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pointed topical papers.

# Cold W.A.R.

Whether it's Air Conditioning or Refrigeration



## The First 100+ Terms

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## The First 100+ Terms

**Accumulator:** a device installed just before a compressor in the suction line that is used to separate vapor refrigerant from liquid refrigerant and lubricant.

**Adiabatic:** describes a process such as compression of a refrigerant vapor without removing or adding heat.

**AEL:** (Allowable Exposure Limit) recommended maximum human exposure to a substance.

**Alkylbenzene:** synthetic chemical structure made from propylene and benzene.

**Aniline:** a colorless, oily, benzene derivative used to make rubber, resins and varnishes.

**ANSI:** American National Standards Institute

**Approach:** the temperature difference between the leaving media and the leaving cooling source.

**ARI:** Air conditioning Refrigeration Institute

**ASC:** (Auxiliary Side Connector) a fitting used in conjunction with a distributor to allow Hot Gas into the evaporator or Liquid refrigerant out of the evaporator.

**ASHRAE:** American Society of Heating, Refrigeration and Air conditioning Engineers.

**Azeotropic:** a blend containing two or more refrigerants containing one common boiling point.

**Barometer:** an instrument for measuring atmospheric pressure.

**Binary:** a compound consisting of two single component refrigerants.

**Blend:** a mixture consisting of two or more single compounds.

**Boyle's Law:** states that for a fixed amount of gas kept at a fixed temperature, pressure and volume are inversely proportional.

**BTU:** (British Thermal Unit) the heat required to raise or lower the temperature of one pound of water one Fahrenheit degree.

**Bubble Point:** the point where the working fluid is 100% saturated liquid.

**BP:** (Burst Pressure) minimum acceptable pressure which a refrigerant storage vessel can withstand without rupturing.

**Calorimeter:** an apparatus for measuring the quantity of heat generated by friction, combustion or chemical change.

**Carnot Cycle:** ideal thermodynamic cycle representing the maximum efficiency attainable from any heat engine.

**Carboxylic Acid:** mild organic acid, family of fatty acids, a precursor in POE lubricants.

**Check Valve:** a valve that only allows flow of refrigerant in one direction.

**CSA:** Canadian Standards Association

**Chart:** a sheet representing data in graph or tabular form.

**Compressor:** a component in a refrigeration system that compresses refrigerant vapor to a higher pressure and temperature while consuming power to do so.

**Condenser:** a component in a refrigeration system where refrigerant is condensed from a vapor to liquid and heat is rejected to the surroundings.

**COP:** (Coefficient Of Performance) the measure of the refrigeration system's efficiency. Defined as the heat removed divided by the work to operate the system.

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**Critical Point:** highest point of the Ph curve, only single phase condition can exist above this point. It is the defining point between a gas and a vapor.

**Crystallization:** the process of forming crystals, a change of state from a liquid to a solid.

**CST:** (Critical Solution Temperature) saturated limit, can hold no more.

**Dalton's law:** vapor pressure exerted on the walls of a container by a mixture of gases equals the sum of the individual vapor pressures of all gases in the mixture.

**De-gassing:** the process of removing gas. Example, removing refrigerant from lubricant.

**Delta T ( $\Delta T$ ):** the temperature difference between two points in the same media.

**Density:** the mass of a substance divided by the volume that substance occupies.

**De-superheater:** a device that removes sensible super heat from either the suction or discharge vapor.

**Dew Point:** the point where the working fluid is 100% saturated vapor.

**Dielectric Strength:** a measure of electrical insulating properties.

**Diagram:** outline designed to explain or demonstrate how something works or clarify the relationship between the parts of a whole.

**Dihydrogen Monoxide:** water, H<sub>2</sub>O.

**Discharge Line:** a refrigerant line that carries superheated, high pressure refrigerant vapor from the compressor to the condenser.

**Distributor:** a device that feeds two phase refrigerant evenly to each tube of a DX evaporator.

**DX:** Direct Expansion evaporator where the refrigerant is in the tubes.

**Dynamic:** ongoing, continuous.

**EER:** (Energy Efficiency Ratio) the refrigeration effect in Btu's per hour per power input in watts.

**EWT:** Entering Water Temperature

**Enthalpy (h):** a thermodynamic property which defines the total useful energy in a substance.

**Entropy (S):** a thermodynamic property which is a measure of energy which is no longer available to perform useful work.

**Esterification:** ester is the name for a combined acid and alcohol.

**Exothermic Process:** a process in which heat is liberated by chemical reaction.

**Ferrogaphy:** the study of wear particles in lubricants.

**Flash Point:** the point where oil will give off flammable vapors when heated.

**Flocculent:** flaky, waxy – forms lumps or masses in lubricants.

**Fluoroproduct:** a refrigerant composed of carbon and a fluoridated product, example R-22.

**Fractionation:** a change in composition of a blend by preferential evaporation of the more volatile component or condensation of the less volatile component.

