

TEMPERATURE AND PRESSURE BALANCE

Propane is affected by heat and pressure in much the same way as water. Let's take a look at that now.

Figure A shows propane liquid in a cylinder at a temperature of 60°F. At atmospheric pressure, the boiling point of propane is -44°F. At any temperature below that, a pool of propane will remain in liquid form, because its vapor pressure is less than atmospheric. At temperatures above -44°F, the vapor pressure of propane is greater than atmospheric pressure, therefore the liquid will vaporize.

In this case, when the propane liquid was pumped into the cylinder it began to boil and pressurize the vapor space of the cylinder. Once the pressure reached 92 psig, the pressure in the container and the vapor pressure of propane at 60°F were equal, and the boiling stopped.

Outside temperature also affects the vapor pressure inside the container.

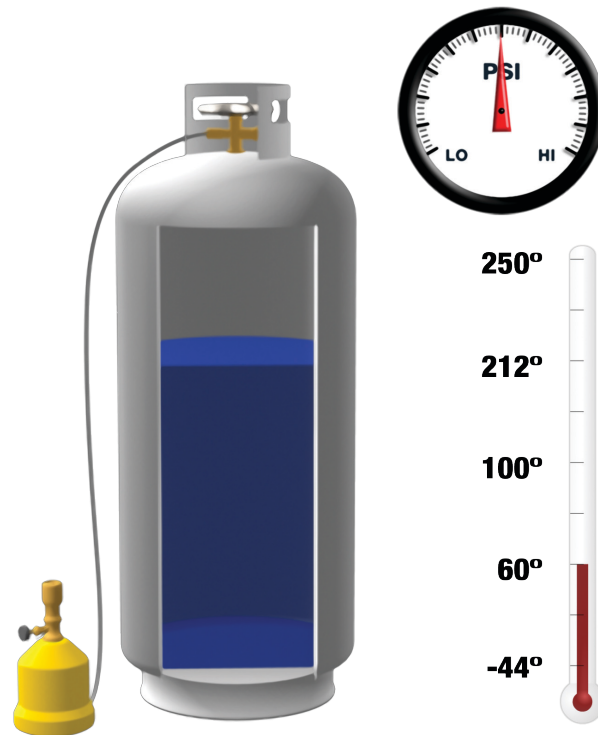


Figure A. Propane liquid in a cylinder at a temperature of 60°F

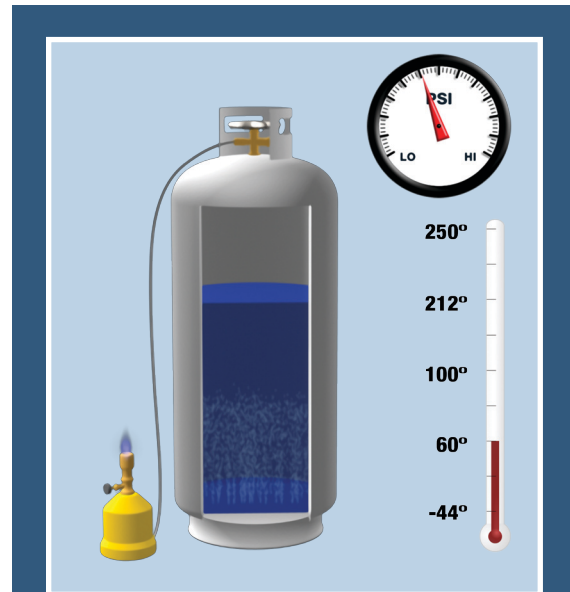
PROPANE BOILING ACTION: VALVE OPENED

If the valve on a cylinder (or appliance) is opened, propane vapor will flow to the burner, and the demand for gas vapor will immediately cause a slight drop in pressure inside the cylinder.

This upsets the balance and will cause the propane to begin boiling off vapor to replace the vapor going to the burner. As long as the demand for vapor remains, the propane will continue to boil, supplying fuel to the burner.

If the valve on an appliance is opened more, then the demand for propane vapor is increased and the boiling rate will also increase. This same action will occur in a customer's gas system, where the tank or cylinder containing liquid propane boils off gas vapor to provide fuel to appliances.

Next, we'll see what happens when the valve is closed.



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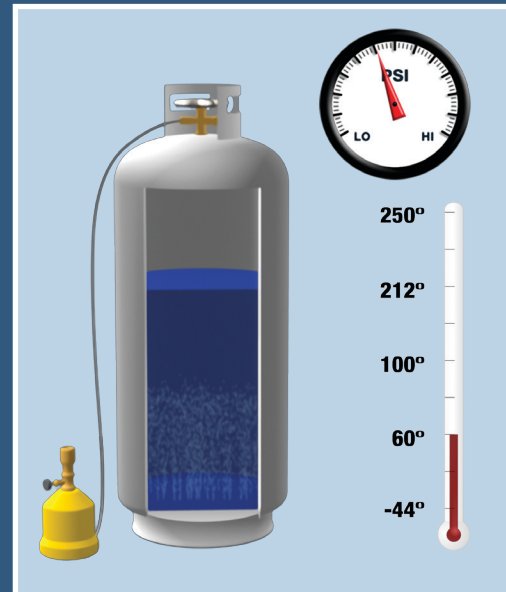


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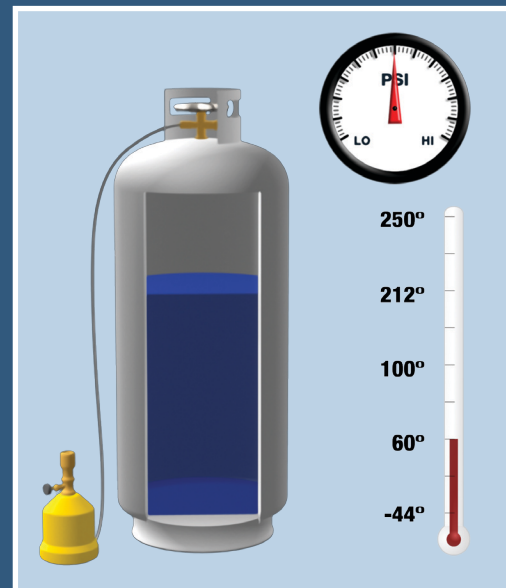
PROPANE BOILING ACTION: VALVE CLOSED

When the valve on the appliance is closed, the propane will stop flowing and return to its balance point. The boiling will slow down as the pressure in the vapor space increases to that balance point. The boiling will eventually stop as the balance is reached.

Except for their boiling points, propane is a lot like water.



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