

Absolute Pressure (psia): The total force per unit area exerted by a fluid. The sum of atmospheric and gage pressures.

Accuracy: The degree to which an observed value matches the actual value of a measurement over a specified range.

Alternating Current (AC): Current that reverses polarity at a uniform frequency.

ANSI: The American National Standards Institute is a private nonprofit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States.

ASTM: (Formerly known as The American Society for Testing and Materials) An international standards developing organization that develops and publishes voluntary technical standards for a wide range of materials, products, systems, and services.

Atmospheric Pressure: The force exerted per unit area by the weight of the atmosphere.

British Thermal Unit (BTU): The amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit. Melting a pound of ice at 32°F requires 143 BTU.

BSPT: British Standard Pipe Thread.

Capacitance: A measure of the amount of electric charge stored (or separated) for a given electric potential. The most common form of charge storage device is a two-plate capacitor.

Cavitation: The process where vapor bubbles in a flowing liquid collapse inside a control valve as the pressure begins to increase.

Closed Loop: A control system that provides feedback to a controller on the state of the process variable.

Cold Junction: The end of thermocouple that is kept at a constant temperature in order to provide a reference point.

Contacts: Elements used to mechanically make or break an electric circuit.

Critical Pressure: The ratio of upstream to downstream pressure where the gas velocity out of the valve is sonic and further decreases in downstream pressure no longer increase the flow.

Cv or Valve Flow Coefficient: The number of US gallons per minute of water at 60°F that will pass through the valve with a pressure drop of 1 psi.

Deadband: The value of measurement between when a switch actuates and deactuates.

Density: The mass of a given substance per unit volume.

Derivative Control: A method of changing the output of a controller in proportion to the rate of change of the process variable.

Dewpoint: The temperature to which air must be cooled for the air to be saturated with water.

Dielectric: The insulating material between the conductors of a capacitor.

Dielectric Constant: The ratio of the insulating ability of a material to the insulating ability of vacuum.

DIN: Deutsches Institut für Normung e.V., The German national organization for standardization and is that country's ISO member body. DIN and mini-DIN connectors, as well as DIN rails are several examples of older DIN standards that are today used around the world.

Direct Current (DC): A current with a constant polarity.

Double Pole Double Throw (DPDT) Switch: Two separate switches that operate simultaneously, each with a normally open and a normally closed contact and a common connection.

Drift: A gradual change in an element over time when the process conditions are constant.

Dry Bulb Temperature: The ambient air temperature measured by a thermometer that is freely exposed to the air but shielded from other heating or cooling effects.

Emissivity: The ratio of energy radiated by the material to energy radiated by a black body at the same temperature. It is a measure of a material's ability to absorb and radiate energy.

Form-C Contact: A contact that has both normally open and normally closed contacts.

Fuzzy Logic: A system that uses mathematical or computational reasoning based on fuzzy sets derived from analog inputs.

Gage Pressure (psig): The measure of force per area exerted by a fluid using atmospheric pressure as the zero reference.

Gain: The ratio of change in output to the change in input of a process.

Hot Junction: The joined end of the thermocouple that is exposed to the process where the temperature measurement is desired.

Humidity: The amount of water vapor in a given volume of air or gas.

Hydrostatic Pressure: The pressure due to the head of a liquid column.

Hysteresis: A property of a device or instrument whereby it gives different output values in relation to its input values, depending on the directional sequence in which the input values have been applied. [IEC 61298-2]

Impedance: The opposition in an electric circuit to the flow of an alternating current consisting of inductive reactance, ohmic resistance and capacitive reactance.

Inaccuracy: Maximum positive and negative deviation from the specified characteristic curve observed in testing a device under specified conditions and by a specified procedure. [IEC 61298-2]

Note 1: Accuracy is defined in IEC 60050-300, definition 311-06-08.

Note 2: The term inaccuracy is sometimes referred to as measured accuracy. This term should not be used.

Inductive Load: Current passing through wound or coiled wire creates a magnetic field that in turn produces mechanical work.

Integral Control: A method of changing the output of a controller by an amount proportional to the error and the duration of that error.

Laminar Flow: Smooth fluid flow that has a parabolic flow profile with no mixing between streamlines.

Linearity: Ability of a measuring instrument to provide an indication having a linear relationship with a defined quantity other than an influence quantity. [IEC 60050-300]

Note: The method of expression of lack of linearity is different for different kinds of instruments and is established in each particular instance.

Long-Term Span Drift: The amount of change of a measured reading with 90% of full scale range pressure applied and constant ambient conditions over a given period of time which is typically quoted as an annual figure. [IEC 61298-2]

Long-Term Zero Drift: The amount of change of a measured reading with zero pressure applied and constant ambient conditions over a given period of time which is typically quoted as an annual figure.

Low Pressure Steam: As defined by ASME, steam under 15 psi pressure.

Manual Reset: A control that must have human input before it will return to its normal state from an alarm state.

Maximum Surge Pressure: Safe pressure for the switch housing but which may damage the mechanism by continuous or repetitive application.

