

Glossary of Refrigeration, air conditioning and heat pump standard definitions

This note provides a reference guide to some useful definitions of terms commonly used in the air conditioning and refrigeration industry legislation and guides. It is based on the UNEP Ozone Secretariat HFC Management Workshop Glossary of Technical Terms issued in 2015.

Term / Acronym	Definition
Absorption	A heat driven refrigeration cycle involving the absorption of a refrigerant vapour into a liquid.
Adsorption	A heat driven refrigeration cycle involving the adsorption of a refrigerant vapour into a solid.
Cascade	A type of refrigeration cycle used for very low temperature applications, using two separate circuits, each with a different refrigerant.
Chiller	A refrigeration system designed to chill a liquid
Condensing unit	A combination of a condenser and compressor. Used in split systems connected to an evaporator in a separate location.
COP	Coefficient of Performance – a measure of refrigeration cycle efficiency. For refrigeration systems the COP is the cooling by the evaporator divided by energy input. For heat pumps the COP is the heat output from the condenser divided by energy input
Critical temperature	The critical temperature is a property of a refrigerant fluid. Above the critical temperature there is no distinction between liquid and vapour phases. Most refrigerants operate below the critical temperature, with change of phase from liquid to vapour an important aspect of the system design. R-744 (CO ₂) has a very low critical temperature (31°C) and when used in a vapour compression refrigeration cycle may need to reject heat at a temperature above the critical temperature.
DX evaporator	Direct expansion. A type of evaporator design where all the liquid refrigerant is fully evaporated. Most medium and large DX systems use thermostatic or electronic expansion valves. Very small DX systems use capillary tube expansion. DX systems are usually the lowest cost option for small systems but they may be less efficient than flooded systems.
Flooded evaporator	A flooded system uses a type of evaporator where not all the liquid supplied is evaporated. Flooded systems usually use either a pumped or a gravity circulation system. Flooded systems use level controlled expansion valves. They provide a fully wetted evaporator surface, which maximises efficiency.
Hermetically sealed	A factory built refrigeration system with all brazed or welded joints. Usually this refers to domestic refrigerators or small stand-alone commercial systems.
Indoor unit	The evaporator for a split or multi-split air-conditioning unit.
LT	Low Temperature. A widely used term in the food retail sector referring to frozen products, usually in the -18°C to -25°C range.
MAC	Mobile air-conditioning. This refers to any air-conditioning system used in a vehicle including MACs in cars, buses and trains.

MT	Medium Temperature. A widely used term in the food retail sector referring to chilled products, usually in the +2°C to +6°C range.
Multi-split system	A split system air-conditioning unit consisting of one outdoor unit and several indoor units.
Outdoor unit	The condenser and compressor (condensing unit) of a split air-conditioning system.
Primary refrigerant	A primary refrigerant is the fluid used in a vapour compression refrigerant cycle. Cold liquid primary refrigerant is evaporated to provide cooling – the resulting vapour is then compressed and condensed.
RACHP	Refrigeration, air-conditioning and heat pumps
Reversible air-conditioning system	A type of air-conditioning system that can provide either cooling or can be reversed to operate as an air-source heat pump.
Secondary refrigerant	A secondary refrigerant is used to transfer cooling from a primary refrigerant to a cooling demand. The secondary refrigerant is cooled by a primary refrigerant in a vapour compression chiller. Most secondary refrigerants are liquids such as chilled water (for temperatures above 0°C) or an anti-freeze solution such as glycol or brine (for temperatures below 0°C). Other types of secondary refrigerant include water / ice mixtures (the ice melts as it provides cooling) and volatile fluids such as CO ₂ (the fluid evaporates as it provides cooling).
Sorption	A term used to refer to heat driven refrigeration cycles including absorption and adsorption systems.
Split system	A type of refrigeration or air-conditioning system with a cooling evaporator in one location and a compressor / condenser in a different location. Usually used with reference to small air-conditioning systems that use an indoor unit and an outdoor unit.
Stand-alone	Small factory built refrigeration units that simply need to be connected to an electricity supply. A domestic refrigerator is a stand-alone system. Various types of stand-alone unit are used in food retail and food service.
Sub-critical	A refrigeration system with both the evaporator and the condenser operating at a temperature below the critical temperature. Most refrigeration systems operate in this way.
Transcritical	A refrigeration system where the evaporator operates below the critical temperature, but the condenser operates as a gas cooler at above the critical temperature. CO ₂ systems operate in transcritical mode when the ambient temperature is above around 20°C. They can operate in sub-critical mode at lower ambient temperatures.
Vapour compression cycle	Most refrigeration systems operate with a vapour compression cycle. The simplest designs consist of four main components. Low temperature liquid (at low pressure) is fed to an evaporator. It provides cooling as liquid is boiled to vapour. The vapour is compressed and is then able to reject heat in a condenser as it turns from vapour to liquid. The high pressure liquid passes through an expansion device where the pressure and temperature fall (as a proportion of the liquid flashes off into vapour). The cycle is then repeated.
VRF	Variable refrigerant flow: a type of split system air-conditioning system used in medium and large sized air-to-air applications. One or more condensing units are connected to a number of indoor units (up to 64). Each indoor unit can be selected for either cooling or heating. Variable speed compressors provide control flexibility.
VRV	Variable refrigerant volume: a variant of VRF system.

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