

air, return: air returned from conditioned or refrigerated space.
 air, saturated: moist air in which the partial pressure of the water vapor is equal to the vapor pressure of water at the existing temperature. This occurs when dry air and saturated water vapor coexist at the same dry-bulb temperature.

air, standard: air with a density of 0.075 lb per cu ft and an absolute viscosity of 0.0379×10^{-6} lb mass per (ft) (sec). This is substantially equivalent to dry air at 70 F and 29.92 in. Hg barometric pressure.

air, supply: the quantity of air delivered to each or any space in the system, or the total delivered to all spaces in the system.

air ventilation: the quantity of supply air required to maintain the desired quality of air within a designated space.

air tunnel: a refrigerated tunnel with rapid air circulation through which the product to be frozen is passed.

air washer: a water spray system or device for cleaning, humidifying, or dehumidifying the air.

algae: a minute fresh water plant growth which forms a scum on the surfaces of recirculated water apparatus, interfering with fluid flow and heat transfer.

analyzer: device in high side of absorption system for increasing the concentration of refrigerant in the vapor entering rectifier or condenser.

anemometer: an instrument for measuring the velocity of a fluid.

approach: in an evaporative cooling device, the difference between the average temperature of the circulating water leaving the device, and the average wet-bulb temperature of the entering air.

aspect ratio: in air distribution outlets, the ratio of the length of the core opening of a grille, face, or register to the width. In rectangular ducts, the ratio of the width to the depth.

aspiration: production of movement in a fluid by suction created by fluid velocity.

atomizer: reduce to fine spray.

attenuation: the sound reduction process in which sound energy is absorbed or diminished in intensity as the result of energy conversion from sound to motion or heat.

baffle: a surface used for deflecting fluids, usually in the form of a plate or wall.

barometer: instrument used for measuring atmospheric pressure.

blast heater: a set of heat transfer coils or sections used to heat air which is drawn or forced through it by a fan.

blow (throw): in air distribution, the distance an air stream travels from an outlet to a position at which air motion along the axis reduces to a velocity of 50 fpm.

For unit heaters, the distance an air stream travels from a heater without a perceptible rise due to temperature difference and loss of velocity.

boiler: a closed vessel in which a liquid is heated or vaporized.
 boiler heating surface: all of the surface of the heat-transfer apparatus in contact on one side with the water or wet steam being heated and on the other side with the gas or refractory being cooled, in which the fluid being heated forms part of the circulating system. This surface to be measured on the side receiving heat. (Stationary Steam-Generating Units, ASME Power Test Codes, PTC 4-1946.)

Direct Heating Surface is generally understood to be the boiler heating surface subject to direct radiation from the surface of the grate, or from the surfaces of oil or gas burners.

Indirect Heating Surface is the boiler heating surface within the flues.

boiler horsepower: the equivalent evaporation of 34.5 lb of water per hr from and at 212 F. This is equal to a heat output of $970.3 \times 34.5 = 33,475$ Btu/h.

boiling point: the temperature at which the vapor pressure of a liquid equals the absolute external pressure at the liquid-vapor interface.

bore: inside diameter of a cylinder.

braced: joined by fusion using a spelter on the order of brass. This is considered equivalent to hard soldering.

breaker strip: a relatively poor conductor of heat used to join the liner and outer shell of an internally refrigerated container such as a refrigerator.

brine: any liquid cooled by the refrigerant and used for the transmission of heat without a change in its state, having no flash

point or a flash point above 150 F as determined by American Society for Testing Materials Method D93.

brine, electrolytic: any brine capable of causing chemical decomposition of one of two dissimilar metals by electrolysis.

brine cooler: evaporator for cooling brine in an indirect system.

brine expansion tank: a vented reservoir in a closed circulating brine system for the accommodation of volume expansion of brine due to temperature change.

brine return tank: a reservoir in an open circulating brine system for the storage of brine at the pump suction and for inspection of the condition and flow of brine.

brine tank: in an ice plant, the main freezing tank in which the cans are immersed while ice is being produced. In a brine circulating system, a storage tank or balance tank for brine. In domestic and commercial fields, a container surrounding the evaporator and filled with brine for storing refrigeration or for equalizing temperature at various points of the evaporator, especially in ice cream cabinets.

