDS/MSDS-A125-Dielectric_Encapsulator.pdf
Safety Lube 2000	Non-flammable, multi-purpose penetrating oil	NA	http://www.chemaxmil.com/TXMAS/MSDS/MSDS-A165-Safety_Lube_2000.pdf
SR-97	Spot remover	0-10%	http://www.screenprinting.com/core/media/media.nl?id=28275&h=15678d95193b04e08186 (old); See Product Website link to download updated SDS
CT-353 Brake Parts Cleaner	Automotive - Brake cleaner	80-100%	http://www.chemtron.com/uploads/products/msds/BRAKE-PARTS-CLEANER--CT-353.pdf
Farm Oyl Rust Buster	Lubricant	40-60%	http://www.farmoyl.com/~media/chs%20inc/micro%20sites/farm%20oyl/sds/rust%20buster05232015.ashx
Vandalism Mark & Stain Remover, Aerosol, Professional Use	Cleaner	10-20%	http://www.clairemfg.com/sites/all/themes/theme623/msds/c870.pdf
Moisture Out Penetrating Oil	Lubricant	40-60%	http://www.clairemfg.com/sites/all/themes/theme623/msds/c926.pdf
Cutting Tool Coolant	Aerosol	78%	http://www.physics.purdue.edu/primelab/safety/MSDS/SDS/Barnes%20Cutting%20Tool%20Coolant%20%20BD1128.pdf
G.T.O. Carpet Plus	Carpet spot remover	70-75%	http://www.clausencarpet.com/(clause n)%20G.T.O.%20(spec%20sheet).pdf
Rubber Roller Restorer	Solvent	35%	https://www.harmonycr.com/v/vsfiles/PDF/MSDS/134.pdf
Chemchill Electric Motor Cleaner	Electrical cleaner	>95%	http://www.linesetsinc.com/docs/cc/EL EC%20MOTOR%20CLEANER%2020%20OZ.%20166130.pdf
Coastal Bodacious	Lubricant	15-40%	http://shop.coastalindustrialtd.com/msds/CoastalBodacious7-18-2013.pdf
Coastal "Un-Stuck" Heavy Duty	Penetrating lubricant	50-60%	http://shop.coastalindustrialtd.com/msds/CoastalUN-STUCK.pdf
Soot Clean Spray, 35-620 Blended Formula	Soot cleaner	>60%	http://www.comstarproducts.com/amfilerating/file/download/file_id/1376/
Grease Cut, 55-120 Blended Formula, Grease Cut	Degreaser	25-50%	http://www.comstarproducts.com/super-grease-cutter-20-ounce-aerosol-44; www.comstarproducts.com/amfilerating/file/download/file_id/1386/
Degrease 20+, 90-305, 90-306 Blended Formula	Degreaser	>35%	http://www.comstarproducts.com/amfilerating/file/download/file_id/1372/
Perch, 55-454 Blended Formula	All-purpose parts cleaner	90-98%	http://www.comstarproducts.com/amfilerating/file/download/file_id/1377/
Contact Cleaner, 55-120 Blended Formula	Electrical contact aerosol cleaner	25-50%	http://www.comstarproducts.com/amfilerating/file/download/file_id/1358/
Tetrachloroethylene 500ml	Solvent	>99%	https://www.amazon.com/Tetrachloroethylene-500ml-16oz-Purity-Solvent/dp/B00HUS5474/ref=sr_1_1?ie=UTF8&qid=1480951647&sr=8-1&keywords=perchloroethylene
18 Oz Terand Coil Clnr Solvent-Based C	Coil cleaner	40-60%	http://www.co.berks.pa.us/Dept/SWA/Documents/Mary%20Picariello/CPC_18%20OZ%20TERAND%20COIL%20CLNR%20SOLVNT-BASED%20C.pdf.pdf
Cable Clean RD	Cable cleaner	90-100%	http://www.crcindustries.com/faxdocs/msds/2150.PDF

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
Heavy Duty Degreaser	Degreaser	80-90%	http://www.crcindustries.com/faxdocs/msds/3095.pdf
Quick Clean Safety Solvent and Degreaser	Degreaser	90-100%	http://www.crcindustries.com/faxdocs/msds/3180.pdf
Lectra-Motive Electric Parts Cleaner	Energized electrical cleaner	90-100%	http://www.crcindustries.com/faxdocs/msds/5018.pdf
Electrical Parts Cleaner	Energized electrical cleaner	90-100%	https://www.fastenal.com/productimages/supplemental/product_docs/CRC%20INDUSTRIES,%20INC_254580.pdf (old); http://docs.crcindustries.com/msds/2180.pdf (new)
Lectra Clean Heavy Duty Energized Electrical Parts Degreaser	Energized electrical cleaner	90-100%	http://www.crcindustries.com/faxdocs/msds/2020.pdf
Lectra Clean Heavy Duty Electrical Parts Degreaser	Energized electrical cleaner	90-100%	http://www.crcindustries.com/faxdocs/msds/2018.pdf
Marine Cleaner and Degreaser	Marine cleaner and degreaser	90-100%	http://www.crcindustries.com/faxdocs/msds/6019.pdf
Carquest Brake Parts Cleaner	Automotive - Brake cleaner	90-100%	http://www.starequip.com/pdf/msds_sheets/CRC%20CARQUEST%20BRAKE%20PARTS%20CLEANER%20(MO%20W5089,%20MO%201005).pdf
Brakleen Brake Parts Cleaner	Automotive - Brake cleaner	90-100%	http://www.crcindustries.com/faxdocs/msds/5089.pdf
Brake Cleaner. Cleaning agent. Automotive Kit.	Automotive - Brake cleaner	60-100%	http://www.homedepot.com/catalog/pdfimages/7c/7c9336c3-f6bb-41c5-a87d-f2160ea46aa1.pdf
Heavy Duty Mold Cleaner	Mold cleaner	90-100%	http://www.crcindustries.com/faxdocs/msds/3315.pdf
Tyme-1 Cold Parts Cleaner	Parts cleaner	50-60%	http://www.crcindustries.com/faxdocs/msds/14101.pdf
AG-W, White Lithium Grease	Lubricant	48%	http://www.crestauto.com/wp-content/uploads/2015/08/AG-W-White-Lithium-Grease.pdf
AK-B/AK-B, Brake Kleaner	Automotive - Brake cleaner	98%	http://www.crestauto.com/wp-content/uploads/2015/08/AK-B-Brake-Kleaner.pdf
C37, Break Thru Electric Motor Cleaner	Electrical cleaner	85-100%	http://www.newlifeparts.com/newlife/msds/cycl_motorclean.pdf ; http://cyclo.com/wp-content/uploads/2015/12/C37_SDS_July2015.pdf
C85, Energized Circuit & Contact Cleaner	Electrical cleaner	85-100%	http://cyclo.com/wp-content/uploads/2015/12/C85-EU-SDS.pdf
C32, Brake & Parts Clean	Automotive - Brake cleaner	85-100%	http://cyclo.com/wp-content/uploads/2015/11/C32_SDS_Jan2016.pdf
C109, Parts, Tools & Brake Cleaner	Automotive - Brake cleaner	60-100%	https://hancousa.com/storefrontContent/attach/msds/Cyclo/CYCC-109.pdf ; http://cyclo.com/wp-content/uploads/2015/12/C109_SDS_July2015.pdf
Daycon All Purpose Degreaser and Vandal Remover	Vandal mark remover	8-10%	http://www.daycon.com/images/uploads/A15870_Daycon_All_Purpose_Degreaser_and_Vandal_Remover-msds.pdf

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
Foremost 531 Dewaxer Degreaser	Degreaser	NA	http://www.deltaforemost.com/search/FM%20531%20Degreaser%20-%20SDS(2).pdf
Foremost 584 ES Contact Degreaser	Degreaser	NA	http://www.deltaforemost.com/search/FM%20584-ES%20Contact%20Degreaser%20-%20SDS.pdf
Foremost 582 Safety Solvent II	Electrical equipment cleaner	NA	http://www.deltaforemost.com/search/FM%20582%20Safety%20Solvent%20II%20-%20SDS.pdf
Foremost 585 Solvent Cleaner	Electrical equipment cleaner	NA	http://www.deltaforemost.com/search/FM%20585%20Solvent%20Cleaner%20-%20SDS.pdf
Foremost 586 Super Solv II	Electrical equipment cleaner	NA	http://www.deltaforemost.com/search/FM%20586%20Super%20Solv%20II%20-%20SDS.pdf
Foremost 591 ES Super Safe Solv	Electrical equipment cleaner	NA	http://www.deltaforemost.com/search/FM%20591-ES%20Super%20Safe%20Solv%20-%20SDS.pdf
Foremost 602 ES Dri 'N Lube	Lubricant	NA	http://www.deltaforemost.com/search/FM%20602-ES%20Dri%20'N%20Lube%20-%20SDS.pdf
DOWPER Solvent (Dowper N Solvent, Dowper LM Solvent, Dowper MC Solvent, Dowper Pure Power Solvent)	Dry cleaning solvent		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_02f3/0901b803802f32be.pdf?filepath=gco/pdfs/noreg/100-05803.pdf&fromPage=GetDoc ; http://www.nortonsupply.com/msds/Dow/Dowper_msds.pdf
ISOFORM Isomerization Grade Perchloroethylene (Reforming Grade Perchloroethylene)	Solvent		http://www.heetu.com/pdf/Isoform%20IG%20grade%20Perchloroethylene%20-%20MSDS.pdf
DOWCLEN 16 Series	Immersion and vapor cleaning in modern closed-loop vacuum systems		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_094c/0901b8038094c57a.pdf?filepath=productsafety/pdfs/noreg/233-00634.pdf&fromPage=GetDoc
DOWCLEN PX Series	Specialty cleaning for optics and electronics industries		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_094c/0901b8038094c57a.pdf?filepath=productsafety/pdfs/noreg/233-00634.pdf&fromPage=GetDoc
DOWCLEN 3660/3670 cleaning fluid	Cleaner and degreaser		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_094c/0901b8038094c57a.pdf?filepath=productsafety/pdfs/noreg/233-00634.pdf&fromPage=GetDoc
DOWCLEN 1621 cleaning fluid	Cleaning oil-based contaminants		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_094c/0901b8038094c57a.pdf?filepath=productsafety/pdfs/noreg/233-00634.pdf&fromPage=GetDoc
DOWCLEN PX-33/PX-36 cleaning fluid	Cleaning screens, templates, misprints, circuit boards, and frames; removing printing inks/pastes, soldering pastes, thick film pastes, and surface-mount technology (SMT) adhesives		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_094c/0901b8038094c57a.pdf?filepath=productsafety/pdfs/noreg/233-00634.pdf&fromPage=GetDoc