**GWP:** Global Warming Potential of a specific substance as compared to CO<sub>2</sub>.

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- Hydrolysis:** decomposition of a chemical compound by reaction with water.
- Hygroscopic:** the ability to attract and retain moisture.
- Isobars:** lines of constant pressure found on a Ph diagram.
- Isotherms:** lines of constant temperature found of a Ph diagram.
- Latent Heat:** heat that occurs with a change of state but no change in temperature. Only found in the two phase region of a substance.
- Lorenz Cycle:** more applicable to interpretation, recognizes changes in temperature and pressure.
- MTD: Mean Temperature Difference** is the average temperature difference of a temperature transfer process.
- Miscibility:** the ability to mix.
- Mollier Diagram:** the European version of the U.S. Psychometric chart.
- Naphthenic:** refined crude oil forming a ring of carbons in its backbone.
- Neutralizer:** a stabilizer that is added to an acid to make the acid inactive.
- ODP: Ozone Depleting Potential** of a specific substance.
- Paraffinic:** refined crude oil forming a straight chain carbons in its backbone.
- Peristalsis:** wavelike movement to propel onward.
- Ph Diagram:** a graphic representation of a specific refrigerants thermodynamic properties.
- Physical Properties:** density, viscosity, boiling point, critical temperature, critical pressure, specific heat, thermal conductivity, ODP, GWP and flammability.
- Pipe:** a fluid conduit that is measured by its inside diameter (ID).
- Polar In Nature:** have an uneven electron balance along the backbone of the molecule.
- Poly Functional Alcohol:** an alcohol / glycol, that is one of the precursor in POE lubricant.
- PPM: Parts Per Million**
- Pressure (P):** application of a continuous force by a fluid. Expressed in absolute units.
- Promatics:** third category of mineral based lubricants, naphthenic and paraffinic most common.
- Psychometric:** the study of the properties and measurements of air.
- Quality:** the percent relationship between liquid and vapor present in a two phase region.
- Refined Product:** manufactured from a natural composite compound, example mineral lubricant manufactured from crude oil.
- Refractive Index:** the ratio of velocity of light in sample of lubricant to the velocity of light in a vacuum.
- Refractometer:** an instrument that measures the bending of light from a straight line.
- Saturated Liquid:** aka Bubble point, the point where the working fluid is 100% saturated liquid.
- Saturated Vapor:** aka Dew Point, the point where the working fluid is 100% saturated vapor.

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**SCT:** Saturated Condensing Temperature

**SEER:** Seasonal Energy Efficiency Ratio

**Sensible Heat (T):** heat that can be measured by a thermometer.

**Single Phase:** working fluid is either a liquid, a vapor or a gas.

**Solubility:** the ability to dissolve.

**SST:** Saturated Suction Temperature

**Sub-cooled:** removal of sensible heat below a fluids saturated liquid point.

**Sublimation:** changing directly from a solid to a gas without becoming a liquid.

**Specific Gravity:** compares the density of oil with that of water, both liquids at 60°F (15°C).

**Superheat:** addition of sensible heat above a fluids saturated vapor point.

**Synthetic:** man made, always having consistent composition.

**TAN:** Total Acid Number, milligrams of potassium hydroxide to neutralize a gram of oil.

**TD:** Temperature Difference is the temperature difference between two points of different medias.

**Ternary:** a compound consisting of three single component refrigerants.

**TEV:** Thermostatic Expansion Valve

**TEWI:** Total Equivalent Warming Index

**Thermodynamic Properties:** temperature, volume, pressure, enthalpy and entropy.

**TIR:** Total Indicated Reading

**Toxicity:** the ability of a refrigerant to be harmful or lethal due to acute or chronic exposure by contact, inhalation or ingestion.

**Tribology:** the study of friction and wear.

**Triple Point:** working fluid exist in three states, they are solid, liquid and vapor in equilibrium.

**Tubing:** a fluid conduit that is measured by its outside diameter (OD).

**TWA:** Time Waited Average, when exposed to working fluids like refrigerants.

**Two Phase:** working fluid is in two states, specifically liquid and vapor.

**UL:** Underwriters Laboratory

**Vapor:** a substance in a fluid state that can be condensed into a liquid.

**Viscosity:** consistency or thickness of a fluid expressed in terms of resistance to flow.

**WC:** (Water Capacity) the amount of water a refrigerant container can hold at 60°F or 15°C.

**Weir:** a device used to control the behavior of fluid flow.

**Zeotropic:** a blend containing two or more refrigerants without having a common boiling point.