

Cleaning Glossary Terms

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Abrasive media	Materials used to remove soil via the momentum of impact.
ACGIH	American Conference of Government Industrial Hygienists; sets TLV values.
Acid cleaner	An aqueous cleaner that has a pH significantly below 7, typically below a pH of 5.5. Acid cleaners contain acids and often other cleaning ingredients such as surfactants. Acid cleaners are able to clean using the cleaning mechanism of acid solubilization (see other definitions) where an acid reacts with a soil molecule to create a water soluble molecule, and acid hydrolysis (see other definitions) where an acid reacts with a soil molecule and breaks it into a smaller water soluble soil.
Airless	A description of an enclosed cleaning system that is sealed to contain either full vacuum (~1 mmHg) or a pressure significantly elevated above ambient (~800 to 10,000 mmHg).
Airtight	A description of an enclosed cleaning system that is sealed to contain a light pressure above ambient, typically about 0.5 psig.
Aliphatic	A compound that is not <i>aromatic</i> ; i.e., it lacks a particular arrangement of atoms in its molecular structure.
Alkaline cleaner	A water based cleaner that contains alkaline ingredients that cause the cleaner to have a significantly high pH. A cleaner with a pH of 8.5-11 can be considered to be a mild alkaline cleaner. A cleaner with a pH of 11-12.5 is at least an unqualified alkaline cleaner. A cleaner with a pH above 12.5 would be a high alkaline and corrosive cleaner. Alkalinity helps promote saponifying (see other definitions), solubilizing (see other definitions) alkaline soluble soils, and hydrolysis (see other definitions).
Anionic surfactant	A cleaner ingredient that is a surface active agent (see other definitions) that has a negative charge on the organic portion of the molecule. The charge on the surfactant determines the charge of the cleaner or detergent. An anionic detergent contains anionic surfactants. Anionic surfactants can be and usually are emulsifiers (see other definitions) and dispersants (see other definitions). Typical anionic surfactants include organic sulfates, sulfonates and carboxylates. The most common anionic surfactant is sodium dodecylbenzene sulfonate.
Apriotic	A substance that can neither donate nor accept protons (hydrogen atoms).
Aqueous	Water-based.
Aqueous cleaner	A blend of water soluble chemicals designed to remove soils into a water based solution with a water continuous phase during cleaning.
Aromatic	A molecule or compound that has special stability and properties due to a closed loop of electrons. Not all molecules with ring (loop) structures are aromatic.
ASTM	American Society for Testing and Materials; a group that establishes testing standards.
Azeotrope	A solvent blend that, over a limited range of temperatures, maintains the same relative concentrations as the mixture components evaporate.
Benchtop cleaning	Generally referred to as a small volume, labor-intensive, nonautomated cleaning process performed in the open rather than in specially designed cleaning tanks; examples include overhaul and repair and spot cleaning.
Builder	A cleaner ingredient that enhances the cleaning ability of the surfactants in at least one, and usually a combination of the following ways: softens water to prevent water hardness ions from reacting with the surfactants or soils by chelation, sequestration or binding; enhances surface tension lowering of surfactants; adds alkalinity; buffers a cleaner to maintain alkalinity; emulsifies oils; disperses particulates; inhibits redeposition of soils; breaks up clumps of

