Table 1 – Comparison of pressure definitions

Standard		Pressure ratings
CSA B51 Part 2	Filling pressure	The gas pressure in a cylinder immediately after completion of filling
	Maximum developed pressure	The settled pressure developed when a cylinder filled to the working pressure is raised to the maximum service temperature
	Settled pressure	The gas pressure when a given settled temperature is reached
	Working pressure	the settled pressure of 350 bar (or 700 bar) at a uniform temperature of 15°C
ANSI HGV2	Fill pressure	The pressure attained at the actual time of filling. Fill pressure varies according to the gas temperature in the container, which is dependent on the filling parameters and the ambient conditions. The maximum fill pressure shall not exceed 125 percent of service pressure
	Service pressure	The container pressure, as specified by the manufacturer, at a uniform gas temperature of 15°C , and full gas content.
ISO 15869.3	Settled pressure	Gas pressure when a given settled temperature is reached
	Working pressure	Settled pressure at a uniform temperature of 15°C
	Maximum fill pressure	Pressure not exceeding 1.25x working pressure regardless of filling conditions or temp. and which settle to a pressure not greater than working pressure at settled temp of 15°C
	Burst pressure	Pressure that causes the bursting of a pressure vessel subjected to a constant increase of pressure during a destructive test
EIHP	Nominal working pressure	The pressure level at which a component typically operates. For containers it is the settled pressure at a uniform temperature of 288K (15°C) for a full container
	Maximum alllowable working pressure	The maximum pressure to which a component downstream of a pressure regulator is subjected.
FMVSS 304	Fill Pressure	The internal pressure of a fuel container at the time of filling. Fill pressure varies according to the gas temperature in the container which is dependent on the charging parameters and the ambient conditions.
	Service pressure	The internal settled pressure of a fuel container at a uniform gas temperature of 21°C at full gas content.
	Burst pressure	Highest internal pressure during burst test at 21°C
SAE J2579 TIR	Nominal working pressure	the gauge pressure that characterizes typical operation of a pressure vessel, container, or system. For compressed hydrogen gas containers, NWP is the container pressure, as specified by the manufacturer, at a uniform gas temperature of 15 °C (59 °F) and full gas content.
	Maximum allowable working pressure	Maximum gauge pressure of the working fluid (gas or liquid) to which a piece of process equipment or system is rated with consideration for initiating fault management above normal operation.
	Maximum developed pressure	The maximum developed pressure is the highest gauge pressure that occurs during failure management.
	Maximum fill pressure	The highest gauge pressure, as specified by the manufacturer, that is normally encountered during a fueling process.

	Maximum operating pressure	The highest gauge pressure of a component or system that is expected during normal operation including starts, stops, and transients.
JARI S001	Minimum rupture pressure	2.25 x maximum filling pressure
	Design rupture pressure	Container rupture pressure used by container maker in designing container
	Maximum filling pressure	35 Mpa

Table 2 – Pressure cycling requirements in standards

Standard	Service life (years)	Requirements for pressure cycle testing
CSA B51 Part 2	20 max	- 2 cylinders, 20 bar to 1.25 x working pressure until failure or to 2,250 cycles x the service life - minimum filling cycles = service life x 750 - beyond the minimum filling cycles the cylinder can fail by leakage
ANSI NGV2/HGV2	10 – 25	- 2 cylinders, 10% - 125% x service pressure until failure or to 45,000 cycles. - minimum filling cycles = service life x 750 - beyond the minimum filling cycles the cylinder can fail by leakage
ISO 15869.3	15	- 2 cylinders, 2 MPa to 1.25 x service pressure, pressure cycle until failure or 3 x design fills. - minimum filling test cycles = 11,250 cycles, - a reduced number of 5,500 filling cycles may be specified for the life of the vehicle when used in conjunction with a counter system that records the number of fill cycles and terminates usage of the tank before the reduced number of filled cycles is exceeded.
EIHP		- 2 cylinders, 2 MPa to 1.25 x nominal working pressure - minimum test cycles - 3 x fill cycles (3x5,000) - continue to 9 x fill cycles (45,000) or leakage
FMVSS 304		-cylinder shall not leak before: 10% service pressure to 100% service pressure for 13,000 cycles followed by, 10% service pressure to 125% service pressure for 5,000 cycles
SAE J2579 TIR	15 - 25	Two pressure cycling sequences prescribed: - Expected service performance verification test (gas cycling), and - Durability performance verification test (hydraulic cycling). For expected service cycle, personal vehicles: Cycles = L/R, not less than 500 For durability cycle, personal vehicles: Cycles = L/R, not less than 5500 For expected service cycle, commercial vehicles: Cycles = L/R, not less than 1000 For durability cycle, commercial vehicles: Cycles = L/R, not less than 11,250 (L = vehicle lifetime mileage; R = vehicle range on fully filled system)
JARI S001		-2 cylinders, 2 MPa to 1.25 x maximum filling pressure at rate up to 10x/min until leakage occurs or 45,000 cycles. -pass if container does not fracture, no damage to fiber, and no leakage from container in 11,250 cycles

Table 3 – Hydrostatic burst strength requirements in various standards.

Standard	Requirements for hydrostatic burst testing			
CSA B51 Part 2	- 3 cylinders - hold 5 seconds at design burst pressure - glass fibers – 3.65 x working pressure - Aramid fibers – 3.10 x working pressure - carbon fibers – 2.35 x working pressure			
ANSI NGV2/HGV2	- 3 cylinders – hold 5 seconds at design burst pressure - glass fibers – 3.5 x working pressure - Aramid fibers – 3.0 x working pressure - carbon fibers – 2.25 x working pressure			
ISO 15869.3	- 3 cylinders - hold 5 seconds at design burst pressure			
	Construction	Type 2	Type 3	Type 4
	Glass	2.4	3.4	3.5
	Aramid	2.25	2.9	3.0
	Carbon (working pressure <35Mpa)	2.25	2.25	2.25
	Carbon(working pressure >=35Mpa)	2.0	2.0	2.0
	Min burst = factor x working pressure			
EIHP	- 3 cylinders - hold 5 seconds at design burst pressure - glass fibers – 3.65 x nominal working pressure - Aramid fibers – 3.10 x nominal working pressure - carbon fibers – 2.35 x nominal working pressure			
FMVSS 304	-each cylinder type: minimum burst - 2.25 x service pressure for all fibers hold 10 second at minimum burst pressure			
SAE J2579 TIR	- 1.8 x nominal working pressure at conclusion of expected service cycling - 1.8 x nominal working pressure at conclusion of durability cycling - Not more than 20% reduction in burst strength at conclusion of expected service and durability cycling tests compared to virgin-tank burst strength			
JARI S001	3 cylinders – hold 5 seconds at design rupture pressure -pass if rupture pressure of container at least equal to minimum rupture pressure			

Note: ISO std recently updated to include alternative type tests on one cylinder