

USEFUL DEFINITIONS

ALLOY STEEL: A Steel which owes its distinctive properties to elements other than carbon.

AREA OF A CIRCLE: The measurement of the surface within a circle. To find the area of a circle, multiply the product of the radius times the radius by Pi (3.142). Commonly written $A = \pi r^2$.

BRAZE WELD OR BRAZING: A process of joining metals using a nonferrous filler metal or alloy, the melting point of which is higher than 800°F but lower than that of the metals to be joined.

BUTT WELD: A circumferential weld in pipe fusing the abutting pipe walls completely from inside wall to outside wall.

CARBON STEEL: A steel which owes its distinctive properties chiefly to the various percentages of carbon (as distinguished from the other elements) which it contains.

CIRCUMFERENCE OF A CIRCLE: The measurement around the perimeter of a circle. To find the circumference, multiply Pi (3.142) by the diameter. (Commonly written as πd).

COEFFICIENT OF EXPANSION: A number indicating the degree of expansion or contraction of a substance.

The coefficient of expansion is not constant and varies with changes in temperature. For linear expansion it is expressed as the change in length of one unit of length of a substance having one degree rise in temperature.

CORROSION: The gradual destruction or alteration of a metal or alloy caused by direct chemical attack or by electrochemical reaction.

CREEP: The plastic flow of pipe within a system; the permanent set in metal caused by stresses at high temperatures. Generally associated with a time rate of deformation.

DIAMETER OF A CIRCLE: A straight line drawn through the center of a circle from one extreme edge to the other. Equal to twice the radius.

DUCTILITY: The property of elongation, above the elastic limit, but under the tensile strength.

A measure of ductility is the percentage of elongation of the fractured piece over its original length.

ELASTIC LIMIT: The greatest stress which a material can withstand without a permanent deformation after release of the stress.

EROSION: The gradual destruction of metal or other material by the abrasive action of liquids, gases, solids or mixtures thereof.

RADIUS OF A CIRCLE: A straight line drawn from the center to the extreme edge of a circle.

SOCKET FITTING: A fitting used to join pipe in which the pipe is inserted into the fitting. A fillet weld is then made around the edge of the fitting and the outside wall of the pipe.

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SOLDERING: A method of joining metals using fusible alloys, formerly tin and lead, having melting points under 700°F

STRAIN: Change of shape or size of a body produced by the action of a stress.

STRESS: The intensity of the internal, distributed forces which resist a change in the form of a body. When external forces act on a body they are resisted by reactions within the body which are termed stresses.

TENSILE STRESS: One that resists a force tending to pull a body apart.

COMPRESSIVE STRESS: One that resists a force tending to crush a body.

SHEARING STRESS: One that resists a force tending to make one layer of a body slide across another layer.

TORSIONAL STRESS: One that resists forces tending to twist a body.

TENSILE STRENGTH: The maximum tensile stress which a material will develop. The tensile strength is usually considered to be the load in pounds per square inch at which a test specimen ruptures.

TURBULENCE: Any deviation from parallel flow in a pipe due to rough inner walls, obstructions or directional changes.

VELOCITY: Time rate of motion in a given direction and sense, usually expressed in feet per second.

VOLUME OF A PIPE: The measurement of the space within the walls of the pipe. To find the volume of a pipe, multiply the length (or height) of the pipe by the product of the inside radius times the inside radius by Pi (3.142). Commonly written as $V = h\pi r^2$.

WELDING: A process of joining metals by heating until they are fused together, or by heating and applying pressure until there is a plastic joining action. Filler metal may or may not be used.

YIELD STRENGTH: The stress at which a material exhibits a specified limiting permanent set. (.2% or .5%)