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
DOWCLENEX PX-16S cleaning fluid	Closed-system cleaning (cleaning under vacuum); removal of resin-containing flux residuals from soldered electronic components		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_094c/0901b8038094c57a.pdf?filepath=productsafety/pdfs/noreg/233-00634.pdf&fromPage=GetDoc
DOWCLENEX 1601 cleaning fluid	Removal of grease and oil, emulsion residues, polishing and lapping pastes, and fingerprints		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_094c/0901b8038094c57a.pdf?filepath=productsafety/pdfs/noreg/233-00634.pdf&fromPage=GetDoc
DOWCLENEX 1611 cleaning fluid	Removal of water-based cooling lubricants, protective coatings, polishing pastes, and glues		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_094c/0901b8038094c57a.pdf?filepath=productsafety/pdfs/noreg/233-00634.pdf&fromPage=GetDoc
DOWCLENEX PX-43S cleaning fluid	Vacuum cleaning of screens, templates, frames, soldering frames, circuit boards, surface-mount device (SMD) hybrids, misprints, optical glass; removing flux residues, soldering pastes, SMT adhesives, thick-film pastes, printing inks and pastes, and fillers		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_094c/0901b8038094c57a.pdf?filepath=productsafety/pdfs/noreg/233-00634.pdf&fromPage=GetDoc
DOWCLENEX 36 Series	Dip, brush, and wipe cleaning of hard surfaces		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_094c/0901b8038094c57a.pdf?filepath=productsafety/pdfs/noreg/233-00634.pdf&fromPage=GetDoc
DOWCLENEX 3650 cleaning fluid	Water-based wipe cleaner formulation used for residue-free cleaning; cleaning of large surfaces, such as machine housings, glass, mirrors, engine blocks, etc.		http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_094c/0901b8038094c57a.pdf?filepath=productsafety/pdfs/noreg/233-00634.pdf&fromPage=GetDoc
Aleene's Platinum Bond 7800 Adhesive	Arts and crafts; Adhesive	70%	http://www.ceramicsuppliesnow.com/msds/MSDSAleenesPlatinumBond78000707.pdf
Duncan OG 802 White Gold	Solvent based metallic overglaze	20-30%	http://www.ceramicsuppliesnow.com/msds/MSDSDuncanOG802WhiteGold0708.pdf
Duro Dyne Coil Cleaner - Solvent Based	Coil cleaner	90-100%	http://www.durodyne.com/msds/Coil%20Cleaner-SBCC-SolventBased_SDS.pdf
Dynatex® 52145 Electrical Parts Cleaner	Electrical parts cleaner	NA	http://www.accumetricinc.com/uplimg/dynatex/msds/52145.pdf
E6000 Industrial Adhesive (Black and Clear)	Industrial adhesive	60-100%	http://eclecticproducts.com/downloads/sds-e6000-clear-english.pdf ; http://eclecticproducts.com/downloads/sds-e6000-black-english.pdf
E6100 Non-Slump All Colors	Industrial adhesive	65%	http://www.baersupply.com/files/14/products/12/252/Famowood_FW252011_Industrial_Construction_Adhesive_Caulk.pdf
E6800	Industrial adhesive	60-100%	http://eclecticproducts.com/downloads/sds-e6800-clear-english.pdf
FRP Column Adhesive	Industrial adhesive	30-60%	http://eclecticproducts.com/downloads/sds-frp-english.pdf
E6100 Black	Industrial adhesive	60-100%	http://eclecticproducts.com/downloads/sds-e6100-black-english.pdf

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
E6100 Clear	Industrial adhesive	30-60%	http://eclecticproducts.com/downloads/sds-e6100-clear-english.pdf
E6100 Gray	Industrial adhesive	60-100%	http://eclecticproducts.com/downloads/sds-e6100-gray-english.pdf
E6100 White	Industrial adhesive	60-100%	http://eclecticproducts.com/downloads/sds-e6100-white-english.pdf
Amazing GOOP II MAX	Adhesive	60-100%	http://eclecticproducts.com/downloads/sds-ag-max-clear-english.pdf
Amazing GOOP Trim Repair	Adhesive	60-100%	http://eclecticproducts.com/downloads/sds-AG-TRIM-english.pdf
E6000 Craft (Clear, Black and White)	Arts and crafts; Adhesive	60-100%	http://eclecticproducts.com/downloads/sds-e6000-black-english.pdf ; http://eclecticproducts.com/downloads/sds-e6000-clear-english.pdf ; http://eclecticproducts.com/downloads/sds-e6000-white-english.pdf
E6000 Shoe Dazzle	Arts and crafts; Adhesive	60-100%	http://eclecticproducts.com/downloads/sds-e6000-shoe-dazzle-english.pdf
E6000 Jewelry & Bead Glue	Arts and crafts; Adhesive	60-100%	http://eclecticproducts.com/downloads/sds-e6000-jewelry-and-bead-english-US_Canada.pdf
ISOTACK	Primer	<1%	http://www.plioseal.com/wp-content/uploads/2016/09/ISOTACKSDS.pdf
Flush Monkey	Solvent	NA	http://encoreindustrial.com/wp-content/uploads/2016/01/Flush-Monkey-2016.pdf
CTF-14, Cutting & Tapping Fluid	Lubricant	>50%	https://www.goodson.com/technical_support/msds/CTF-14.pdf
Enplate Stop-Off No. 1	Specialty chemical for the electronics and surface finishing industries	10-20%	https://webcape.capeenv.com/WCL/MSDS/SDS5201627.pdf
TCLP Volatiles	Laboratory chemicals	<0.3%	http://www.eraqc.com/MSDS/730%20TCLP%20Volatiles.pdf
Talon White Lithium Grease	White lithium grease	48%	https://www.fastenal.com/productimages/supplemental/product_docs/0616822.pdf
#850 Chain & Cable Lube	Lubricant	NA	http://www.frontierlubricants.com/Chain_and_Cable_Lube
#853 Pen-Safe	Lubricant	NA	http://www.frontierlubricants.com/Pen-Safe_non-flammable_and_moisture_remover
#873 Chain & Cable Clear	Lubricant	NA	http://www.frontierlubricants.com/Chain_and_Cable_Clear
Geocel® Instant Gutter Seal Gutter & Narrow Seam Sealant	Sealant	49.67%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=GEOCEL&prodno=079239291022&doctype=SDS&lang=2
Geocel® Pro Flex® RV Flexible Sealant	Sealant	42.70%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=GEOCEL&prodno=079239281009&doctype=SDS&lang=2
Geocel® 2000® Construction Caulking Sealant	Sealant	45.51%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=GEOCEL&prodno=079239601005&doctype=SDS&lang=2
Geocel® Pro Flex® Tripolymer Sealant	Sealant	47.50%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=GEOCEL&prodno=079239261018&doctype=SDS&lang=2

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
Geocel® 2300® Construction Tripolymer Sealant	Sealant	47.50%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=GEOCEL&prodno=079239661016&doctype=SDS&lang=2
Geocel® S2™ Solar Panel Roof Installation Sealant (white)	Sealant	47%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=GEOCEL&prodno=079239627012&doctype=MSDS&lang=2
Geocel® 2320® Construction Tripolymer Gutter and Narrow Seam Sealant	Sealant	49.70%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=GEOCEL&prodno=079239671008&doctype=SDS&lang=2
Geocel® 2350 MHRV™ Sealant	Sealant	41.96%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=GEOCEL&prodno=079239621010&doctype=SDS&lang=2
Geocel® Water Shield® Caulking Sealant	Sealant	45.35%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=GEOCEL&prodno=079239101017&doctype=SDS&lang=2
ProCOLOR SWD Tripolymer Sealant	Sealant	30.16%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=GEOCEL&prodno=079239851578&doctype=SDS&lang=2
Geocel® 2300® MHRV Sealant	Sealant	47.50%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=GEOCEL&prodno=079239631002&doctype=SDS&lang=2
TexChem Tex-Out	Spot cleaner	0-10%	https://www.gogsg.com/ASSETS/DOCUMENTS/ITEMS/EN/TexChem%20Tex-Out%20SDS%20(US).pdf
Tec-Chem Vandalism Remover	Vandal mark remover	10-20%	http://www.tecchem.com/images/products/vandalmrkremovermsds.pdf
Premier PB955 Brush Contact Adhesive	Adhesive	<1%	http://www.northstarchemicals.com/literature/Premier/MSDS/MSDS%20PB955%20Bulk-rev1013.pdf
Premier PB970 High Temperature Spray Grade Contact Adhesive Bulk	Adhesive	<1%	http://www.northstarchemicals.com/literature/Premier/MSDS/MSDS%20PB970%20bulk.pdf
StarStuk™ NS55 Brush Contact Adhesive	Adhesive	<1%	http://www.northstarchemicals.com/literature/StarStuk/MSDS/MSDS%20SS%20NS55%20Bulk.pdf
LOCTITE SF 7611 PARTS CLEANER known as Loctite(R) Pro Strength Parts	Parts cleaner	60-100%	http://hybris.cms.henkel.com/henkel/msdspdf?matnr=234941&country=US&language=EN
LOCTITE LB 8419 MAINTAIN LUBE known as Maintain(TM) Lubricant Penetrant	Lubricant	30-60%	http://hybris.cms.henkel.com/henkel/msdspdf?country=US&language=EN&matnr=235293
TURCO 5580-G	Coating	60-100%	http://site.skygeek.com/MSDS/henkel-turco-5580-g-5-gallon-597039.pdf
TURCO FORM MASK 537 BULK	Coating	60-100%	http://northerncomposites.com/docs/default-source/msds/turco_form_mask_537_7-6-11-msdsa7830c281cc2688d932fff000006e6f6.pdf?sfvrsn=2
TURCO FORM MASK 540-R	Coating	60-100%	http://site.skygeek.com/MSDS/henkel-turco-597196-tfm-540-r-55-gallon.pdf
Supertacker 357	Adhesive	70-100%	http://www.homedepot.com/catalog/pdfimages/f9/f9910a6e-d1d4-4a14-a1fc-85de0508323f.pdf (old); http://www.hernon.com/filerepository/products/msds/d92539ab-82ff-48b6-b02c-48f9a72fae01.PDF (new)

