

Gas Pressure and Temperature

Why do you need to keep aerosol cans away from heat sources?

Gay-Lussac's Law: the pressure of a fixed amount of gas at constant volume is directly proportional to its Kelvin temperature.

Ex 1. On a warm winter day ($-5\text{ }^{\circ}\text{C}$) you check your car's tire pressure and find it to be 2.18 atm. A sudden cold snap hits and the temperature drops to $-30\text{ }^{\circ}\text{C}$ that night. What pressure will your tires have now?

Ex 2. Superman tries to blow out a fire at a propane tank factory. The tanks are designed to withstand 13000 torr of pressure. The pressure gauges currently read 9250 torr at $55\text{ }^{\circ}\text{C}$. What is the maximum temperature Superman can let the room get before an explosion?