NEMA: The National Electrical Manufacturers Association, a trade association in the US of electrical equipment manufacturers that develops many industry technical standards, such as the standard for electrical equipment enclosures.

NIST: The National Institute of Standards and Technology, is a non-regulatory agency of the United States Department of Commerce's Technology Administration. The institute provides standard references and calibration services.

Non-Linearity: Deviation from linearity. [IEC 61298-2]

Note 1: Linearity is defined in IEC 60050(300), definition 311-06-05.

Note 2: Non-linearity does not include hysteresis.

Non-Repeatability: Deviation from repeatability. [IEC 61298-2]

Note 3: Repeatability is defined in IEC 60050(300), definition 311-06-06.

Normally Closed Switch: A switch in which the contacts are normally closed. Actuation opens the contact.

Normally Open Switch: A switch in which the contacts are normally open. Actuation closes the contacts.

NPT: National Pipe Thread.

NSF: A not-for-profit, non-governmental organization that develops standards and provides product certification and education in the field of public health and safety.

Null Switch: A floating contact switch with a zone of no contact. Often used to operate reversible motors.

pH: An indication of the acidity or alkalinity of a solution in units ranging from 0 (most acidic), to 7 (neutral), to 14 (most alkaline).

Predictive Balancing: An air balance process that involves predicting the ideal flow set points for each terminal under adjustment (TUA) so that every terminal is at target flow throughout the process.

Pressure Drop: The difference in upstream and downstream pressure of the fluid flowing through a valve.

Proportional Balancing: An air balance process in which terminals under adjustment (TUA) are set in proportion to the key terminal in order for the entire system to be within tolerance of the design.

Proportional Control: A method of changing the output of a controller by an amount proportional to the error.

Proportional-Integral Control (PI): Proportional and integral control combined.

Proportional-Integral-Derivative Control (PID): Proportional, integral, and derivative control combined.

Range: The span of rates within which the sensing element of a given switch can be set to actuate an electric switch.

Rated Pressure: The maximum pressure that the actuating components of the switch in contact with the media can withstand continuously and/or repeatedly without risk of permanent damage.

Relative Humidity: The ratio of the quantity of water vapor in the air to the quantity of water vapor required for saturation at the same temperature.

Repeatability: The closeness of agreement between the results of successive measurements of the same measured, carried out under the same conditions of measurement, i.e.: by the same measurement procedure; by the same observer; with the same measuring instruments, used under the same conditions; at relatively short intervals of time. [IEC 60050-300]

Repetitive Accuracy: The ability of a switch to operate repetitively at its set point under consistent conditions.

Response Time: The time it takes an element to respond to a change in the value of the measured variable or to produce a change in the output signal.

Rotameter: A variable area flowmeter consisting of tapered tube and a float.

RS-232: (Recommended Standard 232) is a standard for serial binary data signals connecting between a DTE (Data Terminal Equipment) and a DCE (Data Circuit-terminating Equipment).

RS-485: (Now known as EIA-485) is an OSI model physical layer electrical specification of a two-wire, half-duplex, multipoint serial connection.

Saturation Point: The point at which condensation is formed.

Serial Transmission: Sending one bit at a time on a single transmission line.

Set or Actuation Point: The exact rate which will cause the electric switch to actuate.

Single-Pole Single Throw (SPST) Switch: A switch that only has one of either a normally open or a normally closed contact.

Single-Pole Double-Throw (SPDT) Switch: A switch combining both normally open and normally closed switch contacts.

Solid State: Any element that controls current without moving parts, vacuum gaps or heated filaments.

Span: The difference between the highest and lowest numbers in a range.

Span Temperature Coefficient: The maximum amount the span reading could change at any point within the compensated temperature range. This error is typically expressed as a percentage of full scale output of reading. It can also be expressed as percentage of full scale per °C, °F or K e.g. $\pm 0.02\%FS/^{\circ}C$.

Specific Gravity: The ratio of the density of a fluid to the density of a reference fluid.

Static Pressure: The pressure exerted by a fluid at rest. The outward push of a fluid against the walls of a container.

Temperature Compensation: The correction for the influence of temperature on a measurement.

3-A: 3-A Sanitary Standards Inc., A non-profit association representing equipment manufacturers, processors, regulatory sanitarians, and other public health professionals that creates standards and accepted practices for dairy and food processing equipment and systems.

Total Pressure: The sum of velocity and static pressure.

Transducer: Any device that generates an electrical signal from physical measurements.

Transmitter: A device that translates the low-level output of a sensor or transducer to a higher level signal suitable for transmission to a site where it can be further processed.

Turbulent Flow: Fluid flow in which the flow profile is a flattened parabola, the streamlines are not present, and the fluid is freely mixing.

Turndown Ratio: The ratio of the maximum to minimum measurable value that can still produce full-scale output.

Velocity Pressure (Dynamic Pressure): The pressure exerted by the velocity of a fluid. Can be measured by the difference between total and static pressure.

Viscosity: The resistance of a fluid to flow when subjected to shear stress.

