Propane Vaporization and LPG Tank Size

Vaporization is the process of a liquid being converted into a gas (or vapor). As propane boils, it is in the process of vaporizing. Water boils at 212°F at which point it converts to a vapor we know as steam. Propane works the same way but at a much lower boiling point. One might refer to propane vapor as "LP Gas steam". Vaporization is affected and influenced by the actual size of the propane tank.

Propane Vaporization Requirements

In order for a propane appliance to work, vaporization must occur and the amount of vaporization rate must be ample enough to deliver the required amount of propane. A small propane tank such as a cylinder does not have the vaporization capacity to fuel a residential propane furnace. The furnace requires so much more propane than a cylinder can deliver. The propane in the cylinder can't vaporize fast enough to satisfy the demand of the furnace.

Let's look at vaporization from another angle using a railroad steam locomotive which requires liquid (water) that is heated to a boiling point which in turn produces the steam (water vapor) powering the locomotive along the tracks. A locomotive with a boiler that's too small will not be able to produce enough steam to power the train. The capacity of the boiler must be able hold enough water to adequately power the steam locomotive. Also, the amount of heat applied to the boiler must cover enough surface area (of the boiler) to produce the required amount of steam to power the locomotive. The vaporization rate must be adequate in order to properly power a steam locomotive and the vaporization rate is dependent upon two things:

1. Container Size - The tank (boiler) must have a large enough capacity to internally produce the required amount of steam (vapor) that will meet the required steam power demands of the locomotive.
2. Heated Surface Area - The heat from the fire must be produce enough heat to generate steam. This means that the container must have enough of its surface heated to cause the water to boil. A lighter can't heat enough surface area of a water kettle to cause the water inside to boil.

Propane tanks work the same way with regard to vaporization. If the tank isn't large enough to supply enough vapor, the appliances will not operate properly or will not operate at all and because propane boils at such a low temperature we consider the outside air temperature to be the source of heat required to bring propane to its boiling point. Applications in which vaporization requirements exceed the vaporization capacity of the tank(s), a propane vaporizer may be installed to meet the demands of the LP Gas equipment.