	particles by deflocculation; saponifies soils; provides corrosion inhibition; and improve the handling, flowing and storage characteristics of the cleaner. A typical builder is sodium polyphosphate.
CAA	Clean Air Act; the U.S. legislation that regulates air quality standards including the phaseout of ODCs.
CAS	Clean Air Solvent; cleaning agents which have been analyzed by South Coast Air quality Management District (SCAQMD) in California and found to meet their stringent environmental requirements for VOCs, ODCs, GWPs, and air toxics. CAS can also refer to Carbon Adsorption System or to Chemical Abstract Services, a division of the American Chemical Society, which assigns a unique registry number, referred to as a CAS number, to each chemical. For example, since they are actually the same substance, acetone and dimethyl ketone have the same CAS number.
Cavitation	Vacuum “bubbles” created by negative pressures in ultrasonic and megasonic processes.
CFC	Chlorofluorocarbon.
Chelating agent	A cleaner ingredient that is a chemical with at least 2 available sites on the molecule to bind with metal ions in a water based solution to form a ring compound with metal. Typical examples of chelating agents include sodium polyphosphate and ethylene diamine tetra acetic acid (EDTA). Many chelating agents are also sequestering agents (see other definitions).
Cleaner	A chemical or blend of chemicals designed to clean. These may be solvents acids, bases, detergents, and/or water based blends.
Cold cleaning	A cleaning process in which the cleaning solvent is below its boiling point (as distinguished from vapor degreasing).
Contaminant	Material that has the potential to degrade the appearance or performance of a part, component, or assembly.
Cosolvent	A sequential process using a different solvent for a rinse.
Cyclic	Organic molecules with ring structures.
d-Limonene	A citrus-derived organic cleaning solvent.
Degreaser	A cleaner that is designed to remove oils and greases. These are typically heavy duty cleaners that are designed to remove gross amounts of oil and grease leaving a visually clean surface rather than light duty fine cleaners that are designed to remove lower or trace levels of oils that leave a measurably or analytically clean surface. Most degreasers are either high alkaline aqueous cleaners or solvent based cleaners.
Detergent	A blend of ingredients intended for cleaning that include at least a surfactant (see other definitions) to give at least emulsifying or dispersing and a builder (see other definitions) to inhibit water hardness precipitation from calcium and magnesium salts. In some industry usage, the word detergent is used when the word surfactant is meant.
Dispersant	A cleaner ingredient that reacts with water insoluble particulates to overcome electrostatic attraction by the particulate to a hard surface to create a liquid solid mixture in the form of a suspension. A typical dispersant is sodium polyphosphate.
Dissolve	A cleaning mechanism that relies on a cleaning fluid to be able to form a stable mixture with individual soil molecules. In aqueous cleaners, one of the cleaning mechanisms is for the water to dissolve water soluble soils.
DMSO	Dimethyl sulfoxide; a cleaning solvent.
Dragin	Material (cleaning chemicals and contaminants) brought in from a previous cleaning step.
Dragout	Material (cleaning chemicals and contaminants) carried over to a subsequent cleaning step.
Emulsifier	A cleaner ingredient that lowers the interfacial tension between immiscible liquids such as oil and water thereby allowing them to mix. A typical mechanism for emulsifying is for the emulsifier to form a micelle, which in the

	case of oil and water involves a small droplet of oil surrounded by emulsifier such that the emulsifier is in contact with the water and the entire surrounded droplet or micelle is dissolved in the water . Emulsifiers are surfactants (see other definitions).
EPA	Environmental Protection Agency; the U.S. government agency responsible for setting and administering air and water standards.
ESCA	Electron spectroscopy chemical analysis; an analytic technique for determining surface contamination.
Flammable	Term used to describe a combustible material that ignites very easily, burns intensely, or has a rapid rate of heat spread.
Flash point	The lowest temperature of a flammable liquid at which vapors are given off to form a flammable mixture with air, near the surface of the liquid or within the container.
FOG	Fat, Oil, Grease. Measurements of water purity to determine compliance to discharge regulations.
Freeboard	A term used in vapor degreasers defined as the distance from the point where the boiling solvent vapor idles to the top of the machine opening.
Freon	A trade name (DuPont) for CFC-113; sometimes applied generically to CFCs.
FTIR	Fourier transform infrared spectroscopy; a surface analytic technique utilizing reflected infrared light to identify types of surface contaminants.
Greenhouse gas	A gas that persists in the stratosphere and acts to trap re-radiated heat from the Earth's surface.
GWP	Global-warming potential; a relative measure of a material's heat trapping ability as a greenhouse gas.
HAP	Hazardous air pollutant.
HEPA	High Efficiency Particulate Arrestance (or Arrestor or Air). A class of fine mesh air filters.
HFC (or HCFC)	Hydrofluorocarbon; a class of chemicals developed as ODC replacements.
HFE	Hydrofluoroether; a class of chemicals developed as ODC replacements.
Hydrolyze	To break a molecule apart using acid (H^+) and hydroxyl ions (OH^-) from water (H_2O). This occurs when a fat or oil is hydrolyzed to make soap as in saponification (see other definitions) or when an enzyme breaks down a protein.
Hydrophilic	Water-soluble.
Hydrophobic	Water-insoluble; usually soluble in organic solvents.
Ion-free cleaner	A cleaner that has no metal ion ingredients. Typically an ion-free cleaner will contain nonionic surfactants and other ingredients that are not metallic salts. An ion-free cleaner does not contain sodium or other metal salts.
IPA	Isopropyl alcohol, a common organic solvent.
KB	Kauri-butanol; a number used to compare the solubility of heavy oils in a particular solvent. It is the volume of solvent required to produce a defined degree of turbidity when added to standard solutions of Kauri resin in <i>n</i> -butyl alcohol.
Kyoto protocol	International agreement to limit emissions of greenhouse gases responsible for global warming.
LEL	Lower explosion level; the lowest concentration at which a mixture can explode.
Linear	Organic molecules without ring structures or branches.
MC (Meth)	Methylene chloride.
Megasonics	A cleaning technique utilizing sound waves at frequencies higher than those for ultrasonics, from 500 kHz to 2 MHz.
Micelle	A sub-microscopic aggregate of molecules. In the context of cleaners these molecules are surfactants usually arranged in sphere or rod shapes with the hydrophilic end of the surfactants facing outwards into the water solution with the hydrophobic ends of the molecules facing toward the inside of the