Wet Bulb Temperature: The lowest temperature that can be obtained through the cooling effect of water evaporating into the atmosphere.

Zero Temperature Coefficient: The maximum amount the output reading at zero pressure might deviate over the compensated temperature range. This error is typically expressed as a percentage of full scale output of reading. It can also be expressed as percentage of full scale per °C, °F or K e.g. $\pm 0.02\%FS/^{\circ}C$.

AREA OF CIRCLES IN FT ²			
Diam. in	Area	Diam. in	Area
Inches	Square Feet	Inches	Square Feet
1	.0054	30	4.909
1-1/2	.0123	31	5.241
2	.0218	32	5.585
2-1/2	.0341	33	5.940
3	.0491	34	6.305
3-1/2	.0668	35	6.611
4	.0873	36	7.069
4-1/2	.1105	37	7.467
5	.1364	38	7.876
5-1/2	.1650	39	8.296
6	.1964	40	8.727
6-1/2	.2305	41	9.168
7	.2673	42	9.621
7-1/2	.3068	43	10.08
8	.3491	44	10.56
8-1/2	.3940	45	11.04
9	.4418	46	11.54
9-1/2	.4923	47	12.05
10	.5454	48	12.57
11	.6600	49	13.10
12	.7854	50	13.64
13	.9218	51	14.19
14	1.069	52	14.75
15	1.227	53	15.32
16	1.396	54	15.90
17	1.576	56	17.10
18	1.767	58	18.35
19	1.969	60	19.63
20	2.182	62	20.97
21	2.405	64	22.34
22	2.640	66	23.76
23	2.885	68	25.22
24	3.142	70	26.73
25	3.409	72	28.27
26	3.687	74	29.87
27	3.976	76	31.50
28	4.276	78	33.18
29	4.587	80	34.91


ALTITUDE PRESSURE TABLE		
Mercury at 0°C (32°F)		
Altitude in feet	Inches of Mercury	In Millimeters of Mercury
-1,000	31.02	787.9
0	29.921	760.0
1,000	28.86	732.9
2,000	27.82	706.6
3,000	26.81	681.1
4,000	25.84	656.3
5,000	24.89	632.3
6,000	23.98	609.0
7,000	23.09	586.4
8,000	22.22	564.4
9,000	21.38	543.2
10,000	20.58	522.6
15,000	16.88	428.8
20,000	13.75	349.1
25,000	11.10	281.9
30,000	8.88	225.6
35,000	7.04	178.7
40,000	5.54	140.7
45,000	4.36	110.8
50,000	3.436	87.30

SPECIFIC GRAVITIES OF GASES		
(Based on 68°F and 14.7 lb. abs.)		
Acetylene	C ₂ H ₂	.897
Air	1.000
Ammonia	NH ₃	.587
Argon	A	1.378
Butane-N	C ₄ H ₁₀	2.390
Butane-ISO	(CH ₃) ₂ CH CH ₃	1.990
Carbon Dioxide	CO ₂	1.517
Carbon Monoxide	CO	.966
Chlorine	CL ₂	2.452
Ethane	C ₂ H ₆	1.035
Helium	He	.138
Hydrogen	H ₂	.070
Methane	CH ₄	.553
Natural Gas665 (Approx. Avg.)
Nitric Oxide	NO	1.035
Nitrogen	N ₂	.966
Nitrous Oxide	N ₂ O	1.518
Oxygen	O ₂	1.103
Propane	C ₃ H ₈	1.550
Sulphur Dioxide	SO ₂	2.209

VOLUME EQUIVALENTS		
1 Cu. Ft.	1 Gal. (U.S.)	1 Liter
1728 Cu. In.	231 Cu. In.	.0353 Cu. Ft.
7.481 Gal. (U.S.)	.1337 Cu. Ft.	.2642 Gal. (U.S.)
28.317 Liters	3.785 Liters	1000 Cu. Cm.
28.317 Cu. Cm.	3785 Cu. Cm.	

FLOW EQUIVALENTS							
1 Cu. Ft./Hr.	1 Cu. Ft./Min.	1 CC/Min.	1 CC/Hr.	1 LPM	1 LPH	1 Gal/Min.	1 Gal/Hr.
.0166 Cu. Ft./Min.	60 Cu. Ft./Hr.	60 CC/Hr.	.0167 CC/Min.	60 LPH	.0166 LPM	60 Gal/Hr.	.0167 Gal/Min.
.4719 LPM	28.316 LPM	.000035 Cu. Ft./Min.	.0000005 Cu. Ft./Min.	.035 Cu. Ft./Min.	.00059 Cu. Ft./Min.	.1337 Cu. Ft./Min.	.002 Cu. Ft./Min.
28.316 LPH	1699 LPH	.0021 Cu. Ft./Hr.	.00003 Cu. Ft./Hr.	2.1189 Cu. Ft./Hr.	.035 Cu. Ft./Hr.	8.021 Cu. Ft./Hr.	.1337 Cu. Ft./Hr.
471.947 CC/Min.	28317 CC/Min.	.001 LPM	.000017 LPM	1000 CC/Min.	16.667 CC/Min.	3.785 LPM	.063 LPM
28317 CC/Hr.	1,699,011 CC/Hr.	.06 LPH	.001 LPH	60,002 CC/Hr.	1000 CC/Hr.	227.118 LPH	3.785 LPH
.1247 Gal/Min.	7.481 Gal/Min.	.00026 Gal/Min.	.000004 Gal/Min.	.264 Gal/Min.	.004 Gal/Min.	3,785.412 CC/Min.	63.069 CC/Min.
7.481 Gal/Hr.	448.831 Gal/Hr.	.0159 Gal/Hr.	.00026 Gal/Hr.	15.851 Gal/Hr.	.264 Gal/Hr.	227,125 CC/Hr.	3785 CC/Hr.