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
Waterproofer 25	Coating	30-60%	http://www.hernon.com/filerepository/products/msds/562abe88-5958-4c84-893f-5d15b1d68c6b.pdf
Hornady - One Shot Primer Sealer (Lock-N-Load Primer Sealer Kit)	Sealant - gun ammunition	30-50%	http://www.hornady.com/assets/files/msds/OneShotPrimerSealerKit-020049.pdf
Hy-Sol, Hydro-Balance	Refrigeration coil cleaner	100%	http://www.hydrobalance.com/SDS/H-1200_Hy-Sol_SDS_2015-05-06.pdf
Tool Cool Aerosol	Lubricant	60-100%	http://www.industrialbolt.com/msds/ToolCool.pdf
Perchloroethylene, DG	Dry cleaning fluid	100%	http://www.imintech.com/wp-content/uploads/2015/05/PerchloroethyleneDG2015opt.pdf
S18 Cleaning Fluid	Dry cleaning fluid	NA	http://www.imintech.com/wp-content/uploads/2015/06/Cleaning-Fluid-S18-MSDS-2015.pdf
S22 Industrial-Plus Cleaning Fluid	Dry cleaning fluid	NA	http://www.imintech.com/wp-content/uploads/2015/06/Cleaning-Fluid-S22-Metal-Can-MSDS-2015.pdf
S55 Professional Cleaning Fluid	Dry cleaning fluid	NA	http://www.imintech.com/wp-content/uploads/2015/06/Cleaning-Fluid-S55-Metal-Can-MSDS-2015.pdf
Renown® Solvent Spot Remover	Aerosol solvent spot remover	>90-<100%	http://www.kelso.wednet.edu/LinkClick.aspx?fileticket=KUejbiHnFrI%3D&tabid=263&portalid=0&mid=802
4504 Silicone Spray	Silicone lubricant	30-40%	http://www.internationalepoxy.com/documents/sds_4504.pdf
Pro-Strength Brake and Parts Cleaner	Automotive - Brake cleaner	40-70%	https://www.permatex.com/wp-content/uploads/tech_docs/sds/01_US_A-English/82606.pdf
Clean Up Aerosol	General purpose degreaser	NA	http://www.jetlube.com/pdf/CLEAN-UP-AEROSOL-sds.pdf
10251-01-012 JIG701 JIG-A-LOO 155G	Lubricant	10-30%	http://www.electro-wind.com/media/files/jigaloo/jigaloo-msds.pdf
Matrix Breakdown, MX-BD-04	Spot remover	10-30%	http://www.jondon.com/media/pdf/msds_docs/MS-MX-BD.pdf
18 Oz Brake Sav (Red/Blue) LB	Automotive - Brake cleaner	90-100%	http://www.kaylinecompany.com/sds/K40.pdf
Grease Gun in a Can	Lubricant	5-10%	http://www.k-chem.com/msds/GreaseGunCan.pdf
Nut Buster	Lubricant	NA	http://www.k-chem.com/msds/KCnutbustermsds.htm
80-929 Solv-All 2 Metal Parts Solvent	Parts cleaner	70-80%	https://www.kimballmidwest.com/PDFViewerPage/LoadPDF?FileattachmentID=432554
80-801 Ultra-Cut Cutting Tool Coolant	Coolant	40-60%	https://www.kimballmidwest.com/PDFViewerPage/LoadPDF?FileattachmentID=1466
80-695 Heavy Duty Silicone	Lubricant	30-40%	https://www.kimballmidwest.com/PDFViewerPage/LoadPDF?FileattachmentID=1413
80-923 TORQ + Intensive Action Penetrating Oil	Penetrating oil	40-50%	https://www.kimballmidwest.com/PDFViewerPage/LoadPDF?FileattachmentID=1570
Brake Clean Free	Automotive - Brake cleaner	70-80%	https://www.kimballmidwest.com/PDFViewerPage/LoadPDF?FileattachmentID=481977

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
NG816 Cleaning Fluid	Cleaner - fabrics/textiles	10-30%	http://www.komar.com/filedownloadfolder/958B5B51-5DBA-442F-AB67-B8603D2B41A3_NG816_MSDS.pdf
NG316 Spot Lifter	Spot cleaner for textiles	20-25%	http://www.komar.com/filedownloadfolder/C4F9598B-D655-4BEC-B166-048EE54E5F91_NG316_MSDS.pdf
Repell Moisture Displacer	Aerosol	80.10%	http://msdsdigital.com/system/files/Repell%20Aerosol%20Lubricant.pdf
Drummond Open & Shut Penetrating Oil	Penetrating oil	60-100%	https://www.lawsonproducts.com/pdfs/msds/DA7671_EN.pdf
Lawson Brake Klean Non-Flammable Brake Parts Cleaner	Automotive - Brake cleaner	60-100%	https://www.lawsonproducts.com/pdfs/msds/61416_EN.pdf
Autoseal 3370 Adhesive	Industrial adhesive	0.1-1%	http://www.lord.com/sites/default/files/Documents/SafetyDataSheet/AUTOSEAL_3370.pdf
Chemlok 220 Adhesive	Industrial adhesive	20%	http://ww2.lord.com/latam/Documents/MSDS%20(US)/CHEMLOK%20220.pdf
Chemlok 220LH Adhesive	Industrial adhesive	1%	http://ww2.lord.com/latam/Documents/MSDS%20(US)/CHEMLOK%20220LH.pdf
Chemlok 220X Adhesive	Industrial adhesive	1%	http://www.lord.com/sites/default/files/CHEMLOK%20220X.pdf
Chemlok 6125 Adhesive	Industrial adhesive	1%	http://www.lord.com/sites/default/files/CHEMLOK%206125.pdf
Chemlok 6220 Adhesive	Industrial adhesive	0.1-1%	http://www.lord.com/sites/default/files/Documents/SafetyDataSheet/CHEMLOK_%206220.pdf
MS 513 Super Quick Kleen II	Electric parts cleaner	30-60%	http://maintsol.com/assets/1-513_Super_Quick_Kleen_II_SDS.pdf
CA Quik Kleen	Energized electrical equipment cleaner	30-60%	http://maintsol.com/assets/1-517_CA_Quik_Kleen_SDS.pdf
Kool Tool Product #7-499320	Tool cutting	NA	http://www.maintsol.com/MSDS%20PDF/Kool%20Tool%20MSDS.pdf
Electra-Dri	Lubricant	35-45%	http://www.maintsol.com/MSDS%20PDF/1-536.pdf ; http://maintsol.com/assets/1-5360_Electra_Dri_SDS32668.pdf (new)
E-Z Glide	Lubricant	25-35%	http://maintsol.com/assets/1-537_E-Z_Glide_SDS.pdf
MS-572 Grease G	Lubricant	10-30%	http://www.maintsol.com/MSDS%20PDF/1-572.pdf ; http://maintsol.com/assets/1-572_MS572_SDS.pdf (new)
MS-550 Super Pen 4	Penetrating lubricant	60-100%	http://maintsol.com/assets/1-550_Super_Pen_4_SDS.pdf
Toxi-Mat-14 Mixture	Laboratory chemicals	0.00%	http://www2.mathesonogas.com/pdfs/msds/MATH0059.pdf
Quicksilver Marine Parts Degreaser and Cleaner	Marine - Cleaner and degreaser	75-80%	http://www.kelloggmarine.com/msds/MER%20-%20Quicksilver/Marine%20Parts%20Degreaser%20&%20Cleaner.pdf
Fast Dry Solvent	Energized electrical equipment cleaner	NA	http://www.meyerlab.com/pdfs/548ola341/Fast-Dry%20Solvent.pdf
Nutbuster	Lubricant, cleaner, rust preventative	NA	http://www.meyerlab.com/pdfs/548ola341/NUT%20BUSTER.pdf
TP-69	Penetrating lubricant	NA	http://www.meyerlab.com/pdfs/548ola341/tp-69.pdf

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
Brake Parts Cleaner CN-1261	Automotive - Brake cleaner	NA	http://www.meyerlab.com/pdfs548ola341/Brake%20Parts%20Cleaner%20CN-1261.pdf
Moisture Guard	Penetrating oil and lubricant	35-45%	http://excaliburstrong.com/store_content/cms/SDS/MOISTURE-GUARD-SDS.pdf
MARC 103 SAFE-SOLV	Solvent cleaner	30-60%	http://s3.amazonaws.com/midamericanresearchcorp/app/public/system/msds/365/original/SDS_MARC_103.pdf?1443189747
MARC 100 PEN-A-LUBE	Penetrating lubricant	30-60%	http://s3.amazonaws.com/midamericanresearchcorp/app/public/system/msds/192/original/SDS_MARC_100_05_31_16.pdf?1472130958
MARC 47 GYM DANDY GYM FLOOR CLEANER	Gym floor cleaner	15-25%	http://s3.amazonaws.com/midamericanresearchcorp/app/public/system/msds/98/original/SDS_MARC_47.pdf?1449249969
Mighty Chlorinated Brake Cleaner	Automotive - Brake cleaner	85-100%	https://www.mightyautoparts.com/documents/10191/7258372/BK101/c2abab50-60de-4dc8-a2ea-7e9b92a55c2e?version=1.7
Miracle Tool (Aerosol)	Lubricant	15%	https://www.momarhaystack.com/data/productsandequipment/miracletoolaerosol/miracletoolaerosol%20msds.pdf
Vandal Mark Remover	Vandal mark remover	7%	https://www.momarhaystack.com/data/productsandequipment/vandalmarkremoverliquid/vandalmarkremoverliquid%20msds.pdf
NG816 Cleaning Fluid	Spot cleaning of apparel and textiles	10-30%	http://www.komar.com/filedownloadfolder/958B5B51-5DBA-442F-AB67-B8603D2B41A3_NG816_MSDS.pdf
Blast Kleen	Condenser Coil Cleaner	NA	http://www.refrigerants.com/pdf/BLAST%20KLEEN.pdf
Aerosol HD Solvent	Degreaser	NA	http://www.refrigerants.com/pdf/NDS17OZ%20AEROSOL%20HD%20SOLVENT_NC.pdf
HD Degreasing Solvent	Degreaser	NA	http://www.refrigerants.com/pdf/NDS1G%20HD%20DEGREASING%20SOLVENT%20new_NC.pdf
Electric Motor Cleaner	Electrical cleaner	NA	http://www.refrigerants.com/pdf/N4835%20ELECTRIC%20MOTOR%20CLEANER_NC.pdf
Netcare Vandalism Mark Remover	Vandal mark remover	8-10%	http://www.networkdistribution.com/msds/870%20Vandalism%20Mark%20Remover.pdf
StarStukTM NS70 High Temperature Spray Grade Contact Adhesive Bulk	Adhesive	<1%	https://baersupply.com/files/14/products/11/235/Northstar_MSDS-NS70-bulk.pdf
Aerosol Degreasing Solvent EF	Degreaser	85-95%	http://www.nucalgon.com/assets/MSDS/English/4083-75.pdf
Degreasing Solvent EF	Degreaser	10-20%	http://www.nucalgon.com/assets/MSDS/English/4162.pdf
Perchloroethylene, All Grades	Petroleum industry, refrigerant manufacturing, metal cleaning, paint stripping, aerosol carrier	99-100%	http://www.ppe.com/msds/MRS-3.PDF