	aggregate. Micelles are able to hold hydrophobic oil molecules inside them and create stable emulsions.
Montreal Protocol	International agreement to limit or eliminate production of ozone-depleting compounds (ODCs).
MSDS	Material Safety Data Sheets.
Neat	A term meaning pure or undiluted.
NESHAP	National Emission Standards for Hazardous Air Pollutants; a series of U.S. federal regulations involving chemicals that can cause air pollution.
Neutral cleaner	A cleaner that has a pH near 7, typically in the range of 5.5 to 8.5. These cleaners tend to rely more on emulsifying and dissolving rather than aggressive chemical attack on soils that are possible with acid or alkaline cleaners.
NMP	<i>N</i> -Methyl pyrillodone; a cleaning solvent
Nonionic cleaner	A cleaner that contains nonionic surfactants. The term does not mean an ion-free cleaner. A nonionic cleaner may easily contain nonionic surfactants blended with many ionic builders that are sodium salts or other metal ion salts. (see ion-free cleaner).
Nonionic surfactant	A cleaner ingredient that is a surface active agent (see other definitions) that has no charge on the organic portion of the molecule. The charge on the surfactant determines the charge of the cleaner or detergent. A nonionic detergent contains nonionic surfactants. A nonionic detergent is not necessarily ion free (see other definitions). A nonionic detergent may contain many ionic salts, just the surfactants can be and usually are emulsifiers (see other definitions) and dispersants (see other definitions). Typical nonionic surfactants include organic ethoxylates and alkylphenol ethoxylates.
NPB (or nPB)	<i>n</i> -Propyl bromide; a cleaning solvent.
NVR	Nonvolatile residue; solid material left behind when a solvent evaporates.
ODC	Ozone-depleting compound, known to persist in the stratosphere and cause depletion of the ozone layer.
ODP	Ozone depletion potential, a relative cumulative measure of the expected effects on ozone of the emissions of gas relative to CFC-11.
ODS	Ozone Depleting Substance (see ODC).
Organic	Any substance which contains the element Carbon.
OSEE	Optically stimulated electron emission; a surface analytic technique that measures the degree (but not the nature) of contamination by using UV light to stimulate the surface to emit electrons.
OSHA	Occupational Safety and Health Agency; the U.S. government agency responsible for setting and administering worker safety standards.
Particulates	Contaminant material with observable length, width, and thickness. In practice an observable size will be about 0.1 μm or larger.
PCE (Perc)	Perchloroethylene.
PEL	Permissible exposure limit; these are exposure guidelines for workers using the given chemical. PELs may be set by EPA or OSHA.
PFC	Perfluorinated compounds containing fluorine and carbon but not chlorine or bromine.
pH	A measure of how acidic or basic a solution is defined as the inverse log of the hydrogen ion concentration in water. In practical terms, pH 7 is neutral, below 7 is acidic and above 7 is basic or alkaline.
POTW	Publicly owned treatment works; a local water treatment facility.
RCRA	Resource Conservation Recover Act; defines hazardous wastes and how to manage them.
RO	Reverse osmosis; a filtering mechanism through a semipermeable membrane.
Saponifier	A cleaner ingredient that reacts with a natural oil ester, or resin ester such as rosin to split the poorly water soluble ester into a more water soluble salt (or soap) of an acid. In the case of many compounds this converts a water

