

Australian Standard™

Pressure equipment—Glossary of terms



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STANDARDS AUSTRALIA

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NOTES

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PREFACE

This Standard was prepared by the Joint Standard Australia/Standards New Zealand Committee ME-001, Pressure Equipment. The Committee recognized there was a need to consolidate the terms used in the Australian and Australian/New Zealand pressure equipment Standards.

This Standard is the result of a consensus among representatives on the Joint Committee to produce it as an Australian Standard.

This Standard contains technical definitions from the various pressure equipment-related Australian and Australian/New Zealand Standards. All extracted definitions have been sorted alphabetically, or where applicable, grouped under a common heading and cross-referenced. Where differing definitions of a particular term existed, the various definitions were either combined or have been shown. This has been done primarily to draw the attention of the various standards writing committees and users to the need for rationalization in definitions. Overall, there is some variety of technical definitions because they were written at different times, by different committees, and for different purposes.

Standards Australia/Standards New Zealand welcomes informed comment on the Standard from its users and, in line with general policy, all suggestions for modifications will be taken on notice to improve future editions.

This Standard will be subject to ongoing review. The capricious introduction of variations in definitions by technical committees is to be discouraged, and committees will be asked to simplify and rationalize definitions in new or revised Standards wherever possible.

Standards Australia has been aware for some time that better ‘standardization’ of technical terms and definitions is desirable. This Standard has several major objectives, being —

- (a) to assist the pressure equipment industry to find appropriate definitions for their work;
- (b) to unify, where possible, definitions across the pressure equipment Standards covered by AS/NZS 1200, *Pressure equipment*; and
- (c) to permit the identification of any gaps in terminology and technical definitions so that such gaps may be filled.

The Figures have been placed together at the end of the glossary.

A list of referenced documents is presented in Appendix A.

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

STANDARDS AUSTRALIA

Australian Standard
Pressure equipment—Glossary of terms

Term	Definition
accessory	A component of a piping system, other than a pipe, or fitting, but including a relief device, pressure-containing item, pipe support, and any other item necessary to make the piping operative.
accreditation	The procedure by which a nationally recognized body gives formal recognition that a body is competent to carry out specific tasks.
accreditation body	A body that conducts and administers an accreditation system and grants accreditation.
actual life	<i>See</i> life terms.
actual thickness	<i>See</i> thickness terms.
alter	To change the design of, add to or take away from the pressure equipment where the change may affect health or safety but does not include routine maintenance, repairs or replacements.
‘AS’	Followed by a designation means the current Australian Standard to which that designation relates as issued by Standards Australia.
assisted safety valve	A safety valve which, by means of a powered assistance mechanism, may be activated to lift at pressure below the unassisted set pressure and which, even in the event of failure of the assistance mechanism, complies with all the requirements for conventional safety valves.
average bursting pressure	The arithmetic average value of bursting pressure, at the coincident temperature, of the test bursts carried out on a batch of bursting discs.
backing run	The final run deposited on the root side of a single butt weld.
backpressure (bursting disc devices)	The static pressure existing at the outlet of a bursting disc device at the time the device is required to operate. It is the result of pressure in the discharge system from other sources or as a result of vacuum on the upstream side.
backpressure (built-up) (safety devices)	The pressure existing at the outlet of the safety valve caused by flow through the valve into a discharge system.
backpressure (superimposed)	The static pressure existing at the outlet of a safety valve at the time the device is required to operate. It is the result of pressure in the discharge system from other sources.
backpressure support	That component of a bursting disc assembly which prevents the failure of the disc due to backpressure differential. NOTE: A backpressure support which is intended to prevent the failure of the disc when the system pressure falls below atmospheric pressure is sometimes referred to as a vacuum support.
baffle plate (bursting disc devices)	A plate attached to vent side of a bursting disc device or system to redirect discharge or reduce recoil.