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
Crude Ethylene Dichloride	Chemical intermediate	0.1-20%	http://www.msdsdigital.com/system/files/CRUDE_ETHYLENE_DICHLORIDE_(ED_C).pdf
A1124 Clear Lube A	Chain and cable lubricant	NA	http://onlyomega.com/msds/Clear%20Lube%20A.pdf
A1007 Fast	Penetrating lubricant	NA	http://onlyomega.com/msds/Fast.pdf
One Stop Triple Blend	Cured plastisol ink remover	NA	http://www.onestopinc.com/downloads/msds/OS-TRIPLE-BLEND.pdf
One Stop Blow Out, Cured Plastisol Remover	Spot cleaning of apparel and textiles	8%	http://www.onestopinc.com/downloads/msds/OS-Blow-Out-Plastisol-Remover.pdf
ADH 100 Clear (Non Flam)	Consumer and industrial adhesive	60-100%	http://www.orenco.com/corporate/doclib/MSDS/MSDS-ADH100.pdf
18.5OZ OVERALL BRKE PRT CLNR 24PK(2-12)	Automotive - Brake cleaner	90-100%	http://www.overallsupply.com/Art%20and%20SDS/SDS/CPC/NonFlammable%20Brake%20Parts%20Clnr.pdf
Techtride Perk	Solvent	100%	http://www.richclean.com/RICHCLEANS/MSDSheets/Miscellaneous/SDS%20DC%20GRADE%20PERC.pdf
DYNA-BRAKE	Automotive - Brake cleaner	30-60%	https://pass.partsmaster.com/MSDS/6228.pdf
GC DET Evaluation Test Mix	Laboratory chemicals	0.1-<0.3%	https://www.perkinelmer.com/Content/MSDSDatabase/MSDS_N9307036_AU(EN).pdf
142LA Ignition & Wire Dryer	Demoistures ignition and wire	80-90%	http://www.neverseezproducts.com/msds/81082.pdf
Chlorasan	Accessory embalming chemical	40-45%	http://www.piercechemical.com/wp-content/uploads/2016/05/Chlorasan-SDS-PW0418500.pdf
Dry Hair Cleaner	Accessory embalming chemical	75-85%	http://www.piercechemical.com/wp-content/uploads/2016/05/Dry-Hair-Cleaner-SDS-PW0410500.pdf
Sani-Spray	Embalming	25-35%	http://www.piercechemical.com/wp-content/uploads/2016/05/SaniSpray-SDS-PW0417000.pdf
Budget Silicone Mold Release	Mold cleaner	5-10%	http://www.ppe.com/msds/BMR-016_01_00_MSDS_English.pdf
MCB 55 Mold Release	Mold cleaner	80-90%	http://www.ppe.com/msds/MCB-01.PDF
Non-Flammable Liquid Tire Buffer and Cleaner	Automotive - Cleaner	15-35%	http://www.plews-edelmann.com/assets/1/7/12092TF_SD_S.pdf
004 Safety Solvent Cleaner	Cleaner	30-60%	http://www.plus-co.com/products_safety_data_sheet/plusco004-industrial-products-safetysolvent-spray.pdf
009 Pierce Penetrating Lubricant	Lubricant	60-100%	http://www.plus-co.com/products_safety_data_sheet/plusco009-industrial-products-pierce-penetrating-lubricant.pdf
GB Electrical Degreaser	Electrical degreaser	97.50%	https://www.menards.com/msds/103551_001.pdf
Prime Source Vandalism Remover	Cleaner	7-13%	https://www.grandandtoy.com/corporatepages/PlayVendorMSDS.aspx?sku=760007701
Knock It Off	Aerosol spray solvent	90-100%	http://procheminc.com/proddocs/KNOCK%20IT%20OFF%201622%20SDS.pdf

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
Pro Tools MP Penetrant Lubricant	Multipurpose penetrant, lubricant, and demoisurant	>70-<90%	http://procheminc.com/proddocs/PRO%20TOOLS%20MP%20PENETRANT%20LUBRICANT%201496%20SDS_1.pdf
Ambush	Fire ant spray	10-30%	http://procheminc.com/proddocs/AMBUSH[1].pdf
Pronto Brake Cleaner 12/16 Oz	Automotive - Brake cleaner	85-100%	http://pronto-net.com/MSDS/817200-EN-TCC-TCC-2012-02-14%2009_col_57_col_42.pdf
Pronto Brake Cleaner 55 Gal	Automotive - Brake cleaner	100%	http://pronto-net.com/MSDS/817255-EN-TCC-TCC-2012-04-23%2012_col_45_col_06.pdf
Qmaxx INDUSTRIAL STRENGTH 55 Gallon	Corrosion inhibitor, penetrating lubricant	40-50%	http://qmaxxproducts.com/wp-content/uploads/2015/05/Industrial-Non-Aerosol-SDS-05152015.pdf
8070 Pad Kleen	Degreaser	60-100%	http://www.questspecialty.com/sds/8070_SDS_QS.pdf
5160-5170 Electro-Clean	Energized electrical equipment cleaner	30-60%	http://www.questspecialty.com/sds/5160-5170_SDS_QS.pdf
5370 Sili Lubricant	Heavy duty silicone spray	NA	http://www.questspecialty.com/sds/5370_SDS_QS.pdf
5720 Bodacious	High pressure, non-melt red grease	10-30%	http://www.questspecialty.com/sds/5720_SDS_QS.pdf
5360 Aqua-Lub Lubricant	Lubricant	35-45%	http://www.questspecialty.com/sds/5360_SDS_QS.pdf
5090 Pierce	Penetrating lubricant	60-100%	http://www.questspecialty.com/sds/5090_SDS_QS.pdf
5500 Pierce	Penetrating lubricant	60-100%	http://www.questspecialty.com/sds/5500_SDS_QS.pdf
6007 Loose Screw	Lubricant	30-60%	http://www.questspecialty.com/sds/6007_SDS_QS.pdf
5120 Quikleen II	Motor cleaner	30-60%	http://www.questspecialty.com/sds/5120_SDS_QS.pdf
5130 Quikleen II	Motor cleaner	30-60%	http://www.questspecialty.com/sds/5130_SDS_QS.pdf
Electric Motor & Equipment Cleaner	Electrical cleaner and degreaser	30-60%	http://gsmart.net.au/msds_pdf/ElectricMotorCleaner.pdf
Vitalsize	Dry cleaning sizing	<55%	http://www.fabricleansupply.com/msds/0265.pdf
PerSec	Dry cleaning solvent	>99%	http://www.fabricleansupply.com/msds/0262.pdf
Brake Parts Cleaner (Chlorinated)	Automotive - Brake cleaner	30-60%	http://catalog.scfastening.com/Asset/M720%20MSDS.pdf
Liquid Wrench Non-Flammable Lubricating and Penetrating Oil with Cerflon	Lubricant	60-100%	https://hdsuppliesolutions.com/wcsstore/B2BDirectStorefrontAssetStore/product/fm/additional/MS/MSDS-111585.pdf
Tip Top Metal Primer PR 300	Metal primer	25-40%	http://www.rematiptop.com/technical/ind/msds/RTT-IND-020%20Rev.%205%20(PR%20300%20Primer)%20110414AOM.pdf
30009, 30009-5XX, & 30109 / VOA Calibration Mix #4	For laboratory use only	0.20%	http://www.restek.com/documentation/msds/30009_useng.pdf
30044, 30044-5XX, & 30144 / 502.2 Calibration Mix #3	For laboratory use only	0.20%	http://www.restek.com/documentation/msds/30044_useng.pdf
Midas® Tarnish Shield	Metal surface treatment	<10%	https://media1.riogrande.com/Content/335037-SDS.pdf
Gunk Electric Motor Contact Cleaner - Energized Equipment	Energized cleaner	90-100%	http://www.rscbrands.com/products/msds/NM1.pdf

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
Gunk Brake Parts Cleaner - Chlorinated	Automotive - Brake cleaner	40-<50%	http://www.rscbrands.com/products/m-sds/M720.pdf
Lexel White VOC	Caulk	30-60%	http://www.sashco.com/hi/pdfs/LexelWhiteVOC_SDS.pdf
18 OZ HANDY II 1494 LB 12PK	Automotive - Brake cleaner	90-100%	https://sspva.com/site/wp-content/uploads/2015/07/1494-HANDY-II.pdf
18 OZ SEVEN OAKS VANDAL REMOVER LB 12PK	Cleaner	2.5-10%	http://www.sevenoakssupply.com/pdf/VAN-MRK-RMR-ACS.pdf
Tool Crib Electric Motor and Contact Cleaner	Electrical cleaner	97%	http://www.seymourpaint.com/wp-content/uploads/2014/02/620-1526.pdf
Sheila Shine (Aerosol and liquid)	Polishing agent/burnishing compound	10-30%	http://www.officedepot.com/pdf/msds/292039.pdf
SIFCO Process Tuff Mask	Automotive - Masking paper	10-20%	http://plating.sifcoasc.com/Asset/MSD_S-TUFF-MASK.pdf
TCLP VOLATILES SPIKE	Certified reference material	0.20%	http://www.spexcertiprep.com/MSDS/TCLP-VX.pdf
TCLP Volatiles Spike Alternate Formulation	Certified reference material	0.20%	http://www.spexcertiprep.com/MSDS/TCLP-VA.pdf
EL™703 Electric Motor Degreaser Aerosol	Electrical degreaser	98%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=SO&doctype=MSDS&prodno=S00703000
LU200™L Dry Film Moly Lubricant	Lubricant	70%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=SO&doctype=SDS&prodno=S20005000&lang=2
MR™351 Mold Cleaner Aerosol	Mold cleaner	25%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=SO&doctype=SDS&prodno=S00351000&lang=2
WL™941 Dry Weld Spatter Protectant Aerosol	Protectant	55.40%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=SO&doctype=SDS&prodno=S00941000&lang=2
L2 Moisture Displacer/Deep Penetrant	Lubricant	40-60%	http://www.spraywayinc.com/sites/all/themes/theme687/msds/sw290.pdf
Chlorinated Brake Parts Cleaner	Cleaner	90-100%	http://www.spraywayinc.com/sites/all/themes/theme687/msds/sw330.pdf
SSD II	Degreaser	30-60%	http://statechemical.com/safety-data-sheets
DRI (AEROSOL)	Lubricant	60-100%	http://www.columbus.k12.wi.us/cms_files/resources/Dri%20All%20Purpose%20Lubricant%20aerosol.pdf
PEN	Penetrating oil	<80%	http://statechemical.com/safety-data-sheets
Perclean	Dry cleaning solvent	>95%	www.ccwonline.com.au/msds/Stelco/Stelco%20Perclean.doc
Primetime Adhesive	Livestock grooming adhesive	15%	http://www.qcsupply.com/media/pdf/msds/441100_441101_MSDS.pdf
20 Oz Sunbelt Nut Buster Penetrating Oil	Lubricant	40-60%	http://www.sunbelt-labs.com/catalog/msds/02142A_msds.pdf
Flush A	Energized electrical equipment cleaner	30-60%	http://www.supercoproducts.com/SDS/SDS-FLUSH-A.pdf
SSP 200 (Bulk)	Solvent applications	60-100%	http://supercoproducts.com/SDS/SDS-SSP-200-BULK.pdf
Liqui Grease	Grease	10-30%	http://supercoproducts.com/SDS/SDS-LIQUI-GREASE.pdf
Break Away	Lubricant	30-60%	http://supercoproducts.com/SDS/SDS-BREAK-AWAY.pdf

