



**Absolute Pressure** – A quantity of pressure with respect to total vacuum. Equal to the sum of a pressure gauge reading and atmospheric pressure (14.69 psia at sea level).

**Absorption** – The "soaking up" of gas, liquids or dissolved substances into a solid material.

**Air** – The mixture of gases that surrounds the earth. The composition of air is 78.08% nitrogen, 20.95% oxygen, 0.03 carbon dioxide and 0.93% argon. Standard air has a density of 0.075 lb/ft<sup>3</sup> measured dry at 70 °F (21.1 °C) and 760 mm Hg, M.W. 28.3.

**Anhydrous** – A descriptive term meaning without water.

**Back Pressure Regulator** – Used for controlling inlet pressure (upstream pressure) rather than reducing. Normally used for pressure relief applications.

**Balance Gas** – A gas used to "top off" a gas mixture after individual component gases at specified concentrations are added.

**Calibration Gas** – A gas of accurately known concentration that is used as a comparative standard in analytical instrumentation.

**Carrier Gas** – Pure gases or gas mixtures used to move a sample to be analyzed through the gas analysis system at an even rate and provide a zero reference (baseline) when a sample is not being detected.

**CGA/DIN Fittings** – CGA is the abbreviation for Compressed Gas Association, which is the group that established the standards used in the gas industry for fittings that attach to gas cylinders. The DIN system was established by the Germans and is used in Europe.

**Compressed Gas** – Any material or mixture having in the container either an absolute pressure exceeding 40 psia at 70 °F or an absolute pressure exceeding 104 psia at 130 °F.

**Corrosive** – Gases that corrode material or tissue with which they come in contact, or do so in the presence of water, are classified as corrosive. It is essential that equipment used for handling corrosive gases be constructed of proper materials. Proper protective clothing and equipment must be used to minimize exposure to corrosive materials.

**Creep** – This is an increase in outlet pressure occurring after lockup. Creep normally appears as a gradual rise in outlet pressure over a period of time. The usual cause of creep is contamination in the regulator seat causing the regulator to remain slightly open, henceforth additional outlet pressure.

**Critical Flow** – This is sometimes referred to as sonic flow and is the maximum flow that can pass through a regulator or an orifice.

**Cv (Flow Coefficient)** – This is a flow expression whose number is a measure of the gallons per minute of water that will pass through a stated flow restriction based on a pressure drop of one psi.

**Cylinder** – A pressure vessel designed for pressure higher than 40 psia and having a circular cross-section.

**Droop** – This is the amount of outlet pressure decrease with respect to increasing flow demand on a pressure-reducing regulator. It can be expressed in percentage change of the set point or can be shown as pounds per square inch change with respect to flow increases.

**Explosion Proof** – An enclosure for an electrical apparatus so designed that an explosion of flammable gas or vapor inside the enclosure will not ignite flammable gas or vapor outside.

**FID Fuels** – Hydrogen-nitrogen and hydrogen-helium mixtures burned as a source of heat and power in FIDs.

**Flammable** – A substance that will ignite easily and burn rapidly in the presence of an oxidizer.

**Flashback** – The phenomenon characterized by vapor ignition and flame travelback to the vapor source.

**Flow Rate** – A quantity of liquid passing through a controlled orifice during a specific time period. Units of measure include: SCFM (Standard Cubic Feet per Minute) and SCFH (Standard Cubic Feet per Hour).