SPECIFIC GRAVITY OF LIQUID	
Liquid	Specific Gravity
Acetone	0.792
Alcohol, ethyl	0.791
Alcohol, methyl	0.810
Ammonia, saturated	0.655
Benzene	0.9
Brine (10% Na Cl)	1.08
Carbolic acid	0.950 to 0.965
Carbon disulfide	1.293
Carbon tetrachloride	1.595
Chloroform	1.489
Ether	0.736
Fuel oil 1	0.82 to 0.95
Fuel oil 2	0.82 to 0.95
Fuel oil 3	0.82 to 0.95
Fuel oil 5A	0.82 to 0.95
Fuel oil 5B	0.82 to 0.95
Fuel oil 6	0.82 to 0.95
Gas oils	0.89
Gasoline a	0.74
Gasoline b	0.72
Gasoline c	0.68
Glycerine	1.260
Heptane-n	0.688
Hexane	0.664
Kerosene	0.820
Mercury	13.600
Methyl acetate	0.93
Methyl iodide	2.28
Milk	1.028 to 1.035
Naptha, petroleum ether	0.665
Naptha, wood	0.848 to 0.810
Oil, castor	0.969
Oil, coconut	0.925
Oil, cotton seed	0.926
Oil, creosote	1.040 to 1.200
Oil, linseed, boiled	0.924
Oil, olive	0.918
Oil, palm	0.924
Oil, peanut	0.92
Oil, sesame seed	0.923
Oil, soy bean	0.924 to .928
Pentane	.623
Propylene glycol	1.038
SAE 30 lube oil	0.9
Sea water	1.025
Sodium chloride, 5%	1.037
Sodium chloride, 25%	1.196
Sodium hydroxide (caustic soda), 20%	1.22
Sodium hydroxide (caustic soda), 30%	1.33
Sodium hydroxide (caustic soda), 40%	1.43
Turpentine (spirits)	0.870
Water	1.000

AGENCY APPROVALS	
	Products with this symbol meet certain requirements for 3-A Sanitary Standards for design and fabrication as governed by 3-A SSI.
	Products with this symbol have had representative samples tested to meet BTL compatibility.
	Products with this symbol conform to certain standards and are eligible to be placed on the market in the European Community.
	This symbol assures you that the product meets certain safety standards and/or performance criteria as set by the Canadian Standards Association.
	Products with this symbol conform to certain ATEX requirements as set by the European Union.
	Products with this mark meet certain requirements as reported by Factory Mutual Research.
	Products with this mark meet certain Canadian requirements as reported by Factory Mutual Research.
	Products with this mark meet certain Canadian and U.S. requirements as reported by Factory Mutual Research.
	Products with this symbol certify to standards for safety of electrical equipment for explosive atmosphere requirements as set by the IECEX Management Committee ExMC.
	The National Institute of Metrology, Standardization and Industrial Quality is a Brazilian federal autarchy, linked to MDIC, the Ministry of Development, Industry and Foreign Commerce.
	Products with this symbol are listed by NSF International. Samples of these products have been evaluated by NSF and meet the safety standards set forth by NSF International.
	Products with this symbol have had representative samples tested to meet UL's safety requirements. These requirements are primarily based on UL's own published Standards for Safety.
	Products with this symbol have been evaluated by UL to Canadian safety requirements, which may be somewhat different from U.S. safety requirements.
	Products with this symbol indicate compliance with both Canadian and U.S. safety requirements.
	Products with this symbol are certified UL recognized components to U.S. requirements. Component parts are part of a larger product or system. These components may have restrictions on their performance or may be incomplete in construction.
	Products with this symbol are certified UL recognized components to Canadian requirements.
	Products with this symbol are certified UL recognized components to both Canadian and U.S. requirements.