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Super Slide A	Lubricant	25-35%	http://supercoproducts.com/SDS/SDS-SUPER-SLIDE-A..pdf
Bust A	Penetrating lubricant	60-100%	http://supercoproducts.com/SDS/SDS-BUST-A..pdf
Electro Kleen	Solvent cleaner	30-60%	https://storage.googleapis.com/nortwo-ods-sds/Electro%20Kleen%20SDS.pdf
Break Away	Penetrating lubricant	60-100%	http://www.cityofmenasha-wi.gov/COM/Health/MSDS/NW%20BREAK%20AWAY%2016.pdf
Team 89 Nut Buster	Lubricant	40-60%	http://www.teamlab.net/docs/default-source/msds-documents/t89-nut-buster-sds.pdf?sfvrsn=2
Johnsen's Brake Parts Cleaner	Automotive - Brake cleaner	85-100%	http://www.technicalchemical.com/msds/2420.pdf
Texstyle Formula TS-3	Cured ink remover	5-<10%	http://tekmarltd.com/products/spot-cleaning/chemicals/formula-ts-3/
Texstyle Formula TS-1	Cured ink remover	5-<12%	http://tekmarltd.com/products/spot-cleaning/chemicals/formula-ts-1/
TS-VLR	Vinyl letter remover	4-12%	http://www.onestrokeinks.com/assets/msds_tekmar_tsvlr.pdf
Cera Fluida Classic	Brightener wax for natural stones	11/5/2011	https://www.regentstoneproducts.com/msds/tenax/Tenax_Cera_Fluida_Classic.pdf
B900, Berkebile Electric Contact Cleaner	Electrical cleaner	>95%	http://www.berkebileoil.com/uploads/1/6/3/3/16336494/sds-b900-05272015.pdf
Berkebile 2+2 Clean Brake	Automotive - Brake cleaner	100%	http://www.berkebileoil.com/uploads/1/6/3/3/16336494/b3501_clean_brake_sds.pdf
Berkebile Oil 2+2 Tire Inflator	Instantly inflate and seal tires	30-40%	http://www.berkebileoil.com/uploads/1/6/3/3/16336494/b3100_tire_inflator_sds.pdf
Hypalon Coating	Cableguard walk surface topcoat	68%	http://www.dsbrown.com/Resources/Bridges/cableguard/Cableguard-Walk-Surface-Top-Coat-MSDS.pdf
San Veino Spray	Embalming and preserving mixture	67.90%	http://www.embalmers.com/sds/Sundries-sds/San_Veino_Spray_SDS.pdf
E1009 Restore Black Battery Reconditioner	Coating	14%	https://www.powerstridebattery.com/sidebar/e1009_msds.pdf
Penray Electric Motor Cleaner	Electrical cleaner	60-100%	http://shipsst.com/training/SDS/Penray%20Electric%20Motor%20Cleaner.pdf
Service Pro Chlorinated Brake Cleaner, 4820 Chlorinated Brake Cleaner	Automotive - Brake cleaner	60-100%	http://ebpaving.com/wp-content/uploads/2013/09/SERVICE-PRO-CHLORINATED-BRAKE-CLEANER.pdf
Polyurethane 8800 Series-Base	Coating	<12%	http://trans-chem.com/msds12.htm
Q20	Lubricant	40-60%	http://www.q20arabia.com/sites/default/files/products/downloads/Q20%20Multi-purpose%20Lubricant.pdf
Blast	Solvent cleaner	30-60%	http://ultra-cheminc.com/images/msds/Blast.pdf
Cure	Lubricant	10-30%	http://ultra-cheminc.com/images/msds/Cure.pdf
Break It	Penetrating lubricant	60-100%	http://ultra-cheminc.com/images/msds/Break-It.pdf

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Sili-Coat	Silicone spray lubricant	25-35%	http://ultra-cheminc.com/images/msds/Sili-Coat.pdf
Buster	Lubricant	30-60%	http://ultra-cheminc.com/images/msds/Buster.pdf
Coal Tar Remover	Coal tar remover	94-98%	http://www.uniservicemarine.com/resources/Chemicals/Products/BC01_COAL_TAR_REMOVER.pdf
United 96 ANABONDA	Industrial adhesive	60-100%	https://www.unitedlabsinc.com/content/pdf/msds/96sds.pdf
United 108 QUIK BREAK	Penetrating oil	<40%	https://www.unitedlabsinc.com/content/pdf/msds/108sds.pdf
Tool Coolant II	Cutting fluid	<50%	https://www.applied.com/uz/wp-content/uploads/M01182.pdf
Spray Degreaser	Degreaser	60-100%	http://www.vapcoproducts.com/sds/SDS-SDS-Spray-Degreaser-Aerosol.pdf
Pierce	Penetrating lubricant	60-100%	http://www.vapcoproducts.com/sds/5500-SDS-Pierce.pdf
Hagerty Silversmiths' Spray Polish	Compounded cleaner	NA	http://www.homedepot.com/catalog/pdfimages/ec/ecc3d5fa-85b7-40f3-a8ce-913af4058e88.pdf
Mag 1 Electric Motor Cleaner 445	Electric motor cleaner	98%	www.godden.ca/index.php?show=getdoc&id=27
Mag 1 Brake Parts Cleaner 408	Automotive - Brake cleaner	60-90%	http://msdsdigital.com/system/files/MG750408 MG750408 USENG.pdf
Well-Worth Brake Cleaner - 20 oz.	Automotive - Brake cleaner	60-100%	http://www.wellworthproducts.com/wp-content/uploads/2015/01/MSDS.CHEMICALS.BRAKE_AWAY_NON_FLAMMABLE.CHLORINATED.BRAKE_CLEANER1.pdf
White Lightning® Storm Blaster® All Season Sealant, White	Sealant	47%	http://www.paintdocs.com/docs/webPDF.jsp?SITEID=WHITELIGHT&prodno=W41000010&doctype=MSDS&lang=2
Original Formula Alumtap	Cutting fluid	<10%	http://www1.mscdirect.com/MSDS/MSDS00002/00265025-20160420.PDF
POWER-SOLV Energized Electrical Cleaner	Electrical cleaner	30-60%	https://www.winzerusa.com/ecat/msds/891_7070_7.pdf
4 n 1 Lubricant/Penetrant	Penetrant/lubricant	75-85%	http://blogs.baersupply.com/msds/YPI/MSDS/DSPRO%20Brands/BAER-4007-AA%204%20N%201%20Lubricant-Penetrant%20MSDS.pdf
A00175 MST SOLVENT SPOT RMVR 20net20	Cleaner	>90-<100%	https://sds.zepinc.com/ehswww/zep/result/direct_link.jsp?P_LANGU=E&P_SYS=2&P_SSN=11337&C001=MSDS&C002=US&C003=E&C013=1001620&C123=SDS*
A00365 MST ICS ENRGZD ELCTRCL CLNR 20n20	Energized electrical cleaner	>90-<100%	http://steinsinc.com/MSDS/Misty/ICS%20Energized%20Electrical%20Cleaner.pdf
ZEPUNCH	Engine degreaser	10-30%	http://webfiles.acuitysp.com/msds/0307_1_EN1_CDN.PDF
Zep Parts Cleaner Aero DZ	Industrial cleaner and degreaser	45-55%	http://associatedfuelsystems.com/wp-content/uploads/2014/05/Parts-Cleaner-SDS-003601.pdf
ZEP 45	Lubricant	1-10%	http://zep45.com/wp-content/uploads/2014/06/Zep45 MSDS ENG.pdf

Trade Name	Use of the Product	% by weight of chemical	Link to SDS or other Information and References
A00391 MST MOISTURE GUARD 16net15	Lubricant	>70-<90%	https://sds.zepinc.com/ehswww/zep/result/direct_link.jsp?P_LANGU=E&P_SYS=2&P_SSN=11337&C001=MSDS&C002=US&C003=E&C013=1002472&C123=SDS*
LUBRISIL	Lubricant	30-40%	https://sds.zepinc.com/ehswww/zep/result/direct_link.jsp?P_LANGU=E&P_SYS=2&P_SSN=11337&C001=MSDS&C002=US&C003=E&C013=325801&C123=SDS*
Zep Brake Parts Cleaner	Automotive - Brake cleaner	30-60%	http://webfiles.acuitysp.com/msds/0184_1_EN1_CDN.PDF
A00733 ZEP AUTO BRAKE & PARTS CLN 20N20 (Misty Brake Parts Cleaner)	Automotive - Brake cleaner	>90-<100%	https://sds.zepinc.com/ehswww/zep/result/direct_link.jsp?P_LANGU=E&P_SYS=2&P_SSN=11337&C001=MSDS&C002=US&C003=E&C013=1047961&C123=SDS*
ZEP-X-OUT II	Spot cleaner for carpet and fabrics	65-75%	http://www.cityofmenasha-wi.gov/COM/Health/MSDS/Zep%20X-Out%20II%20Carpet%20Cleaner.pdf
ZEP Formula 300 4-1 GL	Degreaser	>30-<50%	http://associatedfuelsystems.com/wp-content/uploads/2014/04/Formula-300-SDS.pdf
BZ7518 CHLOR SLVNT DGRSR R28035 5 GAL	Degreaser	>90-<100%	https://sds.zepinc.com/ehswww/zep/result/direct_link.jsp?P_LANGU=E&P_SYS=2&P_SSN=11337&C001=MSDS&C002=US&C003=E&C013=1041606&C123=SDS*
A00390 MST PENETRATING LUBE 20net19	Penetrating lubricant	>50-<70%	https://sds.zepinc.com/ehswww/zep/result/direct_link.jsp?P_LANGU=E&P_SYS=2&P_SSN=11337&C001=MSDS&C002=US&C003=E&C013=1002456&C123=SDS*
A07296 ZEP PRO ANTISPATER R23001 20N19OBS (Zep Anti-Spatter)	Welding product	>30-<50%	https://sds.zepinc.com/ehswww/zep/result/direct_link.jsp?P_LANGU=E&P_SYS=2&P_SSN=11337&C001=MSDS&C002=US&C003=E&C013=1040604&C123=SDS*
Zep-Erase Aero DZ	Vandal mark remover	>30-<50%	http://associatedfuelsystems.com/wp-content/uploads/2014/05/Zep-Erase-Aerosol-SDS.pdf
BZ7659 ZEP PRO CHLR DGR BL R34150 20GOBS (Zep Chlorinated Degreaser Blend)	Degreaser	>90-<100%	https://sds.zepinc.com/ehswww/zep/result/direct_link.jsp?P_LANGU=E&P_SYS=2&P_SSN=11337&C001=MSDS&C002=US&C003=E&C013=1045891&C123=SDS*
ZEP SOLV	Industrial cleaner and degreaser	>95%	https://login.sitehawk.com/msds/viewfetch.aspx?materialID=414923&facilityID=3050&msdsVersion=3&companyid=VnHGuNngdQA&username=1zyX2SxZNXzOT4HqaBZkRAA%3D
Z99 Safety Solvent BULK	Degreaser	50-65%	http://www.liquidheat.com/wp-content/uploads/2015/06/Z99-Safety-Solvent-Bulk.pdf
DE AQUA LUBE	Lubricant	NA	http://www.liquidheat.com/wp-content/uploads/2015/06/De-Aqua-Lube.pdf

4. Distribution (Includes Retailers)

Based on information reported to TRI for 2015, 7 facilities manufacture perchloroethylene for sale or distribution. Based on information reported to CDR for 2016, 3 facilities manufacture perchloroethylene for wholesale and retail trade.

Industrial products, such as Sprayon WL941 Dry Weld Spatter Protectant Aerosol, can be purchased at industrial supply stores. Also, many products containing perchloroethylene are only sold through company sales representatives, and shipped directly to customers. Additionally, these products are available to consumers through online retailers such as Walmart.

<http://www.sprayon.com/where-to-buy/>
<https://www.walmart.com/ip/SPRAYON-A00941000-Welders-Anti-Spatter-Dry/40832829?wmlspartner=wlp&selectedSellerId=1122&adid=2222222227028403023&wl0=&wl1=g&wl2=c&wl3=61178874729&wl4=pla-96569192889&wl5=1014895&wl6=&wl7=&wl8=&wl9=pla&wl10=101593696&wl11=online&wl12=40832829&wl13=&veh=sem#about-item>

Commercial construction products, such as Geocel® 2000® Construction Caulking Sealant, are sold through building supply centers, industrial distributors, OEM distributors for manufactured housing and RV's, roofing wholesalers, specialty supply centers (i.e., windows, masonry, HVAC, etc.). Also, many products containing perchloroethylene are only sold through company sales representatives, and shipped directly to customers. Other products, such as Geocel® Instant Gutter Seal Gutter & Narrow Seam Sealant, are sold by online retailers including Walmart and Amazon.