Term	Definition
baffle plate (pressure vessels)	A plate in a heat exchanger, stripper or other vessel use to promote even distribution or assist in eliminating droplets from a vapour or gas stream.
batch	A group of manufactured items of the same type and size, manufactured from material of the same identity and properties made as a single group.
blowdown (safety and relief valves)	The difference between the set pressure and the re-seating pressure.
blowdown (boilers)	Boiler water discharge to compensate for volume changes and to maintain water quality.
boiler	An arrangement of vessels and interconnecting parts wherein steam or other vapour is generated or water or other liquid is heated at a pressure above that of the atmosphere by the application of fire or the products of combustion or by electrical or solar means. It also includes valves, gauges, fittings and controls directly associated with the boiler and where consistent with the requirements of its application Standard includes the boiler setting and associated equipment. NOTES: 1 The New Zealand definition approximates to the above but applies only to the generation of steam heated by a directly applied combustion process or by heated gases. 2 See also 'fired heater' which may be more appropriate for some equipment which generates steam or other vapour.
— electrode boiler	A boiler in which the water or other liquid is heated by the passage of an alternating current through the liquid.
— element boiler	A boiler in which the water or other liquid is heated by an electrical element.
— fire-tube boiler	A boiler in which the water or other liquid to be heated is contained in a vessel which may be directly heated or contain tubes in which combustion takes place or through which products of combustion flow. Typical examples of fire-tube boilers are shown in Figures 1(A) to 1(D).
— fluidized bed boiler	A boiler which is heated by fuel added to a bed of sand, or similar material, made fluid by passing compressed air through the bed and across the top face of the bed.
— forced circulation boiler	A water-tube boiler composed of a number of long tubes in which evaporation is substantially suppressed and into which a regulated flow of water is forced, a mixture of steam and water flowing from the outlet end of each tube and entering an unheated separator where the water and steam are separated, the water returning to the system.
— hot water boiler	A boiler used for heating water without removing steam from the system.

Term	Definition
— limited attendance boiler	A boiler designed for fully automatic operation with fail-safe features and suitable for periods of operation without human supervision, subject to regular checks by a certificated boiler attendant and subject to specified supervision and maintenance procedures. NOTE: See AS 2593.
— miscellaneous boilers	Boilers that are not classified as fire-tube or water-tube boilers. NOTE: Some types of fire-tube and miscellaneous boilers have an obvious shell and are also referred to commercially as ‘shell boilers’.
— natural circulation boiler	A water-tube boiler in which fluid circulation is a result of the thermosiphonic head produced by heating.
— once-through boiler	A water-tube boiler in which the fluid passes from the inlet to the outlet of the boiler without internal circulation.
— organic fluid heater and vapourizer	A boiler which uses organic fluid for the heating medium. It excludes pressure equipment, such as fired heaters and heat exchangers, which is covered by other Standards.
— steam boiler	A boiler in which steam is generated.
— unattended boiler	A boiler designed for fully automatic operation with fail-safe features; and suitable for periods of operation without human supervision. NOTE: See AS 2593.
— waste heat boiler	A boiler in which water or other liquid is heated by exhaust gases from an engine, process or combustion gases.
— water-tube boiler	A boiler in which the heat transfer takes place through the wall of tubes inside which the fluid to be heated flows or circulates. NOTE: This definition intentionally includes systems which have been commonly known as ‘steam generators’ and are referred to in AS 2593 as forced circulation water-tube boilers.
boiler management system	A system that controls the entire boiler function including the energy input management system, the water level management system, the pressure controls, instruments and circuitry.
brazier	A person who performs a manual brazing operation.
brazing operator	A person who operates furnaces or other automatically controlled or timed brazing equipment.
bursting disc	The pressure-containing and pressure-sensitive element of a bursting disc device.
bursting disc assembly	The complete assembly of the bursting disc components which are installed in the bursting disc holder to perform the desired function.
bursting disc device	A non-reclosing pressure-relief device actuated by differential pressure and designed to function by the bursting or venting of the bursting disc.
bursting disc device discharge capacity	The rate at which a bursting disc device can discharge fluid after bursting or venting of the bursting disc.