HAZARDOUS LOCATIONS LISTINGS	
Class I (-4)	Flammable gases or vapors are or may be present in sufficient quantities to produce explosive or ignitable mixtures.
Division I (-4A)	Gases or vapors are or may be in the atmosphere in normal operations.
Group A (-2)	Containing acetylene.
Group B (-2)	Containing hydrogen, ethylene oxide & propylene oxide or gases or vapors of equivalent hazard.
Group C (-2)	Containing ethyl-ether vapor, ethylene or cyclopropane.
Group D (-2)	Containing gasoline, hexane, naphtha, benzene, butane, propane, alcohol, acetone, lacquer solvent or natural gas.
Division II (-4B)	Gases or vapors are not normally present. They may be present due to leakage, accidents or maintenance. It is possible for one atmosphere to contain the same items as listed for Groups of Division I of this class.
Class II (-5)	Combustible dust may be present in sufficient quantities to produce an explosive atmosphere.
Division I (-5A)	Dust in suspension. Dust is or may be present in the atmosphere due to normal operating conditions.
Class E (-2)	Containing metal dust, including aluminum, magnesiums and their commercial alloys, and other metals of similar hazardous characteristics.
Group F (-2)	Containing carbon black, coal or coke dust.
Group G (-2)	Containing flour, starch or grain dust.
Division II (-5D)	Dust not normally in suspension. Possibly containing the same items as listed for Groups of Division I of this class.
Class III (-6)	Ignitable fibers are present, but not necessarily present in air in quantities sufficient to produce ignitable mixtures.
Division I (-6A)	Easily ignitable fibers or materials producing combustible flyings are handled, manufactured or used.
Division II (-6B)	Easily ignitable fibers are stored or handled.

NEMA STANDARDS FOR INDUSTRIAL ENCLOSURES	
Type 1	General purpose - indoor.
Type 2	Drip-proof - indoor. Protects against limited amounts of falling liquids and dirt.
Type 3	Dust-tight, raintight and sleet resistant - outdoor. Protects against windblown dust, rain sleet and external ice formation.
Type 3R	Same as Type 3, except not dust-tight.
Type 3S	Same as Type 3, but provides for operation of external mechanism when ice-laden.
Type 4	Watertight and dust-tight - indoor and outdoor. Protects against windblown dust and rain, splashing water and hose-directed water.
Type 4X	Same as Type 4 except also corrosion resistant.
Type 5	Dust-tight - indoor. Protects against dust and falling dirt.
Type 6	Submersible, watertight and dust-tight - indoor and outdoor. Protects against water entry during occasional temporary submersion to a limited depth.
Type 6P	Same as Type 6 except for prolonged submersion.
Type 7	Class I indoor hazardous locations. Explosion-proof, may be A, B, C or D.
Type 8	Class I indoor or outdoor hazardous locations - oil immersed equipment, may be A, B, C or D.
Type 9	Class II indoor hazardous locations. Explosion-proof, may be E, F or G.
Type 10	Mining Enforcement Safety Administration. Explosion-proof in methane or natural gas.
Type 11	Corrosion resistant and drip-proof - oil-immersed - indoor.
Type 12	Dust-tight and drip-tight - indoor, non-corrosive dripping liquids.
Type 12K	Same as Type 12 except enclosures have knockouts.
Type 13	Oil-tight and dust-tight - indoors, non-corrosive spray of water, oil and coolant.

IP CODES FOR INDUSTRIAL ENCLOSURES			
Example	IP	0 0	IP00 - No special protection from solids or liquids
Ingress Protection	IP		IEC 60529 degrees of protection provided by enclosures (IP code)
Protection from Solids		0	No protection
		1	Protection against solid objects larger than 50 mm in diameter
		2	Protection against solid objects larger than 12 mm in diameter
		3	Protection against solid objects larger than 2.5 mm in diameter
		4	Protection against solid objects larger than 1 mm in diameter
		5	Dust protected
		6	Dust tight
Protection from Liquids		0	No protection
		1	Protection against dripping water
		2	Protection against dripping water when tilted 15 degrees
		3	Protection against spraying water
		4	Protection against splashing water
		5	Protection against water jets
		6	Protection against powerful water jets
		6K	Protection against powerful water jets with increased pressure
		7	Protection against temporary immersion up to 1m depth
	8	Protection against immersion of 1m or more depth	
	9K	Protection against powerful water jets with high temperature	

*Protection stated above is in reference to protection of the internal equipment housed inside of the enclosure
The IP code may be followed by one or two characters for special conditions during testing.

REGISTERED TRADEMARKS OF DWYER INSTRUMENTS, INC.



Capsuhelic®	Lin-E-Aire®	Plast-A-Vane®
Capsu-Photohelic®	Magnehelic®	Preciso® Quick-View®
DigiHelic®	MagneSense® Mercoid®	Rate-Master®
DigiMag®	Mercoid Control®	Safe-T-Ohm®
Duotect®	Microtector®	Slack Tube®
Durablock®	Minihelic® Mini-Master®	SMART Air Hood®
Dwyer Group®	Mini-Photohelic®	Spirahelic®
Dwyer®	Mobile Meter®	The Low Pressure People®
Flex-Tube®	One-Touch®	Visi-Float®
Flotect®	Optitrol®	
Iso Verter®	Photohelic®	

COMMON LAW MARKS OF DWYER INSTRUMENTS, INC.



