



Calculate the storage volume of compressed air or gas

The storage volume for a compressed gas can be calculated using Boyle's Law:

$$p_a V_a = p_c V_c \quad (1)$$

where

p_a = [atmospheric](#) pressure (14.7 psi, 101.325 kPa)

V_a = volume of the gas at [atmospheric](#) pressure (cubic feet, cubic meter)

p_c = compressed pressure (psi, kPa)

V_c = volume of the gas at compressed pressure (cubic feet, cubic meter)

Volume of free gas in a Storage Volume

The amount of free gas at atmospheric pressure in a given volume as a cylinder storage can be calculated by modifying (1) as:

$$V_a = p_c V_c / p_a \quad (2)$$

Gas can be stored in high-pressure cylinders ranging to 6000 psig (410 bar), normal-pressure cylinders ranging between 2000 and 2500 psig (140 and 175 bar) and low-pressure cylinders ranging up to 480 psig (34 bar).

Example - Volume of Air in a Cylinder Storage

The [standard atmospheric air](#) in a 250 cubic feet cylinder at 2000 psig (2014.7 psia) can be calculated as:

$$V_a = (2014.7 \text{ psia}) (250 \text{ cu ft}) / (14.7 \text{ psig})$$

$$= \underline{34264} \text{ (cu ft)}$$

Fuente: The Engineering Tool box

