

Degreasing Solvent Alternatives/Additives

Excluded from regulation under the Clean Air Act as volatile organic compounds

Added to the list

Excerpted from 40 CFR 51.100 (s)(1) on September 5, 2017 – <https://www.ecfr.gov>

Acetone (Propanone) – used in lacquers for automotive/furniture finishes, as a degreasing & degumming agent and paint varnish & lacquer strippers; can be used in combination with Methyl Acetate as a spray gun cleaner; *potentially an F003 hazardous waste*

Dimethyl Carbonate (Dimethyl Ester) – used as a lubricant, solvent, and fuel additive

Hydrofluorocarbons (HFC)

Trifluoromethane (HFC-23) – used in plasma etching & cleaning in semiconductor production

1,1,2,3,3-Pentafluoropropane (HFC-245ea) – used as a cleaning solvent

1,1,1,3,3-Pentafluorobutane (HFC-365mfc) – used in cleaning metals

1,1,1,2,3,4,4,5,5,5-Decafluoropentane (HFC-4310mee) – used as a cleaning solvent

Hydrofluoroethers (HFE)

1,1,1,2-Tetrafluoro-1-(2,2,2-trifluoroethoxy) Ethane (HFE-347pcf2) – used in

applications as a precision cleaning agent to remove contaminants such as oil, flux, and fingerprints from items such as medical devices, artificial implants, crucial military and aerospace items, electric components, printed circuit boards, optics, jewelry, ball bearings, aircraft guidance systems, film, relays, and a variety of metal components.

Methoxy Heptafluoro Propane (HFE-7000) – used as a process solvent and in electronics cleaning

Methoxy Nonfluoro Butane (HFE-7100) – used in vapor degreasing as a spray contact cleaner

Ethoxy Nonfluoro Butane (HFE-7200) – used in vapor degreasing and cold cleaning applications

1,1,1,2,2,3,4,5,5,5-Decafluoro-3-Methoxy-4-Trifluoromethyl-Pentane (HFE-7300) – used in cleaning applications

2-Trifluoromethyl-3-ethoxy Dodecafluoro Hexane (HFE-7500)

Hydrochlorofluoroolefins (HCFO)

Trans 1-Chloro-3,3,3-Trifluoropropene (HCFO-1233zd(E)) – used in cleaning metals

Methyl Acetate (Methyl Ethanoate) – used as a solvent; can be used in combination with Acetone as a spray gun cleaner

Methylated Siloxanes (Volatile Methyl Siloxanes – VMS) – cyclic, branched or linear; used to remove particulates, oils, fluxes, and aqueous contaminants

Methyl Formate (R-611) – used as a solvent, but not typically in degreasing

Para-Chlorobenzotrifluoride (PCBTF) – high capacity for dissolving many printing inks (faster than Toluene); used as a Xylene replacement in cleaners and thinners

Propylene Carbonate (Cyclic Propylene Carbonate) – can be found in some paint strippers

Tertiary Butyl Acetate (t-Butyl Acetate) – used as a cleaning solvent; additive in wood & metal coatings