AQStick™	Mother Node™	Tell Tale™
Even-Action™	PredictAir™	Tell Tale Jr.™
Hi-Flow™	Pre-Trac™	Thermoguide™
Loop Alarms™	Proximity™	Ultra-Mag™
Lovelink™	S-D™	Ultra-View™
Mini-Node™	Slide Guide™	Vaneometer™
Minitorator™	SLiquid™	

COMMONLY USED MARKS & GRAPHICS



MARKS REGISTERED TO COMPANIES OTHER THAN DWYER INSTRUMENTS, INC.



Alumel®	Conceptech, Inc.	IOS®	Cisco Systems, Inc.	Velcro®	Velcro Industries B.V.
Android®	Google, Inc.	Lexan®	SABIC Innovative Plastic IP B.V.	Windows®	Microsoft Corporation
Chromel®	Conceptech, Inc.	Loctite®	Henkel Corporation	Windows NT®	Microsoft Corporation
Darina®	Shell Trademark Management B.V.	Modbus®	Schneider Automation, Inc.	Windows Vista®	Microsoft Corporation
Duracell®	The Gillette Company	Norprene®	Saint-Gobain Abrasives, Inc. Corporation	Excel®	Microsoft Corporation
Eveready®	Eveready Battery Company, Inc.	Nylatch®	Southco, Inc.	PowerPoint®	Microsoft Corporation
Fluon®	AGC Chemicals Americas, Inc.	Open I/O®	Easton Controls, Inc.		
Fluorolube®	Gabriel Performance Products LLC	Open Signal®	Easton Controls, Inc.	Air Flow™	TSI, Inc.
Freon®	E.I. DuPont De Nemours and Company	Sensorpak®	Easton Controls, Inc.	No More Leaks™	Permatex
HART®	Hart Communication Foundation	Sensorpulse®	Easton Controls, Inc.	Precision Flow™	Sierra Instruments, Inc.
Hirschmann®	Hirschmann Electronics GMBH	Swagelock®	Swagelock Company	ProHood™	TSI, Inc.
HyperTerminal®	Hilgraeve, Inc.	Trendreader®	ACR Systems, Inc.	Smart Interface™	Ientek Co., Ltd.
Iglide®	Igus GMBH	Tygon®	Saint-Gobain Abrasives, Inc. Corporation		
Inconel®	Huntington Alloys Corporation	VCR®	Swagelok Company		

INFORMATION ABOUT MERCURY-ADDED PRODUCTS

Dwyer Instruments, Inc. continues its development of non-mercury replacement alternatives for those products currently offered containing mercury. We will continue to work with all customers to supply mercury added products as needed for replacement of products currently in use and to guide customers towards non-mercury added products for new applications.

Dwyer Instruments, Inc. will comply with all local, state, federal, and international laws regarding the sale of mercury added products. These laws may affect our ability to sell, distribute, or transport products into restricted states and/or countries. Mercury added product sales may be limited or denied to certain customers depending on the location or intended use of the product.

Dwyer Instruments, Inc. encourages all customers to become familiar and comply with all mercury legislation. Sales of any and all mercury added products will be discontinued to any customer that knowingly or willfully disregards any legislation concerning mercury.

Dwyer Instruments, Inc. requests that all mercury containing products are properly disposed of at the end of their useful life. Many web sites are available to help educate consumers about proper disposal of mercury added products. Please visit www.newmoa.org for additional information related to mercury usage.