Term	Definition
bursting disc device discharge area	The area which is the geometric minimum cross-sectional flow area of the bursting disc device that is used to calculate the theoretical flow capacity of the bursting disc device. NOTE: Possible reduction of the cross-section, for example by backpressure supports, catching devices, or parts of the bursting disc which remain after bursting, has to be considered.
bursting disc holder	That part of a bursting disc device which retains the assembly of bursting disc components in position.
bursting disc pressure (specified)	<i>See</i> pressure terms.
bursting pressure	<i>See</i> pressure terms and average bursting pressure.
bursting tolerance	The maximum variation of test results in equal positive and negative quantities or percentages related to the average bursting pressure. Where zero manufacturing range is stated, the tolerance is applied directly to the specified bursting pressure.
calculation pressure	<i>See</i> pressure terms
calculated thickness (minimum)	<i>See</i> thickness terms
capacity (of a fuel vessel)	The designed water capacity (total volume) of the space within the fuel vessel.
certificate of inspection	A written statement signed by an inspector or an authorized representative of an inspection body affirming the safety parameters of the subject equipment.
certificated boiler attendant	A person who is the holder of an appropriate certificate of competency to operate a boiler issued by the relevant regulatory authority.
certificated welder	A welder who possesses a welder's certificate. (<i>See</i> AS 1796.)
certificated welding supervisor	A supervisor who possesses a certificate which is awarded as evidence of having passed an examination appropriate to that certificate, and which indicates a knowledge of the theory of welding and capability of supervising welders in accordance with the requirements of the pressure equipment industry.
certified capacity	That portion of the measured capacity permitted to be used as a basis for the application of a safety valve, i.e. — (a) measured flow rate $\times$ derating factor; (b) theoretical flow rate $\times$ coefficient of discharge $\times$ derating factor; or (c) theoretical flow rate $\times$ derated coefficient of discharge.
coating	A layer of metallic or non-metallic material applied by brush, spray, or dipping, or other methods to protect manufactured items.
coefficient of discharge (α)	The ratio between the measured discharge capacity and the theoretical discharge capacity of a safety valve or a relief valve.
coincident temperature (bursting pressure)	The temperature used in conjunction with bursting pressure.

Term	Definition
cold differential test pressure	The inlet static pressure at which a safety valve is set to commence to lift on the test stand. This test pressure includes corrections for service conditions of back pressure and temperature.
cold spring	The forcing into position of a component that has been fabricated to a length shorter or longer than its nominal length, so that it is stressed in the installed condition, with the intention of compensating for the change in length produced by an increase or decrease in temperature. (Also called ‘cold pull’ or ‘cold push’).
cold-stretched pressure vessel	A pressure vessel subjected to a calculated and controlled internal pressure at ambient temperature (cold-stretching pressure) after completion. This pressure stretches the steel, as necessary, and within limits to raise its proof strength and to ensure that the actual thickness $\times$ proof strength satisfies the design. NOTE: Vessels made of cold-stretched or work hardened plate will normally have very little plastic deformation during cold-stretching.
commencement of lift	Initial lift such as would cause the first indication of movement on a linear transducer or equivalent.
commissioning	Performing the necessary adjustments, tests (including operational trials) and inspections to ensure pressure equipment is in safe working order to specified requirements before the pressure equipment is declared operational. Commissioning includes re-commissioning.
competency	A competency comprises of knowledge and skill and the application of that knowledge and skill within an occupation or industry level, to the standard of performance required.
competency assessment	The assessment of the integration and application of the knowledge and skills required for the effective performance of the candidate.
competent person	A person who has acquired through training, qualification or experience, or a combination of these, the knowledge and skills enabling that person to perform the task required.
complete shutdown	A condition in which the boiler is immediately and effectively isolated from all sources of fuel and power (or for a solid fuel boiler, from all sources of combustion air and power) and the controls can be reset only by hand. The safety control and sequence indicated system (mimic diagram) and water supply need not be isolated. This will enable the feed pumps to run after the boiler has shutdown with — (a) a low water level alarm condition; (b) a fault in low-level water device; (c) failure of the system to go to a self-checking sequence; (d) failure of the system during the self-checking function; and (e) failure to return to a normal operating position. NOTE: This condition means all systems will be locked out. Some regulations define ‘complete shutdown’ as ‘lockout’.
comply	To act in keeping with requirements.