<http://www.geocelusa.com/product/all-constructionbuilding-products/2000a-construction-caulking-sealant-detail.html>
<https://www.walmart.com/ip/Geocel-Corp.GC29402Instant-Gutter-Seal-5OZ-GRAY-GUTTER-SEALANT/38473188?wmlspartner=wlp&selectedSellerId=1609&adid=2222222227026489603&wl0=&wl1=g&wl2=c&wl3=52578182711&wl4=pla-84459710111&wl5=1014895&wl6=&wl7=&wl8=&wl9=pla&wl10=113487702&wl11=online&wl12=38473188&wl13=&veh=sem>
https://www.amazon.com/Geocel-29002-Instant-Gutter-Seal/dp/B000LNX0X0/ref=sr_1_2?ie=UTF8&qid=1483037255&sr=8-2&keywords=Geocel%C2%AE+Instant+Gutter+Seal+Gutter+%26+Narrow+Seam+Sealant

Degreasers, such as aerosol CRC Brake and Parts Cleaner, are sold online and in stores such as Grainger, AutoZone, and numerous others.

https://www.grainger.com/product/5YK77?gclid=Cj0KEQIAhZPDBRCz642XqYOCpb8BEiQANUcwT6DNEvmWBggOnRFj1dNpYbJNGQoR6xonuAlbFGNZd1QaAvSz8P8HAQ&cm_mmc=PPC:GOOGLE_PLAA--Fleet%20and%20Vehicle%20Maintenance--Automotive%20Chemicals--5YK77&AL!2966!3!50916716757!!!g!82495727877!&s_kwcid=AL!2966!3!50916716757!!!g!82495727877!&ef_id=WEXT5gAABQSoYNH4:20161229185221:s
http://www.autozone.com/brake-and-power-steering-fluid-additives/brake-cleaner/crc-brake-cleaner/119712_0_0?checkfit=true

Craft glues containing perchloroethylene, such as Aleene's Super Fabric Adhesive, are sold by many online retailers including Walmart, Michael's, Jo-Ann Stores, and more.

<https://www.walmart.com/ip/Aleene-s-Platinum-Bond-Super-Fabric-Textile-Adhesive/17299866>
<http://www.michaels.com/aleenes-super-fabric-adhesive/10306719.html>
<http://www.joann.com/aleenes-super-fabric-adhesive/4883807.html>

Laboratory grade perchloroethylene is available on Amazon.com in 4oz and 16oz bottles for \$12 and \$24, respectively. It is also available for purchase on eBay. Consumers have purchased the product for cleaning wax, tar, and stain removal.

https://www.amazon.com/Tetrachloroethylene-120ml-High-Purity-Solvent/dp/B00I9JDONE/ref=sr_1_2?ie=UTF8&qid=1483025483&sr=8-2&keywords=perchloroethylene
http://www.ebay.com/itm/like/121634587064?lpid=82&chn=ps&ul_noapp=true

5. Use

Perchloroethylene is used as or in:

- Feed stock for manufacturing chlorinated chemicals
- Degreaser and solvent cleaner
- Dry cleaning and textile processing
- Carpet and spot cleaning
- Industrial catalyst regeneration
- Lubricants
- Wood furniture manufacturing
- Sealants and adhesives
- Metal and stone polishes and coatings
- Paints, inks, and ink removal products
- Metal surface preparation and cleaning
- Plastic and rubber manufacturing
- Laboratory applications
- Automotive manufacturing and maintenance
- Mold cleaners, releases, and protectants
- Other various industrial, commercial, and consumer uses.

As described by one manufacturer, “tetrachloroethylene [perchloroethylene] is commercially important as a chlorinated hydrocarbon solvent and as a chemical intermediate. In 2008, an estimate of the current end-use pattern for tetrachloroethylene is as follows: 60% for chemical intermediate, 18% for dry cleaning and textile processing, 18% for surface preparation and cleaning, 2% for oil refining catalyst regeneration, and 2% for miscellaneous use.”

http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_096d/0901b8038096dbc7.pdf?filep ath=productsafety/pdfs/noreg/233-00398.pdf&fromPage=GetDoc

Perchloroethylene is used as a thinning agent which allows adhesives to be applied easily and dry quickly. The perchloroethylene evaporates soon after application. Perchloroethylene is used as a general solvent carrier in aerosols. Emissions can occur in both the manufacture and use of the aerosol. Perchloroethylene is used as a general solvent carrier in paints and coatings. Other minor uses not covered in the OAQPS/HSIA data, include use as a chemical intermediate; in the plastics, rubber and textile industries; as a coolant/lubricant; in foundry, printing, welding, electronics, and photographic film applications; as a general cleaning solvent, in the laboratory; and other not classified uses.

[EPA, Occupation Exposure and Environmental Release Assessment of Tetrachloroethylene.](#)

In 2006, EPA calculated there to be approximately 28,000 perchloroethylene dry cleaning facilities in the United States. Of the 28,000 dry cleaners, 15 of the facilities were major sources, and the remaining were area sources.

<https://www3.epa.gov/ttnecas1/regdata/EIAs/eiafinalpercdrycleanersresidrisk.pdf>

Use at Industrial Sites

Reported uses of perchloroethylene at industrial sites include:

- Industrial dry cleaners clean heavily stained articles such as work gloves, uniforms, mechanics' overalls, mops, and shop rags (EPA 2006).
https://www3.epa.gov/ttn/ecas/docs/eia_ip/perc_eia_neshap_final_09-2006.pdf
- In 1985, five major industry groups used perchloroethylene in degreasing operations. These are furniture and fixtures, fabricated metal products, electric and electronic equipment, transportation equipment, and miscellaneous industries. Perchloroethylene is received by rail car, tank truck, or 55-gallon drum. [EPA, Occupation Exposure and Environmental Release Assessment of Tetrachloroethylene.](#)
- Cold degreasing: Cold cleaners are batch loaded, non-boiling solvent degreasers, usually providing the simplest and least expensive method of metal cleaning. Cold cleaner operations include spraying, brushing, flushing, and immersion. In a typical maintenance cleaner, dirty parts are cleaned manually by spraying and then soaking in the tank. After cleaning, the parts are either suspended over the tank to drain or are placed on an external rack that routes the drained solvent back into the cleaner. The cover is intended to be closed whenever parts are not being handled in the cleaner. Typical manufacturing cold cleaners vary widely in design, but there are 2 basic tank designs: the simple spray sink and the dip tank. Of these, the dip tank provides more thorough cleaning through immersion, and often is made to improve cleaning efficiency by agitation. Small cold cleaning operations may be numerous in urban areas. However, because of the small quantity of emissions from each operation, the large number of individual sources within an urban area, and the application of small cold cleaning to industrial uses not directly associated with degreasing, it is difficult to identify individual small cold cleaning operations (EPA 1985).
<https://www3.epa.gov/ttnchie1/ap42/ch04/final/c4s06.pdf> [EPA, Occupation Exposure and Environmental Release Assessment of Tetrachloroethylene.](#)
- Vapor degreasing (open-top): Open-top vapor degreasers clean with the condensation of hot solvent vapor on colder metal parts. A typical open-top vapor degreaser is a sump containing a heater that boils the solvent to generate vapors. Dirty parts are immersed in the vapor zone, and condensation occurs until the parts are heated to the vapor temperature. Residual

solvent evaporates as the part is removed from the vapor zone. Spraying the immersed parts with solvent or dipping them into the liquid phase increases the cleaning efficiency (EPA 1985). [EPA, Occupation Exposure and Environmental Release Assessment of Tetrachloroethylene.](#)

- Vapor degreasing (conveyorized): Conveyorized degreasers may operate with either cold or vaporized solvent. They are continuously loaded and are almost always hooded or enclosed (EPA 1985). [EPA, Occupation Exposure and Environmental Release Assessment of Tetrachloroethylene.](#)
- Perchloroethylene can also be used in closed system degreasers.
<http://www.dow.com/safechem/eu/en/chemaware/technology/cleansys.htm>
- A 1981 EPA report stated that about 85 percent of conveyorized degreasers were vapor types, and 15 percent were non-boiling (EPA 1995).
<https://www3.epa.gov/ttnchie1/ap42/ch04/final/c4s06.pdf>

Solvent evaporation occurs with all types of degreasing equipment. The major causes of emissions are loss of solvent through diffusion, convection, and movement of surrounding air; carry-out of solvent on cleaned parts; and evaporation from disposal of waste solvent. The amount of these emissions varies with the type of equipment used and the operating parameters. [EPA, Occupation Exposure and Environmental Release Assessment of Tetrachloroethylene.](#)

Emissions from cold cleaners occur through: waste solvent evaporation, solvent carryout (evaporation from wet parts), solvent bath evaporation, spray evaporation, and agitation. Waste solvent loss, cold cleaning's greatest emission source, can be reduced through distillation and transport of waste solvent to special incineration plants. As with cold cleaning, open top vapor degreasing emissions relate heavily to proper operating methods. Most emissions are due to diffusion and convection, which can be reduced by using an automated cover, by using a manual cover regularly, by spraying below the vapor level, by optimizing workloads, or by using a refrigerated freeboard chiller (for which a carbon adsorption unit would be substituted on larger units). Safety switches and thermostats that prevent emissions during malfunctions and abnormal operation also reduce diffusion and convection of the vaporized solvent. Additional sources of emissions are solvent carryout, exhaust systems, and waste solvent evaporation. Carryout is directly affected by the size and shape of the workload, by racking of parts, and by cleaning and drying time. Exhaust emissions can be nearly eliminated by a carbon adsorber that collects the solvent vapors for reuse. Waste solvent evaporation is not so much a problem with vapor degreasers as it is with cold cleaners, because the halogenated solvents used are often distilled and recycled by solvent recovery systems.

<https://www3.epa.gov/ttnchie1/ap42/ch04/final/c4s06.pdf>

Facilities reporting to the Toxics Release Inventory (TRI) in 2015 for perchloroethylene use included facilities in the following sectors:

- Fossil Fuel Electric Power Generation
- All Other Miscellaneous Textile Product Mills
- Petroleum Refineries
- Plastics Material and Resin Manufacturing
- Artificial and Synthetic Fibers and Filaments Manufacturing
- Paint and Coating Manufacturing

- Adhesive Manufacturing
- Soap and Other Detergent Manufacturing
- Polish and Other Sanitation Good Manufacturing
- Urethane and Other Foam Product (except Polystyrene) Manufacturing
- Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers
- Electroplating, Plating, Polishing, Anodizing, and Coloring
- Small Arms Ammunition Manufacturing
- Welding and Soldering Equipment Manufacturing
- Carbon and Graphite Product Manufacturing
- Travel Trailer and Camper Manufacturing
- Aircraft Manufacturing
- Ship Building and Repairing
- Musical Instrument Manufacturing
- Petroleum Bulk Stations and Terminals
- Marine Cargo Handling
- Testing Laboratories
- Hazardous Waste Treatment and Disposal
- Solid Waste Combustors and Incinerators

Commercial Uses

Dry Cleaning

In 2006, EPA estimated that there were approximately 28,000 perchloroethylene dry cleaning facilities in the United States. Of the 28,000 dry cleaners, 15 of the facilities were major sources, and the remaining were area sources. Major source perchloroethylene dry cleaners are those that emit 10 tons or more of perchloroethylene per year upon the compliance date of the 1993 NESHAP.

https://www3.epa.gov/ttn/ecas/docs/eia_ip/perc_eia_neshap_final_09-2006.pdf

In 2008, Halogenated Solvents Industry Alliance (HSIA) estimated that 70% of dry cleaners used perchloroethylene as a solvent.