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PRESSURE CONVERSION CHART

in/H ₂ O	P.S.I.	in/Hg	mm/H ₂ O	mm/Hg	kg/cm ²	bar	mbar	Pa	kPa
.1	.0036	.0073	2.534	.1863	.0002	.0002	.2482	24.82	.0248
.2	.0072	.0146	5.067	.3726	.0005	.0005	.4964	49.64	.0496
.4	.0144	.0293	10.13	.7452	.0010	.0010	.9928	99.28	.0993
.6	.0216	.0440	15.20	1.118	.0015	.0015	1.489	148.9	.1489
.8	.0288	.0588	20.34	1.496	.0020	.0020	1.992	199.2	.1992
1.0	.361	.0735	25.41	1.868	.0025	.0025	2.489	248.9	.2489
2	.722	.1470	50.81	3.736	.0051	.0050	4.978	497.8	.4978
3	1.083	.2205	76.22	5.604	.0076	.0075	7.467	746.7	.7476
4	1.444	.2940	101.62	7.472	.0102	.0099	9.956	995.6	.9956
5	1.804	.3673	127.0	9.335	.0127	.0124	12.44	1244	1.244
6	2.165	.4408	152.4	11.203	.0152	.0149	14.93	1493	1.493
7	2.526	.5143	177.8	13.072	.0178	.0174	17.42	1742	1.742
8	2.887	.5878	203.2	14.940	.0203	.0199	19.90	1990	1.990
9	3.248	.6613	228.6	16.808	.0228	.0224	22.39	2239	2.239
10	3.609	.7348	254.0	18.676	.0254	.0249	24.88	2488	2.488
11	3.970	.8083	279.4	20.544	.0279	.0274	27.37	2737	2.737
12	4.331	.8818	304.8	22.412	.0304	.0299	29.86	2986	2.986
13	4.692	.9553	330.2	24.280	.0330	.0324	32.35	3235	3.235
14	5.053	1.029	355.6	26.148	.0355	.0348	34.84	3484	3.484
15	5.414	1.102	381.0	28.016	.0381	.0373	37.33	3733	3.733
16	5.774	1.176	406.4	29.879	.0406	.0398	39.81	3981	3.981
17	6.136	1.249	431.8	31.752	.0431	.0423	42.31	4231	4.231
18	6.496	1.322	457.2	33.616	.0457	.0448	44.79	4479	4.479
19	6.857	1.396	482.6	35.484	.0482	.0473	47.28	4728	4.728
20	7.218	1.470	508.0	37.352	.0507	.0498	49.77	4977	4.977
21	7.579	1.543	533.4	39.22	.0533	.0523	52.26	5226	5.226
22	7.940	1.616	558.8	41.09	.0558	.0547	54.74	5474	5.474
23	8.301	1.690	584.2	42.96	.0584	.0572	57.23	5723	5.723
24	8.662	1.764	609.6	44.82	.0609	.0597	59.72	5972	5.972
25	9.023	1.837	635.0	46.69	.0634	.0622	62.21	6221	6.221
26	9.384	1.910	660.4	48.56	.0660	.0647	64.70	6470	6.470
27	9.745	1.984	685.8	50.43	.0685	.0672	67.19	6719	6.719
28	10.106	2.056	710.8	52.26	.0710	.0696	69.64	6964	6.964
29	1.047	2.132	736.8	54.18	.0736	.0722	72.19	7219	7.219
30	1.083	2.205	762.2	56.04	.0761	.0747	74.67	7467	7.467
31	1.119	2.278	787.5	57.91	.0787	.0772	77.15	7715	7.715
32	1.155	2.352	812.8	59.77	.0812	.0796	79.63	7963	7.963
33	1.191	2.425	838.2	61.63	.0837	.0821	82.12	8212	8.212
34	1.227	2.498	863.5	63.49	.0862	.0846	84.60	8460	8.460
35	1.263	2.571	888.9	65.36	.0888	.0871	87.08	8708	8.708
36	1.299	2.645	914.2	67.22	.0913	.0896	89.56	8956	8.956
37	1.335	2.718	939.5	69.08	.0938	.0920	92.04	9204	9.204
38	1.371	2.791	964.9	70.95	.0964	.0945	94.53	9453	9.453
39	1.408	2.865	990.9	72.86	.0990	.0971	97.08	9708	9.708
40	1.444	2.940	1016	74.72	.1015	.0996	99.56	9956	9.956
41	1.480	3.013	1042	76.59	.1040	.1020	102.0	10204	10.20
42	1.516	3.086	1067	78.45	.1066	.1045	104.5	10452	10.45
43	1.552	3.160	1092	80.31	.1091	.1070	107.0	10701	10.70
44	1.588	3.233	1118	82.18	.1116	.1095	109.5	10949	10.95
45	1.624	3.306	1143	84.04	.1142	.1120	112.0	11197	11.20
46	1.660	3.378	1168	85.90	.1167	.1144	114.5	11445	11.44
47	1.696	3.453	1194	87.76	.1192	.1169	116.9	11694	11.69
48	1.732	3.526	1219	89.63	.1218	.1194	119.4	11942	11.94
49	1.768	3.600	1244	91.49	.1243	.1219	121.9	12190	12.19
50	1.804	3.673	1270	93.35	.1268	.1244	124.4	12438	12.44
51	1.841	3.748	1296	95.27	.1294	.1269	126.9	12693	12.69
52	1.877	3.822	1321	97.13	.1320	.1294	129.4	12941	12.94
53	1.913	3.895	1346	98.99	.1345	.1319	131.9	13190	13.19
54	1.949	3.968	1372	100.8	.1370	.1344	134.4	13438	13.44
55	1.985	4.041	1397	102.7	.1395	.1369	136.9	13686	13.69
56	2.021	4.115	1422	104.6	.1421	.1393	139.3	13934	13.93
57	2.057	4.188	1448	106.4	.1446	.1418	141.8	14182	14.18
58	2.093	4.261	1473	108.3	.1471	.1443	144.3	14431	14.43
59	2.129	4.335	1498	110.2	.1497	.1468	146.8	14679	14.68
60	2.165	4.408	1524	112.0	.1522	.1493	149.3	14927	14.93
61	2.202	4.483	1550	113.9	.1548	.1518	151.8	15182	15.18
62	2.238	4.556	1575	115.8	.1573	.1543	154.3	15430	15.43
63	2.274	4.630	1600	117.7	.1599	.1568	156.8	15679	15.68
64	2.310	4.703	1626	119.5	.1624	.1593	159.3	15927	15.93
65	2.346	4.776	1651	121.4	.1649	.1618	161.8	16175	16.18
66	2.382	4.850	1676	123.3	.1674	.1642	164.2	16423	16.42
67	2.418	4.923	1702	125.1	.1700	.1667	166.7	16672	16.67
68	2.454	4.996	1727	127.0	.1725	.1692	169.2	16920	16.92
69	2.490	5.070	1752	128.8	.1750	.1717	171.7	17168	17.17
70	2.526	5.143	1778	130.7	.1776	.1742	174.2	17416	17.42
71	2.562	5.216	1803	132.6	.1801	.1766	176.6	17664	17.66
72	2.598	5.290	1828	134.4	.1826	.1791	179.1	17912	17.91
73	2.635	5.365	1854	136.2	.1852	.1817	181.7	18168	18.17
74	2.671	5.438	1880	138.2	.1878	.1842	184.2	18416	18.42
75	2.707	5.511	1905	140.1	.1903	.1866	186.6	18664	18.66
76	2.743	5.585	1930	141.9	.1928	.1891	189.1	18912	18.91
77	2.779	5.658	1956	143.8	.1954	.1916	191.6	19160	19.16
78	2.815	5.731	1981	145.7	.1979	.1941	194.1	19409	19.41
79	2.851	5.805	2006	147.5	.2004	.1966	196.6	19657	19.66
80	2.887	5.878	2032	149.4	.2030	.1991	199.1	19905	19.90
81	2.923	5.951	2057	151.2	.2055	.2015	201.5	20153	20.15
82	2.959	6.024	2082	153.1	.2080	.2040	204.0	20402	20.40
83	2.996	6.100	2108	155.0	.2106	.2066	206.6	20657	20.66
84	3.032	6.173	2134	156.9	.2131	.2091	209.1	20905	20.90
85	3.068	6.246	2159	158.8	.2157	.2115	211.5	21153	21.15
86	3.104	6.320	2184	160.6	.2182	.2140	214.0	21401	21.40
87	3.140	6.393	2210	162.5	.2207	.2165	216.5	21650	21.65
88	3.176	6.466	2235	164.4	.2232	.2190	219.0	21900	21.90
89	3.212	6.540	2260	166.2	.2258	.2215	221.5	22146	22.15
90	3.248	6.613	2286	168.1	.2283	.2239	223.9	22394	22.39
91	3.284	6.686	2311	169.9	.2309	.2264	226.4	22642	22.64
92	3.320	6.760	2336	171.8	.2334	.2289	228.9	22890	22.89
93	3.356	6.833	2362	173.7	.2359	.2314	231.4	23139	23.14
94	3.392	6.906	2387	175.5	.2384	.2339	233.9	23387	23.39
95	3.429	6.981	2413	177.4	.2410	.2364	236.4	23642	23.64
96	3.465	7.055	2438	179.3	.2436	.2389	238.9	23890	23.89
97	3.501	7.128	2464	181.2	.2461	.2414	241.4	24138	24.14
98	3.537	7.201	2489	183.0	.2486	.2439	243.9	24387	24.39
99	3.573	7.275	2514	184.9	.2512	.2464	246.4	24635	24.64
100	3.609	7.348	2540	186.8	.2537	.2488	248.8	24883	24.88

