



Designation: E 41 – 92 (Reapproved 1998)

Standard Terminology Relating To Conditioning¹

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1. Scope

1.1 These definitions pertain to the conditioning of materials for test purposes. Unless otherwise specified, they are intended to apply to all cases where combinations of atmospheric influences are an essential part of the testing of materials.

1.2 It is the intent of this standard to include those conditioning terms in wide use in ASTM for which standard definitions appear desirable.

2. Referenced Documents

2.1 ASTM Standards:

E 171 Specification for Standard Atmospheres for Conditioning and Testing Materials²

E 337 Test Method for Measuring Humidity with a Psychrometer (the Measurement of Wet- and Dry-Bulb Temperatures)³

3. Terminology

3.1 Definitions:

air conditioning—the simultaneous control of all, or at least the first three, of those factors affecting both the physical and chemical conditions of the atmosphere within any structure. These factors include temperature, humidity, motion, distribution, dust, bacteria, odor, and toxic gases.

air, dry—air containing no water vapor.

air, saturated—a mixture of dry air and water vapor in which the latter is at its maximum concentration for the prevailing temperature and pressure.

atmospheric pressure—the pressure due to the weight of the atmosphere. It is the pressure indicated by a barometer that registers actual atmospheric pressure which is not corrected to sea level equivalence. Standard atmospheric pressure is a pressure of 76 cm Hg (101325 Pa) having a density of 13.5951 g/cm³, under standard gravity of 980.665 cm/s².

atmosphere, standard—air maintained at a specified temperature, relative humidity, and standard atmospheric pressure.

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condition, standard—the condition reached by a specimen when it is in temperature and moisture equilibrium with a standard atmosphere.

conditioning—the exposure of a material to the influence of a prescribed atmosphere for a stipulated period of time or until a stipulated relation is reached between material and atmosphere.

dehumidify—to reduce, by any process, the quantity of water vapor within a given space.

dew point—the temperature to which water vapor must be reduced to obtain saturation vapor pressure, that is, 100 % relative humidity.

NOTE 1—As air is cooled, the amount of water vapor that it can hold decreases. If air is cooled sufficiently, the actual water vapor pressure becomes equal to the saturation water-vapor pressure, and any further cooling beyond this point will normally result in the condensation of moisture.

humidify—to increase, by any process, the quantity of water vapor within a given space.

humidistat—a regulatory device, activated by changes in humidity, used for the automatic control of relative humidity.

humidity—the condition of the atmosphere in respect to water vapor. (See also **humidity, absolute**; **humidity, relative**.)

humidity, absolute—the weight of water vapor present in a unit volume of air, for example, grains per cubic foot, or grams per cubic metre.

NOTE 2—The amount of water vapor is also reported in terms of weight per unit weight of dry air, for example, grains per pound of dry air. This value differs from values calculated on a volume basis and should not be referred to as absolute humidity. It is designated as **humidity ratio**, **specific humidity**, or **moisture content**, which also see.

humidity ratio—in a mixture of water vapor and air, the mass of water vapor per unit mass of dry air.

humidity, relative—the ratio of the actual pressure of existing water vapor to the maximum possible (saturation) pressure of water vapor in the atmosphere at the same temperature, expressed as a percentage.

humidity, specific—in a mixture of water vapor and air, the mass of water vapor per unit mass of moist air.

¹ These definitions are under the jurisdiction of ASTM Committee G-3 on Durability of Nonmetallic Materials and are the direct responsibility of Subcommittee G03.92 on Terminology.

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² Annual Book of ASTM Standards Vol 15.09.

³ Annual Book of ASTM Standards Vol 11.03.