	insoluble oil or resin into a water soluble soap that in turns acts as an emulsifier to emulsify any unreacted oil or resin and assist with cleaning. Typical saponifiers are potassium hydroxide and sodium hydroxide.
Saponification	The reaction between any organic oil containing reactive fatty acids with free alkalis to form soap.
SARA	Superfund Amendments and Re-authorization Act; this act requires reporting of inventories and emissions of listed chemicals and groups.
SCAQMD	South Coast Air Quality Management District; the air quality regulating agency in southern California.
SEM	Scanning electron microscopy; a surface analytic technique involving imaging a surface by means of an electron beam.
Semiaqueous	A sequential process using both organic solvent and water to rinse.
Semiaqueous cleaner	A chemical or blend of chemicals or solvents that are used to clean that rely on a water rinse. These are usually either a solvent or blend of water soluble solvents that are used straight without water as a cleaner followed by a water rinse, or they may be blended with water during use.
Sequestering agent	A cleaner ingredient that is a chelating agent (see other definitions) that reacts with metal ions in a water based cleaner to hold them in solution and bind with them tightly enough to stop the metal ions from reacting with other chemicals or soils. A typical sequestering agent is sodium polyphosphate.
SIMS	Secondary ion mass spectroscopy; a surface analytic technique using atoms ejected from a surface to identify contaminants.
SNAP	Significant New Alternatives Policy; an EPA effort to identify CFC replacement chemicals.
Soap	The salt of an acid. A typical example is the sodium salt of stearic acid (sodium stearate) formed from sodium hydroxide (a saponifier see other definitions) and glycerol tristearate (natural animal fat). Soap is a surfactant (see other definitions) that usually has good emulsifying properties for the oils or fats from which it is derived. One issue with soap is that it can react with calcium or magnesium hardness ions in tap water to form water insoluble calcium or magnesium salts that precipitate out as a soap scum film.
Soil	Matter out of place, contamination.
Solubilizing	A cleaning mechanism that involves dissolving a soil into a single aqueous phase that relies on a "like dissolves like" principle. In an aqueous cleaner the water acts as a polar solvent to help solubilize polar soils. The main cleaning mechanism of solvent based cleaners is solubilizing or dissolving.
Solvent	Organic (carbon-containing) liquid; usually distinguished from aqueous.
Solvent cleaner	A cleaner that is made up of one or more organic chemicals that have some ability to dissolve soils. Typically solvent cleaners contain volatile organic compounds. Fluorocarbon based Freon cleaners are solvent cleaners. Solvent cleaners do not have a water continuous phase present in their formulations.
STEL	Short-term exposure limit; a 15-min TWA exposure that should not be exceeded at any time during the work day (see TWA).
STOC	Solvent and Adhesives Technical Options Committee; a United Nations UNEP committee that provides a great deal of input into worldwide environmental policy on cleaning.
Stoddard solvent	A common hydrocarbon blend used for cleaning oils.
Stratosphere	The atmospheric layer above the troposphere; considered to be above about 7 miles.
Surface tension	A force that runs parallel to a surface that results from the attraction of the surface molecules towards the molecules that are below the surface. This tension acts to minimize surface areas of a solution.
Surface active agent	Surfactants are an ingredient in most aqueous cleaners that are chemicals that are active at solution surface interfaces. In the context of cleaners this means chemicals that lower the surface tension or interfacial tension at liquid-gas,

liquid-liquid, and liquid-solid interfaces. The structure of surface active agents used in aqueous cleaners are usually oblong with one end of the molecule that is hydrophobic (“water hating”) and the other end of the molecule that is hydrophilic (“water loving”). The hydrophilic end of the molecule is stable in water and the hydrophobic end of the molecule is more stable out of the water next to the air, particulate, oil or surface away from the water solution. This means that a surface active agent can act as a wetting agent to allow a cleaner to wet a surface or penetrate into small cracks and crevices to perform cleaning. A surface active agent reacts with a particle to act as a dispersant. A surface active agent can act as an emulsifier with oil. Surface active agents are either anionic, nonionic, cationic, or amphoteric (see other definitions).

Surfactant	A material added to water or a solvent to increase wettability.
TCA	1,1,1-Trichloroethylene (also called methyl chloroform).
TCE (TRI)	Trichloroethylene.
TDS	Total dissolved solids; a measure of concentration of dissolved contaminants.
TLV	Threshold limit value; a concentration level above which there may be adverse health risks on exposure; usually set by the American Conference of Governmental Industrial Hygienists (ACGIH).
TOC	Total organic carbon; a measure of concentration of organic matter in water.
Troposphere	The lower layer of the atmosphere.
TWA	Time-weighted average; an employee’s permissible average exposure in any 8-hour work shift of a 40-hour week (see STEL).
UEL	Upper explosion level; the maximum concentration at which a mixture can explode.
Ultrasonics	A cleaning technique utilizing sound waves from 20 kHz to over 100kHz.
UNEP	United Nations Environmental Programme; a United Nations group that includes the STOC committee.
Vapor degreasing	A cleaning process in which, at least for the final cleaning, the part is suspended above a boiling solvent and is cleaned by the condensate of freshly distilled solvent vapor.
VMS	Volatile methyl siloxane; a silicon-based cleaning solvent.
VOC	Volatile organic compound; responsible for smog formation in the troposphere.
VOC exempt (or de-listed)	An <i>organic</i> compound which has been specifically determined by the EPA to be sufficiently low threat to smog formation that it can be used in areas with VOC restrictions.

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