P.S.I.	in/H ₂ O	in/Hg	mm/H ₂ O	mm/Hg	kg/cm ²	bar	mbar	Pa	kPa
1.0	27.71	2.036	703.1	51.75	.0703	.0689	68.95	6895	6.895
1.1	30.45	2.240	773.4	56.89	.0773	.0758	75.84	7584	7.584
1.2	33.22	2.443	843.7	62.06	.0844	.0827	82.74	8274	8.274
1.3	35.98	2.647	914.0	67.23	.0914	.0896	89.63	8963	8.963
1.4	38.75	2.850	984.3	72.40	.0984	.0965	96.52	9652	9.652
1.5	41.52	3.054	1054.6	77.57	.1055	.1034	103.4	10340	10.34
1.6	44.29	3.258	1124.9	82.74	.1125	.1103	110.3	11030	11.03
1.7	47.06	3.461	1195.2	87.92	.1195	.1172	117.2	11720	11.72
1.8	49.82	3.665	1265.5	93.09	.1266	.1241	124.1	12410	12.41
1.9	52.59	3.868	1335.8	98.26	.1336	.1310	131.0	13100	13.10
2.0	55.36	4.072	1406.1	103.4	.1406	.1379	137.9	13790	13.79
2.1	58.13	4.276	1476.4	108.6	.1476	.1448	144.8	14480	14.48
2.2	60.90	4.479	1546.7	113.8	.1547	.1517	151.7	15170	15.17
2.3	63.67	4.683	1617.0	118.9	.1617	.1586	158.6	15860	15.86
2.4	66.43	4.886	1687.3	124.1	.1687	.1655	165.5	16550	16.55
2.5	69.20	5.090	1757.6	129.3	.1758	.1724	172.4	17240	17.24
2.6	71.97	5.294	1827.9						

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