Alternate solvent degreasers

The products in this list have lower rates of evaporation and drying than the chlorinated solvents they replace. In some cases, they may require more time or stronger physical action for cleaning surfaces.

The cleaning claims in this reference list are made primarily by the manufacturer. Some claims are augmented by reports from the U.S. Environmental Protection Agency (EPA) and third parties.

MnTAP maintains the following list of alternative solvent degreasers solely as a service to Minnesota companies. This is not a complete list of available suppliers and products, and does not represent an endorsement by MnTAP. MnTAP, by providing this list, does not represent that the products do or do not ensure compliance with environmental and safety laws in any specific application.

Safety Information

Most solvent degreaser alternatives are safer than chlorinated solvents because their slow evaporation rates result in low worker exposure. When selecting a product, consider the following safety information.

Exposure Limit

Exposure limit estimates given in the following table are made by the Occupational Safety and Health Administration (OSHA), the American Congress of Governmental Industrial Hygienists (ACGIH), or the product manufacturer. OSHA establishes the legally enforceable standard; the ACGIH standard is generally recognized as the prudent industrial standard in the absence of an OSHA limit or when new information suggests an established OSHA limit is too lenient.

Vapor Hazard Ratio

The vapor hazard ratio is the likelihood that an exposure limit will be exceeded with normal use. It does not apply if the solvent will be sprayed or atomized. It is estimated by dividing the vapor pressure of a product, the tendency of a solvent to get into the air, by the exposure limit, its risk. The higher the number the greater the chance the exposure limit will be exceeded due to solvent evaporation. This is a comparison of relative risks, this scale does not indicate if a chemical is unsafe.

Hazard Rating

A hazard rating for health, flammability, and reactivity is assigned to pure chemicals by the National Fire Protection Association (NFPA). A similar rating can be assigned to products by their manufacturer using the National Paint and Coatings Association (NPCA) Hazardous Materials Information Systems (HMIS) criteria. Because the HMIS is more subjective, the table on the following pages gives HMIS ratings only in the absence of NFPA ratings.

Supplier	Product/ Residues Removed	Flash Point	Exposure Limit	Vapor Pressure (mmHg)[a]	Vapor Hazard Ratio[b]	Hazard Rating
Ashland Chemicals Shakopee, MN 952.445.0076 www.ashland.com	Ashland 142 Solvent, aliphatic hydrocarbon. Removes: grease and oil.	142° F	100 ppm (ACGIH)	0.1	1.3	1:2:0
Brulin Corporation Indianapolis, IN 317.923.3211 800.776.7149 www.brulin.com	SD 1291, propylene glycol ether and an ester. Removes: adhesive, grease, and ink.	160° F	85 ppm (Brulin)	0.4	6.2	2:2:0
	815MX, surfactants, and amines. Removes: rosin solder flux.	>212° F	3 ppm (OSHA)	NA	NA	1:0:0

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Supplier	Product/ Residues Removed	Flash Point	Exposure Limit	Vapor Pressure (mmHg)[a]	Vapor Hazard Ratio[b]	Hazard Rating
Chemsearch St. Louis, MO 314.997.6311 800.325.8896 www.chemsearch.com	Voltz, petroleum-terpene blend. Removes: grease, ink, oil, and tar.	142º F	300 ppm (OSHA)	0.7	3.1	1:2:0
Ecolink Tucker, GA 770.621.8240 www.ecolink.com	Aeroclean, dibasic ester. Removes: carbon, grease, oil, and sealants.	216º F	not established	0.06	NA	1:1:0[c]
	Electron, terpene. Removes: carbon, grease, oil, and resin.	124º F	not established	<1	NA	1:2:0[c]
	Vortex, terpene. Removes: grease, oil, resin, and tar.	147º F	not established	0.3	NA	1:2:0[c]
Graymills Corporation Chicago, IL 773.477.4100 www.graymills.com	Graymills Super Agitene 141, petroleum solvent. Removes: road dirt, grease, oil, and light varnish.	141º F	100 ppm (OSHA)	10	NA	1:2:0
Inland Technology Tacoma, WA 800.552.3100 www.inlandtech.com	Breakthrough. Removes: grease and oil.	150º F	not established	<2	NA	1:2:0
	Citra-Safe. Removes: adhesive, flux, grease, and oil.	132º F	not established	<2	NA	1:2:0
	Iso-Prep. Removes: adhesive, asphalt, grease, ink, oil, and wax.	104º F	not established	<10	NA	0:2:0
	Skysol. Removes: grease and oil.	152º F	not established	<2	NA	1:2:0
	Teksol EP. Removes: flux, grease, and oil.	112º F	not established	<2	NA	1:2:0
JNJ Industries Franklin, MA 800.554.9994 www.jnj-industries.com	GlobalTech Solvents, 6 ester-based solvents. Removes: grease, oil, rosin flux, and tar.	109 - 126º F	< 100 ppm	1.5 - 12	NA	1:2:0 - 2:2:0
Johnson Diversey Corp./ DuBois Division Sharonville, OH 513.326.8800	DuSqueeze, terpene solvent, and detergents. Removes: dye, grease, ink, oil, and uncured paint.	124º F	not established	17.5	NA	2:2:0
Kleen-Tec Albert Lea, MN 507.373.5152 800.435.5336 www.kleentec.com	Hi-T Degreasol 99R, petroleum solvent and detergents. Removes: grease and oil.	141º F	100 ppm (OSHA)	0.1	1.3	1:2:0

