



Designation: D 4150 – 03

Standard Terminology Relating to Gaseous Fuels¹

This standard is issued under the fixed designation D 4150; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This standard defines the terms used in standards that are the responsibility of Committee D03 on Gaseous Fuels. These terms are used in:

- 1.1.1 The sampling of gaseous fuels,
- 1.1.2 The analysis of gaseous fuels for composition and various other physical properties, and
- 1.1.3 Other practices related to the processing, transmission, and distribution of gaseous fuels.

2. Referenced Documents

- 2.1 *ISO Standard:*
ISO NP 14532 Natural Gas—Terminology²

3. Terminology

acid gas—natural gas containing high concentrations of hydrogen sulfide or carbon dioxide, or both, which is acidic when in contact with water or water vapor.

associated gas—natural gas, also known as gas-cap gas or dome gas, that overlies and is in immediate contact, but not in solution, with crude oil in a reservoir.

at-line instrument—instrument requiring operator interaction to sample gas directly from the pipeline.

base conditions—temperature and pressure conditions at which natural gas volumes are determined for purposes of custody transfer. In natural gas measurement the properties of interest are temperature, pressure, and composition. Assuming ideal gas properties, for simplicity, tables of pure compounds can be prepared for use in calculating gas properties for any composition at “base conditions.” These “base conditions” are chosen near ambient.

Btu—British thermal unit, the amount of energy required to raise the temperature of one pound of water one degree

Fahrenheit. One Btu_{IT} (International Table) is equal to 1055.056 J.

compressed natural gas (CNG)—natural gas that is typically pressurized to 3600 psi. CNG is primarily used as a vehicular fuel.

compressibility—the property of a material that permits it to decrease in volume when subjected to an increase in pressure.

compressibility factor (z)—a factor calculated by taking the ratio of the actual volume of a given mass of gas at a specified temperature and pressure to its volume calculated from the ideal gas law at the same conditions.

dew point—the temperature at any given pressure at which liquid initially condenses from a gas or vapor. It is specifically applied to the temperature at which water vapor starts to condense from a gas mixture (**water dew point**), or at which hydrocarbons start to condense (**hydrocarbon dew point**).

dissolved gas—natural gas held in solution in reservoir liquids at the prevailing temperature and pressure of the reservoir.

dry gas—natural gas containing little or no water vapor.

gas quality—quality of gaseous fuel, which is defined by its composition and its physical properties.

gross heating value (also called higher heating value)—the amount of energy per volume transferred as heat from the complete, ideal combustion of the gas at standard temperature in which all the water formed by the reaction condenses to liquid.

hydrate—a solid, crystalline material composed of water and components of natural gas formed under pressure at temperatures above the freezing point of water.

hydrocarbon dew point—(see **dew point**)

inert components—those elements or components of natural gas (fuel gas) that do not contribute to the heating value.

in-line instrument—instrument whose active element is installed in the pipeline and measures at pipeline conditions.

lean gas—natural gas containing little or no hydrocarbons commercially recoverable as liquid products.

DISCUSSION—Water and recoverable hydrocarbons (ethane and heavier hydrocarbons) are customarily removed from natural gas to meet contractual or state statutory requirements.

¹ This terminology is under the jurisdiction of ASTM Committee D03 on Gaseous Fuels and is the direct responsibility of Subcommittee D03.92 on Terminology Classification and Specifications.

Current edition approved Aug. 10, 2003. Published September 2003. Originally approved in 1982. Last previous edition approved in 2000 as D 4150 – 00.

² Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.