**GC** – Gas chromatograph.



## GC Detectors

<b>DID</b>	Discharge Ionization Detector	Atmospheric contaminants in the helium carrier gas can cause baseline noise and reduced detector sensitivity
<b>ECD</b>	Electron Capture Detector	Oxygen and water can reduce detector response, and halocarbons can give rise to baseline noise and negative peaks.
<b>FID</b>	Flame Ionization Detector	Hydrocarbons in carrier and fuel gases can cause baseline noise and reduced detector sensitivity. Oxygen and water can cause column deterioration.
<b>FPD</b>	Flame Photometric Detector	Carbon dioxide can suppress detector response, and organics can yield baseline noise.
<b>FTIR</b>	Fourier Transform Infrared	Any impurity coinciding with quantitated peaks can cause analytical inaccuracies. Water interferes with infrared spectra, and oxygen can oxidize the sample during Matrix Isolation.
<b>Hall®</b>	Electrolytic Conductivity Detector	To minimize baseline noise and analytical inaccuracies, Hall® Grade gases are specifically manufactured for use with the Tracor Hall® Electrolytic Conductivity Detector.
<b>HID</b>	Helium Ionization Detector	Atmospheric contaminants in the helium carrier gas can cause baseline noise, signal polarity and reduced detector sensitivity and stability.
<b>MS</b>	Mass Spectrometer	Any impurity coinciding with quantitated peaks can cause analytical inaccuracies.
<b>PID</b>	Photoionization Detector	Oxygen can cause suppressed detector response, and hydrocarbons yield baseline noise.
<b>TCD</b>	Thermal Conductivity Detector	Atmospheric contaminants can oxidize the detector filament and give rise to reduced sensitivity and negative peaks.
<b>USD</b>	Ultrasonic Detector	Atmospheric contaminants in the carrier gas may cause baseline noise and loss of sensitivity.

**Impurity** – Amount of foreign material or contaminants found in a pure material.

Purity	Contamination
99.9999%	1 ppm
99.999%	10 ppm
99.99%	100 ppm
99.9%	1000 ppm

**Inert** – Gases that do not react with other materials under normal temperature and pressure.

**Inboard Leakage** – This refers to leakage of the atmosphere or the environment surrounding the regulator while it is in service at operating pressure. The test for this is usually done with a mass spectrometer leak detector, which is sensitive to helium and for practical purposes, a vacuum is pulled on the internal of the regulator and helium surrounding the regulator. For this reason, the leak rate is usually expressed in standard cc per second of helium, and the numbers are usually small, such as  $1 \times 10^{-8}$  cc/sec helium.

**Inlet Pressure** – This is always the pressure at the inlet of the regulator from the cylinder.

**Lockup** – This is the amount of outlet pressure increased beyond the set pressure with respect to decreasing flow demand on a pressure-reducing regulator.

**Molecular Weight** – The sum of the atomic weights of all the constituent atoms in a molecule.

**Off-gassing** – The removal of gas, liquids or dissolved substances from the surface of solids.

**Outboard Leakage** – This refers to leakage of the regulator from the internal area to the atmosphere while at operating pressures.

**Outlet Pressure** – This is always the pressure at the outlet of the regulator.

**Oxidant** – A gas that does not burn but will support combustion.



**PPM** – Parts Per Million.

**PPB** – Parts Per Billion.

**PPT** – Parts Per Trillion.

**Process Analyzer** – A general class of instrumentation, which is used to analyze conditions in process streams on a continuous basis.

**Pyrophoric** – Materials that spontaneously ignite on contact with air at normal conditions.

**Setability** – This is a term used to describe the ability to adjust a hand loaded pressure regulator to a specific set point. This involves the number of turns of rotation on the adjusting knob to reach the set point. This is sometimes referred to as resolution.

**Set Point** – This is the control point desired for operation of a regulator.

**Single Stage Pressure Reducing Regulator** – A regulator that reduces high pressure to low pressure and controls the low or outlet pressure with one stage of pressure reduction.

**SLPM** – Standard Liters per Minute, SCC/MIN –Standard Cubic Centimeters per Minute. Standard condition for all of the above is 60 °F and 14.7 psia.

**Specific Gravity** – The ratio of the weight of any volume to the weight of an equal volume of another substance taken as a standard. For solids or liquids, the standard is usually water and for gases, the standard is air.

**Specific Volume** – The volume of a unit weight of a substance at a given temperature.

**TLV** – Threshold Limit Value: The time-weighted average concentration of an airborne substance that represents the condition under which it is believed nearly all workers may be exposed in a normal eight-hour day, five-day work week without suffering adverse effect.

**Toxic Gas** – Gases that may chemically produce injuries or lethal effects to humans.

**Two Stage Pressure Reducing Regulator** – A regulator that reduces high pressure to low pressure and controls the low or outlet pressure with two stages of pressure reduction. Used when more stability of operation is required.

**Vapor Pressure** – The pressure exerted when a solid or a liquid is in equilibrium with its own vapor at a particular temperature.

**Wetted Parts** – This term refers to the area of the device that comes in contact with the flow stream. This does not normally include the cap, range spring knob, etc.