[Perchloroethylene - Halogenated Solvents Industry Alliance Inc](#)

A 2010 survey in King County (Seattle), WA, estimated that 66% of machines used perchloroethylene as dry cleaning solvent. [A Profile of the Dry Cleaning Industry in King County, Washington](#)

Dry cleaning technology has evolved substantially over the decades. The newer machine designs (dry-to-dry, closed looped) greatly reduce the amount of perchloroethylene vapor released into the air inside the shop as well as outdoors, resulting in cost savings since more perchloroethylene is recovered for reuse, as well as safer working conditions and a cleaner environment.

<https://www.osha.gov/dsg/guidance/perc.html>

The oldest type of dry cleaning machines - transfer machines - can expose workers to high amounts of perchloroethylene, particularly during transfer of solvent-laden clothing from washer to dryer. Newer

equipment (dry-to-dry machines) reduce worker exposure by eliminating this transfer step (clothes enter and exit the machine dry). <https://www.osha.gov/dsg/guidance/perc.html>

New transfer machines are effectively prohibited at major and area sources due to the 1993 NESHAP requirement that new dry cleaning systems eliminate any emissions of perchloroethylene while transferring articles from the washer to the dryer. Therefore, transfer machines are no longer sold. https://www3.epa.gov/ttn/ecas/docs/eia_ip/perc_eia_neshap_final_09-2006.pdf

The first dry-to-dry equipment, dry-to-dry vented, exhausts residual solvent vapors either directly outside or first through a perchloroethylene vapor recovery system. The present designs, dry-to-dry closed loop machines, recirculate perchloroethylene rather than release it outdoors. The latest technology incorporates a secondary vapor recovery system on the dry-to-dry closed loop machines that most effectively minimizes perchloroethylene usage, environmental releases, and worker exposure. <https://www.osha.gov/dsg/guidance/perc.html>

The primary sources of perchloroethylene emissions from dry-to-dry machines are the drying cycle and fugitive emissions from the dry cleaning equipment (including equipment used to recycle perchloroethylene and dispose of perchloroethylene-laden waste). Machines are designed to be either vented or non-vented during the drying cycle. In 2006, approximately 200 dry cleaners (or about 1 percent) used vented machines, and the remaining facilities use the lower-polluting, non-vented machines. https://www3.epa.gov/ttn/ecas/docs/eia_ip/perc_eia_neshap_final_09-2006.pdf

In 2006, EPA said that no new commercial facilities were expected to be major sources. Based on the low emission rates of current perchloroethylene dry cleaning machines and the typical business models used in the industrial and commercial dry cleaning sectors, it is unlikely that any new major sources will be constructed or that any existing area sources will become major sources by the addition of new equipment. https://www3.epa.gov/ttn/ecas/docs/eia_ip/perc_eia_neshap_final_09-2006.pdf

Solvent Degreasing

Perchloroethylene is used as a solvent degreaser. Commercial uses include metal degreasing in cold cleaning, vapor degreasing, and spray applications. Spray applications are both sprayed directly on the medium to be cleaned and on clothes.

Consumer Uses

There are several uses of perchloroethylene in consumer products, including adhesives (arts and crafts, as well as light repairs), sealants for gun ammunition, and stainless steel polish. The use of perchloroethylene in consumer adhesives is especially prevalent.

Past and Potential Other Uses

- Solvents for fats, greases, waxes, rubber, gums, and removing caffeine from coffee.
<https://www.tceq.texas.gov/assets/public/implementation/tox/dsd/final/tetrachloroethylene.pdf>
- Paint and spot removers, water repellents, brake and wood cleaners, glues, and suede protectors. <https://www.health.ny.gov/environmental/chemicals/tetrachloroethene/>
- Past use as a chemical intermediate in the synthesis of fluorocarbon 113, 114, 115, & 116 - [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). Available at: <http://monographs.iarc.fr/ENG/Classification/index.php> p. V20: 494 (197)]
- Synthesis of trichloroacetic acid.
<https://www.tceq.texas.gov/assets/public/implementation/tox/dsd/final/tetrachloroethylene.pdf>
- Insulating fluid and cooling gas in electric transformers.
<https://pubchem.ncbi.nlm.nih.gov/compound/tetrachloroethylene#> [O'Neil, M.J. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 2006., p. 1581]
- Wool scouring and solvent carrier in dyes and water repellents.
<http://www.oxy.com/OurBusinesses/Chemicals/Products/Documents/methylenechloride/580-104%20Perc%20Applications.pdf>
- Heat transfer medium.
<https://www.tceq.texas.gov/assets/public/implementation/tox/dsd/final/tetrachloroethylene.pdf>
- Correction fluid. <http://www.med.navy.mil/sites/nmcphc/Documents/environmental-programs/risk-communication/posters/PERCsml.pdf>
- Flexament, furniture polish, gasket remover, shoe waterproofing, gun oil, shoe adhesive, spray snow, windshield cleaner.
http://events.awma.org/education/Presentations/Session%208/3_AF_AWMA_IA_09272010_EMD.pdf
- Fabric protector spray (discontinued).
<http://webforms.sgs.com/v4/corp/safeguards/pdf/PRODUCT%20RECALLS-Consumer%20Products-October-16-31.pdf>
- Used in the coal industry to determine the specific gravity of the various fractions of a sample provided by the /coal/ mine. In Australia, an estimated 26 tonnes of perchloroethylene per year is used in the coal industry.
http://tools.niehs.nih.gov/cebs3/ntpviews/index.cfm?action=testarticle.properties&cas_number=127-18-4; https://www.nicnas.gov.au/_data/assets/word_doc/0019/34822/PEC15-tetrachloroethylene.docx
- Formerly used, but no longer approved, in mixtures with grain protectants and certain liquid grain fumigants.
[Farm Chemicals Handbook 87. Willoughby, Ohio: Meister Publishing Co., 1987., p. C-248] (From HSDB database)

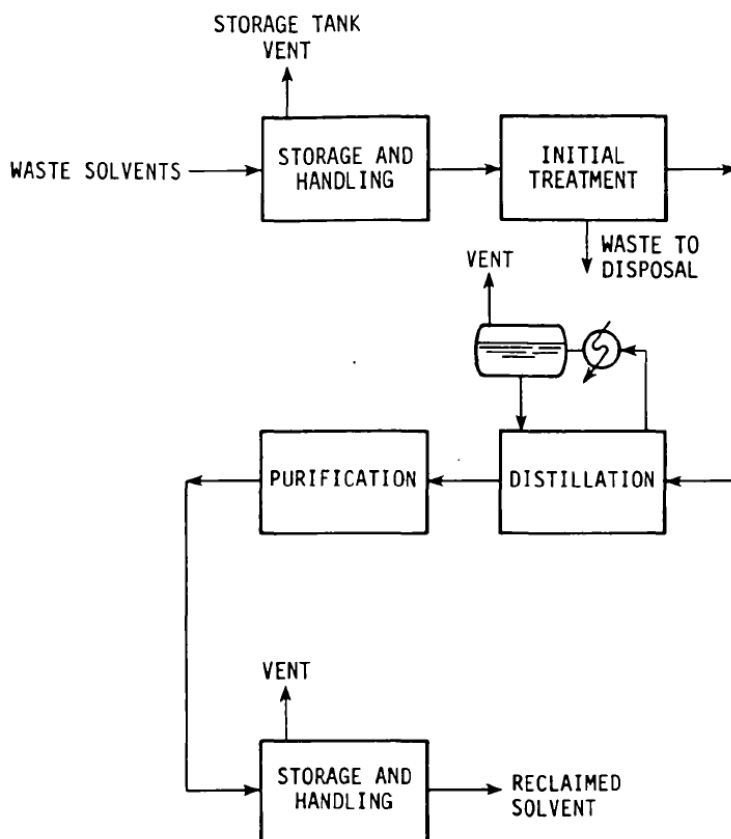
6. Disposal of Waste and Recycling/Recovery

Recycling and Recovery

The following recycling and recovery information is from a 1985 EPA risk assessment. The figure below is a process flow diagram for the solvent recovery of perchloroethylene. Solvents are stored both before and after reclamation in containers ranging in size from 55-gallon drums to 20,000-gallon tanks. Waste solvent can be piped or leaded manually into process equipment. Initial treatment includes vapor recovery or mechanical separation. Vapor recovery operations include condensation, adsorption, and absorption. Mechanical recovery operations include decanting, filtering, draining, settling, and centrifuging. Distillation methods include batch, continuous, or steam distillation. After distillation, the solvent is purified. During purification, water is removed by decanting or salting. During purification, special additives are added to renew the solvent. Waste materials are disposed of by incineration, landfilling, or deep well injection. Emission points for perchloroethylene include storage tank vents, condenser vents, incinerator stacks, and fugitive losses.

[EPA, Occupation Exposure and Environmental Release Assessment of Tetrachloroethylene.](#)

Figure 1. Process flow diagram for the solvent recovery of perchloroethylene (1985).



[EPA, Occupation Exposure and Environmental Release Assessment of Tetrachloroethylene.](#)

TRI includes on-site solvent recovery (including distillation, evaporation, fractionation or extraction) and other recovery or reclamation for reuse. <http://www.epa.gov/tri>

Disposal of Waste

Under the Resource Conservation and Recovery Act (RCRA), perchloroethylene is a listed hazardous waste. See 40 CFR 261.33 - *Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof*.

One method of disposing perchloroethylene involves absorption in vermiculite, dry sand, earth, or a similar material and then burial in a secured sanitary landfill (HSDB 2013). A second method involves incineration after mixing with another combustible fuel. With the latter method, combustion must be complete to prevent the formation of phosgene, and an acid scrubber must be used to remove the haloacids produced. The gas-fired type of incinerator is optimal for the total destruction of perchloroethylene (HSDB 2013).

<https://www.atsdr.cdc.gov/toxprofiles/tp18-c5.pdf>

HSDB. 2013. Tetrachloroethylene. Hazardous Substances Data Bank. National Library of Medicine, <http://toxnet.nlm.nih.gov>. May 09, 2013.

Perchloroethylene is also a potential candidate for fluidized bed incineration at 450–980°C, rotary kiln incineration at 820–1,600°C, and liquid injection incineration at 650–1,600°C (HSDB 2013). Federal regulations prohibit land disposal of various chlorinated solvent materials that may contain perchloroethylene. Any solid waste containing perchloroethylene must be listed as a hazardous waste unless the waste is shown not to endanger the health of humans or the environment (EPA 1985b, 1988). Destruction and removal efficiency of perchloroethylene that is designated as a principal organic hazardous constituent must be 99.99%.