British thermal unit (Btu): the Btu is defined as 778.177 foot-pounds if it is related to the IT calorie in such a way that 1 IT calorie per (kg) (C deg) = 1 Btu per (lb) (F deg), with 1 lb = 453.5924g. Approximately, it is the heat required to raise the temperature of a pound of water from 59 F to 60 F.

bunker: space in refrigerator given to ice or cooling element.

bypass: a pipe or duct, usually controlled by valve or damper, for conveying a fluid around an element of a system.

calibration: process of dividing and numbering the scale of an instrument; also of correcting or determining the error of an existing scale, or of evaluating one quantity in terms of readings of another.

calorie: heat required to raise the temperature of 1 gram of water 1 C, actually from 4 C to 5 C. Mean calorie = 1/100 part of the heat required to raise 1 gram of water from 0 to 100 C.

calorimeter: device for measuring heat quantities, such as machine capacity, heat of combustion, specific heat, vital heat, heat leakage, etc. Also device for measuring quality (or moisture content) of steam or other vapor.

capacitor: a device, the primary purpose of which is to introduce capacitance into an electric circuit.

capacity: the usable output of a system or system component in which only losses occurring in the system or component are charged against it.

capacity, heat: the amount of heat necessary to raise the temperature of a given mass one degree. Numerically, the mass multiplied by the specific heat.

capacity reducer: in a compressor, a device such as a clearance pocket, movable cylinder head, or suction bypass, by which compressor capacity can be adjusted without otherwise changing the operating conditions.

capillarity: the action by which the surface of a liquid where it is in contact with a solid (as in a slender tube) is raised or lowered.

capillary tube: in refrigeration practice a tube of small internal diameter used as a liquid refrigerant flow control or expansion device between high and low sides; also used to transmit pressure from the sensitive bulb of some temperature controls to the operating element.

Centigrade: a thermometric scale in which the freezing point of water is called 0 deg and its boiling point 100 deg at normal atmospheric pressure (14.696 psi).

change of air: introduction of new, cleansed or recirculated air to conditioned space, measured by the number of complete changes per unit time.

change of state: change from one phase, such as solid, liquid, or gas, to another.

charge: amount of refrigerant in a system; to put in the refrigerant charge.

chill: to apply refrigeration moderately, as to meats, without freezing.

chilled cargo: cargo maintained at an assigned temperature above its freezing point.

chilling room: room where products are cooled prior to cold storage.

chimney effect: the tendency of air or gas in a duct or other vertical passage to rise when heated due to its lower density compared with that of the surrounding air or gas. In buildings, the tendency toward displacement caused (by the difference in temperature) of internal heated air by unheated outside air due to the difference in density of outside and inside air.

Terminology

clearance: space in cylinder not occupied by piston at end of compression stroke, or volume of gas remaining in cylinder at same point; measured in percentage of piston displacement.

coefficient of discharge: for an air diffuser, the ratio of net area or effective area at vena contracta of an orificed air stream to the free area of the opening.

coefficient of expansion: the change in length per unit length or the change in volume per unit volume, per deg change in temperature.

coefficient of performance (heat pump): ratio of heating effect produced to the energy supplied—heating effect and energy supplied each expressed in the same thermal units.

coefficient of performance (refrigerating unit): ratio of the refrigeration produced to the work supplied—refrigeration and work each expressed in the same thermal units.

coil: a cooling or heating element made of pipe or tubing.

coil, direct expansion: coil using the direct method of refrigeration.

cold storage: a trade or process of preserving perishables on a large scale by refrigeration.

comfort chart: a chart showing effective temperatures with dry-bulb temperatures and humidities (and sometimes air motion) by which the effects of various air conditions on human comfort may be compared.

comfort line: a line on the comfort chart showing relation between the effective temperature and the percentage of adults feeling comfortable.

compression: in a compression refrigeration system, a process by which the pressure of the refrigerant is increased.

compression, compound: see *compression, multistage*.

compression multistage: compression in two or more steps, as where the discharge of one compressor is connected with the suction of another.

compression, ratio of: ratio of absolute pressures after and before compression.

compression, wet: a system of refrigeration in which some liquid refrigerant is mixed with vapor entering the compressor so as to cause the discharge vapors from the compressor to be saturated rather than superheated.

compressor, booster: a compressor for very low pressures, usually discharging into the suction line of another compressor.

compressor, centrifugal: a nonpositive displacement compressor which depends for pressure rise, at least in part, on centrifugal effect.

compressor, compound: a compressor in which compression is accomplished by stages, as in two or more cylinders.

compressor, mechanical refrigerant: a specific machine, with or without accessories, for compressing a given refrigerant vapor.

compressor, open-type: a compressor with a shaft or other moving part extending through a casing to be driven by an outside source of power, thus requiring a stuffing box, shaft seals or equivalent rubbing contact between a fixed and moving part.

compressor, positive displacement: a compressor in which increase in vapor pressure is attained by changing the internal volume of the compression chamber.

