Pressure, Vacuum, and Cryogenic Systems: Codes, Regulations, and Standards List

Department: Chemical and General Safety
Program: Pressure, Vacuum, and Cryogenic Systems
Owner: Program Manager
Authority: ES&H Manual, Chapter 14, Pressure, Vacuum, and Cryogenic Systems[1]

The SLAC program for pressure safety is based on compliance with all regulations, codes, and standards implicit within Title 10, *Code of Federal Regulations*, Part 851, "Worker Safety and Health Program" (10 CFR 851).[2] Included in this regulation is the requirement to conform to the "strictest applicable state and local codes", as well as certain industry consensus standards. Many of these standards are available through the SLAC Research Library.[3]

The list of codes and regulations listed in the table below is an elaboration of Section 3, "Standards" in Chapter 14. Here, the codes are listed by system type and also cross-referenced with the applicable Chapter 14 exhibit Use the most current edition unless otherwise indicated.. This compilation may not include all applicable local requirements.

1 *SLAC Environment, Safety, and Health Manual* (SLAC-I-720-0A29Z-001), Chapter 14, "Pressure, Vacuum, and Cryogenic Systems", http://www-group.slac.stanford.edu/esh/hazardous_activities/pressure/policies.htm

2 "Code of Federal Regulations: Main Page", http://www.gpoaccess.gov/cfr/

Additional information on 10 CFR 851 and its implementation is available from the following site: "Worker Safety and Health Program Final Rule - 10 CFR 851", http://www.hss.energy.gov/healthsafety/WSHP/rule851/851final.html

3 See the "SLAC Research Library Community Pages", http://www-group.slac.stanford.edu/library/CommunityPages.asp, for available standards.

System Content or Type	*California Fire Code* (chapters)	American Association of Mechanical Engineers (ASME)	National Fire Protection Association (NFPA)[4]	*California Mechanical Code* (chapters)	Compressed Gas Association (CGA)	Additional Required Codes and Standards
Acetylene and hot work[5]	26, 27, 30	B31.3-2002	51	–	–	American National Standards Institute (ANSI) Z49.1-2005
Cryogens[6]	27, 30, 32	B31.3 2002, B16 series	55	5 and 14	P-12, P-18, P-30, P-35, P-56	–
Drains and drain systems	27, 30	–	–	–	–	*California Plumbing Code*, Chapters 8 and 10
Flammable and combustible liquids[7]	34	B31.3-2002	30	14	–	*California Plumbing Code*, Chapter 8
Health and physical hazards[8]	27	B31.3-2002	55	14	–	–
Hydrogen[9]	27, 30	B31.3-2002, B16 series	55	14	G-5, G-5.3, G-5.4, G-5.5	–
Natural gas transmission	34	B31.8-2003	58	–	–	–

4 Use NFPA standards and publications in effect at the time the system becomes operational.

5 Pressure, Vacuum, and Cryogenic Systems: Requirements for Systems for Acetylene and Other Gases for Hot Work (SLAC-I-730-0A21S-040), http://www-group.slac.stanford.edu/esh/eshmanual/references/pressureReqHotWork.pdf

6 Pressure, Vacuum, and Cryogenic Systems: Hydrogen Requirements (SLAC-I-730-0A21S-041), http://www-group.slac.stanford.edu/esh/eshmanual/references/pressureReqHydrogen.pdf

7 Pressure, Vacuum, and Cryogenic Systems: Flammable and Combustible Liquid Requirements (SLAC-I-730-0A21S-039), http://www-group.slac.stanford.edu/esh/eshmanual/references/pressureReqFlamCombust.pdf

8 Pressure, Vacuum, and Cryogenic Systems: Requirements for Systems Containing Fluids with Health or Physical Hazards (SLAC-I-730-0A21S-043), http://www-group.slac.stanford.edu/esh/eshmanual/references/pressureReqFluidHaz.pdf

9 Pressure, Vacuum, and Cryogenic Systems: Hydrogen Requirements (SLAC-I-730-0A21S-041), http://www-group.slac.stanford.edu/esh/eshmanual/references/pressureReqHydrogen.pdf

System Content or Type	*California Fire Code* (chapters)	American Association of Mechanical Engineers (ASME)	National Fire Protection Association (NFPA)[4]	*California Mechanical Code* (chapters)	Compressed Gas Association (CGA)	Additional Required Codes and Standards
Oxygen[10]	27, 30	B31.3-2002, B16 series	51, 53, 55	14	G-4, G-4.1	ASTM International (ASTM) G88, G93, G128
Piping systems	–	A13.1-2001	–	–	–	–
Refrigeration systems[11]	6	B31.5-2001, B31.9-1996	–	11 and 12	–	–
Vacuum systems[12]	–	–	–	–	–	–

10 Pressure, Vacuum, and Cryogenic Systems: Oxygen Requirements (SLAC-I-730-0A21S-042), http://www-group.slac.stanford.edu/esh/eshmanual/references/pressureReqOxygen.pdf

11 Pressure, Vacuum, and Cryogenic Systems: Refrigeration, Chiller, Heating / Cooling System Requirements (SLAC-I-730-0A21S-046), http://www-group.slac.stanford.edu/esh/eshmanual/references/pressureReqRefrig.pdf

12 Pressure, Vacuum, and Cryogenic Systems: Vacuum System Requirements (SLAC-I-730-0A21S-037), http://www-group.slac.stanford.edu/esh/eshmanual/references/pressureReqVacuumSafety.pdf