<https://www.atsdr.cdc.gov/toxprofiles/tp18-c5.pdf>

WHO. 1987. Tetrachloroethylene health and safety guide. World Health Organization, Distribution and Sales 1211 Geneva 27, Switzerland, 32.

HSDB. 2013. Tetrachloroethylene. Hazardous Substances Data Bank. National Library of Medicine, <http://toxnet.nlm.nih.gov>. May 09, 2013.

According to TRI, in 2015, 1,170,581 pounds of perchloroethylene were transferred offsite to landfills and/or other treatment/disposal facilities and 791,156 pounds were released to air, water, or land.

USEFUL TYPES OF INFORMATION

This document presents a summary of information currently available to EPA on this chemical. To more fully characterize the manufacturing, processing, distribution, disposal, and use of this chemical, and to inform the development of the scoping document for this chemical, EPA is interested in obtaining information on:

- the functional uses for this chemical;
- what types of products contain this chemical;
- which industry sectors use this chemical;
- what volume of the chemical is used;
- which uses have been discontinued or phased out;
- exposure scenarios for this chemical; and
- in which articles this chemical is found.

APPENDIX: SOURCES CONSULTED

- U.S. EPA *Chemical Inventory*
<https://www.epa.gov/tsca-inventory>
- U.S. EPA *ChemView*
<https://java.epa.gov/chemview>
- TRI P2 information
<https://www.epa.gov/toxics-release-inventory-tri-program/pollution-prevention-p2-and-tri>
- U.S. EPA *HPV HC* (access through Chemical Data Access Tool – CDAT)
https://java.epa.gov/oppt_chemical_search/
- U.S. EPA *HPVIS* and *HPV HC* (access through Chemical Data Access Tool – CDAT)
https://java.epa.gov/oppt_chemical_search/
- DfE Alternatives Assessments
<https://www.epa.gov/saferchoice/design-environment-alternatives-assessments>
- Safer Chemical Ingredients List
<https://www.epa.gov/saferchoice/safer-ingredients>
- Green Chemistry awards
<https://www.epa.gov/greenchemistry/presidential-green-chemistry-challenge-winners>
- Greener products and services
<https://www.epa.gov/greenerproducts/identify-greener-products-and-services>
- Pollution Prevention
<https://www.epa.gov/p2/pollution-prevention-case-studies>
<https://www.epa.gov/p2/grant-programs-pollution-prevention#sra>
<https://www.epa.gov/p2/pollution-prevention-tools-and-calculators>
- U.S. EPA *InertFinder*
<https://iaspub.epa.gov/apex/pesticides/f?p=101:1:>
- U.S. EPA *Pesticide Chemical Search*
<https://iaspub.epa.gov/apex/pesticides/f?p=CHEMICALSEARCH:1:0::NO:1::>
- U.S. EPA *Endocrine Disruptor Screening Program*
<https://www.epa.gov/ingredients-used-pesticide-products/endocrine-disruptor-screening-program-tier-1-assessments>
- U.S. EPA *Hazardous Waste*
<https://www.epa.gov/hw/learn-basics-hazardous-waste#regulations>
- U.S. EPA *Superfund chemical data matrix*
<https://www.epa.gov/superfund/superfund-chemical-data-matrix-scdm-query>
- U.S. EPA *Hazardous Air Pollutants*
<https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications>
- U.S. EPA *Significant New Alternatives Policy (SNAP)*
<https://www.epa.gov/snap>
- U.S. EPA *Volatile Organic Compounds*
<https://www.epa.gov/indoor-air-quality-iaq/technical-overview-volatile-organic-compounds#definition>
- U.S. EPA *Toxic and priority pollutants under the Clean Water Act*
<https://www.epa.gov/eg/toxic-and-priority-pollutants-under-clean-water-act#toxic>

- U.S. EPA *Contaminant Candidate list under the Safe Drinking Water Act*
<https://www.epa.gov/ccl/contaminant-candidate-list-3-ccl-3#chemical-list>
- U.S. EPA *IRIS Assessment*
<https://cfpub.epa.gov/ncea/iris2/atoz.cfm>
- U.S. EPA *SRS*
https://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/substancesearch/search.do
- U.S. EPA *Chemical and Product Categories (CPCat) Database*
<https://actor.epa.gov/cpcat/faces/home.xhtml>
- U.S. National Library of Medicine *ChemIDplus*
<https://chem.sis.nlm.nih.gov/chemidplus/>
- U.S. National Library of Medicine *Hazardous Substance Data Bank (HSBD)*
<https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- U.S. Department of Health & Human Services *Household Products Database*
<https://hpd.nlm.nih.gov/index.htm>
- OSHA *Chemical Hazards and Toxic Substances*
<https://www.osha.gov/SLTC/hazardoustoxicsubstances/index.html>
- NIOSH *Workplace Safety and Health Topics Chemicals*
<http://www.cdc.gov/niosh/topics/chemical.html>
- NIOSH *Pocket Guide to Chemical Hazards*
<http://www.cdc.gov/niosh/npg/npgdcas.html>
- CPSC *Chemicals*
<http://www.cpsc.gov/en/Research--Statistics/Chemicals/>
- CPSC *FHSA*
<https://www.cpsc.gov/Business--Manufacturing/Business-Education/Business-Guidance/FHSA-Requirements/>
- Food and Drug Administration *List of Databases*
<http://www.fda.gov/ForIndustry/FDABasicsforIndustry/ucm234631.htm>
- NTP (National Toxicology Program) *Substances studied by NTP*
<http://ntpsearch.niehs.nih.gov/?e=True&ContentType=Testing+Status>
- Department of Energy *Protective Action Criteria Database*
<http://energy.gov/ehss/protective-action-criteria-pac-aegls-erpgs-teels-rev-29-chemicals-concern-may-2016>
- California Department of Toxic Substances Control *Toxics in Products*
<http://www.dtsc.ca.gov/PollutionPrevention/ToxicsInProducts/index.cfm>
<http://www.dtsc.ca.gov/SCP/CandidateChemicalsList.cfm>
<http://www.dtsc.ca.gov/SCP/WhatIsAPriorityProduct.cfm>
- California Office of Environmental Health Hazard Assessment *Proposition 65*
<http://oehha.ca.gov/proposition-65/chemicals>
<http://oehha.ca.gov/proposition-65/proposition-65-list>
- California Office of Environmental Health Hazard Assessment *Biomonitoring*
<http://biomonitoring.ca.gov/chemicals>
- California *permissible exposure limits for chemical contaminants*
https://www.dir.ca.gov/title8/5155table_ac1.html

- California *hazardous substance list*
<https://www.dir.ca.gov/title8/339.html>
- California *Safe Cosmetics Program – list of chemical agents known or suspected to cause cancer or developmental or other reproductive harm.*
<http://www.cdph.ca.gov/programs/cosmetics/Pages/default.aspx>
<https://safecosmetics.cdph.ca.gov/search/Default.aspx>
- Maine *chemicals of high concern*
<http://www.maine.gov/dep/safechem/highconcern/>
- Massachusetts *Toxics Use Reduction Act (TURA) (link includes a link to Higher hazard substances list)*
<http://www.mass.gov/eea/waste-mgmt-recycling/toxics/toxic-use-reduction/toxics-use-reduction-act/>
- Massachusetts *Complete list of TURA chemicals*
<http://www.mass.gov/eea/agencies/massdep/toxics/tur/toxics-use-reduction-act-tura-reporting-and-fees.html>
- Lowell Center for Sustainable Production *Chemical, Policy and Science Initiative*
<http://www.chemicalspolicy.org/chemicalspolicy.us.state.database.php>
- Minnesota Department of Health *Toxic Free Kids Act Chemicals of High Concern*
<http://www.health.state.mn.us/divs/eh/hazardous/topics/toxfreekids/highconcern.html>
- Michigan *Environmental Health Topics*
http://www.michigan.gov/mdhhs/0,5885,7-339-71548_54783_54784_74881-13050--,00.html
- New Hampshire *Regulated Toxic Air Pollutants*
<http://des.nh.gov/organization/commissioner/legal/rules/documents/env-a1400.pdf>
- New Jersey *Right to Know Hazardous Substances*
<http://web.doh.state.nj.us/rtkhsfs/rtkhsf.aspx>
- Oregon *Priority Persistent Pollutants (in water)*
<http://www.deq.state.or.us/wq/SB737/>
- Oregon *Pollutant Profiles*
<http://www.deq.state.or.us/wq/SB737/docs/LegRpAtt420100601.pdf>
- Oregon *Reducing Toxics in Oregon*
<http://www.oregon.gov/deq/Pages/ToxicsReduction.aspx>
- Oregon *Chemicals of Concern for Children’s Health*
<http://public.health.oregon.gov/HealthyEnvironments/HealthyNeighborhoods/ToxicSubstances/Pages/childrens-chemicals-of-concern.aspx>
- Pennsylvania Department of Labor and Industry *Hazardous Substance List*
<http://www.pacode.com/secure/data/034/chapter323/chap323toc.html>
- Rhode Island *Air Resources – Air Toxics*
http://www.dem.ri.gov/pubs/regs/regs/air/air22_08.pdf
- Vermont *Chemical Disclosure Program for Children’s Products*
<http://www.healthvermont.gov/enviro/chemical/cdp.aspx>
- Washington *Chemicals of High Concern to Children*
<http://www.ecy.wa.gov/programs/hwtr/rtt/cspa/chcc.html>
- Washington *Children’s Safe Products Act*
<http://apps.leg.wa.gov/RCW/default.aspx?cite=70.240>

- Washington Department of Labor & Industries *SHARP Publications*
<http://www.lni.wa.gov/Safety/Research/Pubs/default.asp>
- National Conference of State Legislatures
<http://www.ncsl.org/research/environment-and-natural-resources/state-chemical-statutes.aspx>
- Canada *Chemicals Portal*
<http://chemicalsubstanceschimiques.gc.ca/index-eng.php>
- EU *ECHA website*
<https://echa.europa.eu/>
- Australia *NICNAS Chemical Information*
<https://www.nicnas.gov.au/chemical-information>
- Japan *Chemical Risk Information Platform (CHIRP)*
http://www.nite.go.jp/en/chem/chrip/chrip_search/systemTop
- OECD *eChemPortal*
http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- Stockholm Convention on Persistent Organic Pollutants
<http://chm.pops.int/TheConvention/ThePOPs/ListingofPOPs/tabid/2509/Default.aspx>
<http://chm.pops.int/TheConvention/ThePOPs/ChemicalsProposedforListing/tabid/2510/Default.aspx>
- WHO IPCS (UN)
<http://www.who.int/ipcs/en/>
- Other – worker protection information
<http://www.dguv.de/ifa/gestis/gestis-internationale-grenzwerte-fuer-chemische-substanzen-limit-values-for-chemical-agents/index-2.jsp>
- DeLima Associates *Consumer Product Information Database (CPID)*
<https://www.whatsinproducts.com/chemicals/index/1>
- SRC *FatePointers Search Module PHYSPROP*
<http://esc.syrres.com/fatepointer/search.asp>
- Product and company websites