compressor, reciprocating: a positive displacement compressor with a piston or pistons moving in a straight line but alternately in opposite directions.

compressor, rotary: one in which compression is attained in a cylinder by rotation of a positive displacement member.

compressor, sealed refrigerant: a mechanical compressor combination consisting of a compressor and a motor, both of which are enclosed in the same housing, with no external shaft or shaft seals, the motor operating in the refrigerant atmosphere.

concentration: a number in percentage specifying the composition of a solution with respect to the constituent named, as lb of salt per gal of brine.

condensate: the liquid formed by condensation of a vapor. In steam heating, water condensed from steam; in air conditioning, water extracted from air, as by condensation on the cooling coil of a refrigeration machine.

condensation: the process of changing a vapor into liquid by the extraction of heat. Condensation of steam or water vapor is effected in either steam condensers or in dehumidifying coils and the resulting water is called condensate.

condenser: a vessel or arrangement of pipe or tubing in which a vapor is liquefied by removal of heat.

condenser, air-cooled refrigerant: a condenser cooled by natural or forced circulation of atmospheric air through it.

condenser, atmospheric refrigerant: condenser cooled with water which is exposed to the atmosphere.

condenser, evaporative refrigerant: an assembly of heat transfer elements in which a vapor part of the heat transferred from the refrigerant vapor and liquid increases the sensible heat of an air stream forced through the heat transfer elements and the remainder evaporates water sprayed over the heat transfer elements.

condenser, open shell-and-tube: one in which the water passes in a film over the inner surfaces of the tubes, which are open to the atmosphere.

condenser, shell-and-coil refrigerant: one in which the refrigerant vapor is condensed in a closed shell, with the cooling water circulated through one or more continuous or assembled coils contained within the shell.

condenser, shell-and-tube refrigerant: one in which the refrigerant vapor is condensed either on the inside or on the outside of a group of straight parallel tubes within a closed shell, with tubes terminating at each end in a tube sheet.

condenser, tube-in-tube refrigerant: consists of one or more assemblies of two tubes, one within the other, in which the refrigerant vapor is condensed either in the annular space or in the inner tube.

condenser, water-cooled refrigerant: an assembly of elements by which the flows of refrigerant vapor and water are maintained in such a heat transfer relationship that the refrigerant vapor is condensed into a liquid and the water is heated.

condensing unit: a specific refrigerating machine combination for a given refrigerant, consisting of one or more power-driven compressors, condensers, liquid receivers (when required), and the regularly-furnished accessories.

condensing unit, hermetically-sealed: a sealed condensing unit in which the motor-compressor housing is permanently sealed by welding or brazing, and is not provided with means of access for servicing internal parts in the field.

condensing unit, mechanical: a complete high side of a refrigeration system including the motor in a unit assembly.

condensing unit, sealed: a mechanical condensing unit, in which the compressor and compressor motor are enclosed in the same housing, with no external shaft or shaft seal, the compressor motor operating in the refrigerant atmosphere.

condensing unit, service-sealed: a sealed condensing unit in which the motor-compressor housing is sealed by one or more gaskets and means of access are provided for servicing internal parts in the field.

conductance, surface: the time rate of heat flow per unit area under steady conditions between a surface and the ambient fluid for unit temperature difference between the surface and the fluid.

conductance, thermal: the time rate of heat flow through a body per unit area from one of its bounding surfaces to the other for a unit temperature difference between the two surfaces, under steady conditions. The term is applied to specific bodies or constructions as used, either homogeneous or heterogeneous.

conduction, thermal: the process of heat transfer through a material medium in which kinetic energy is transmitted by the particles of the material from particle to particle without gross displacement of the particles.

conductivity, thermal: the time rate of heat flow through unit area of a homogeneous material under steady conditions when a unit temperature gradient is maintained in the direction perpendicular to area. Materials are considered homogeneous when the value of the thermal conductivity is not affected by variation in thickness or in size of sample within the range normally used in construction.

conductor, thermal: a material which readily transmits heat by means of conduction.

conduit: a tube or pipe used for conveying fluid. Also a tube or pipe in which wires may be laid for protection.

connecting rod: a device connecting the piston to a crank and used to change rotating motion into reciprocating motion, or vice versa, as from rotating crankshaft to reciprocating piston.

conservation of energy: the principle which assumes that energy can be neither created nor destroyed.

control: any device for regulation of a system or component in normal operation, manual or automatic. If automatic, the implication is that it is responsive to changes of pressure, temperature or other property whose magnitude is to be regulated.

control, anticipating: one which, by artificial means, is activated