Supplier	Product/ Residues Removed	Flash Point	Exposure Limit	Vapor Pressure (mmHg)[a]	Vapor Hazard Ratio[b]	Hazard Rating
	Cybersolve C3400. Removes: adhesive, buffing compound, flux, grease, pitch, tar, and wax.	142° F	not established	1.0	NA	0:2:0
	Ionox FCR, alcohol. Removes: fingerprints and flux.	212° F	not established	<0.6	NA	1:2:0
	Metalox M6381, hydrocarbon solvent. Removes: grease, oil, pitch, and tar.	142° F	not established	1.5	NA	0:2:0
Orange Sol Gilbert, AZ 480.497.8822 www.orange-sol.com	De-Solv-It, terpene solvent Removes: grease, oil, varnish, tar, and wax.	205° F	not established	7.6	NA	NA
Petroferm Gurnee, FL 847.249.6334 www.petroferm.com **Axarels are blends of petroleum solvents and detergent.*	Axarel 56*. Removes: buffing and lapping compound, grease, oil, and wax.	205° F	not established	<0.1	NA	2:1:0
	Axarel 6100 & 9100*. Removes: grease, oil, and wax.	142 - 205° F	1.5 ppm	<1.0	87.7	2:2:0
	Bioact AE-130, soy-based esters. Removes: asphalt and tar.	285° F	not established	<2	NA	1:1:0
	Bioact EC-7, terpene solvent, and surfactants. Removes: rosin flux.	117° F	not established	1.6	NA	1:2:0
	Re-Entry, 2 terpene solvents. Removes: epoxies, grease, mold release, oil, paint, polishing compound, polyamides, polyesters, and rosin flux.	122° F	100 ppm (ACGIH)	0.28	3.7	1:2:0
Solvent Kleene Peabody, MA 978.531.2279 www.solventkleene.com	D-Greeze 500, petroleum solvent. Removes: adhesive, buffing compound, grease, ink, oil, and low-melt wax.	142° F	not established	0.7	NA	0:2:0
SOYSolv Tiffin, OH 419.992.4570 800.231.4274 www.soysolv.com	6 soy-derived solvents. Removes: adhesives, asphalt, grease, ink, oil, paint, and tar.	150 - 300° F	not established	0.9 - 1.7	NA	1:1:1 - 1:2:2

Table Key

[a] Vapor pressure measured at approximately 20° C.

[b] Vapor hazard ratio is calculated by dividing the vapor pressure by 760 mm Hg, multiplying by one million to estimate the equilibrium vapor concentration in parts per million, and then dividing by the exposure limit in parts per million.

Halogenated Solvents for Comparison

Supplier	Product/Residues Removed	Flash Point	Exposure Limit	Vapor Pressure (mmHg)[a]	Vapor Hazard Ratio[b]	Hazard Rating
Various	n-Propyl bromide	none	25 ppm (EPA proposed)	134	7,050	2:1:0[c]
			10 ppm (ACGIH)	134	17,600	2:1:0[c]
Various	Trichlorethylene	90° F[d]	50 ppm	60	1,580	1:1:0

[c] *Estimated by the manufacturer, based on HMIS criteria*

[d] *Practically non-flammable*

For More Information

MnTAP has a variety of technical assistance services available to help Minnesota businesses implement industry-tailored solutions that maximize resource efficiency, prevent pollution, increase energy efficiency, and reduce costs. Our information resources are available online at <mntap.umn.edu>. Please call MnTAP at 612.624.1300 or 800.247.0015 for personal assistance or more information about MnTAP's services.