

Code of Federal Regulations

Title 49. Transportation

Subtitle B. Other Regulations Relating to Transportation

Chapter I. Pipeline and Hazardous Materials Safety Administration, Department of Transportation (Refs & Annos)

Subchapter D. Pipeline Safety

Part 192. Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards (Refs & Annos)

Subpart C. Pipe Design

49 C.F.R. § 192.105

§ 192.105 Design formula for steel pipe.

Currentness

(a) The design pressure for steel pipe is determined in accordance with the following formula:

$$P=(2 St/D) xFxExT$$

P=Design pressure in pounds per square inch (kPa) gauge.

S=Yield strength in pounds per square inch (kPa) determined in accordance with § 192.107.

D=Nominal outside diameter of the pipe in inches (millimeters).

t=Nominal wall thickness of the pipe in inches (millimeters). If this is unknown, it is determined in accordance with § 192.109. Additional wall thickness required for concurrent external loads in accordance with § 192.103 may not be included in computing design pressure.

F=Design factor determined in accordance with § 192.111.

E=Longitudinal joint factor determined in accordance with § 192.113.

T=Temperature derating factor determined in accordance with § 192.115.

(b) If steel pipe that has been subjected to cold expansion to meet the SMYS is subsequently heated, other than by welding or stress relieving as a part of welding, the design pressure is limited to 75 percent of the pressure determined under paragraph (a) of this section if the temperature of the pipe exceeds 900 ° F (482 ° C) at any time or is held above 600 ° F (316 ° C) for more than 1 hour.

Credits

[49 FR 7569, March 1, 1984; Amdt. 192–85, 63 FR 37501, July 13, 1998]

SOURCE: [35 FR 13257](#), Aug. 19, 1970; [52 FR 32800](#), Aug. 31, 1987; [53 FR 1635](#), Jan. 21, 1988; Amdt. 192–73, [60 FR 14650](#), March 20, 1995; Amdt. 192–3, [60 FR 41828](#), Aug. 14, 1995; Amdt. 192–75, [61 FR 18516](#), April 26, 1996; [61 FR 38403](#), July 24, 1996; [70 FR 8302](#), Feb. 18, 2005; Amdt. 192–111, [74 FR 62505](#), Nov. 30, 2009; Amdt. 192–112, [74 FR 63326](#), Dec. 3, 2009; Amdt. 192–120, [80 FR 12777](#), March 11, 2015; Amdt. 192–119, [80 FR 46847](#), Aug. 6, 2015; Amdt. 192–122, [81 FR 91872](#), Dec. 19, 2016; Amdt. 192–123, [82 FR 7997](#), Jan. 23, 2017; Amdt. 192–124, [83 FR 58715](#), Nov. 20, 2018; Amdt. 192–125, [84 FR 52243](#), Oct. 1, 2019, unless otherwise noted.

AUTHORITY: [30 U.S.C. 185\(w\)\(3\)](#), [49 U.S.C. 5103](#), [60101 et. seq.](#), and [49 CFR 1.97](#).

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