

### Answer on Question #43310 – Engineering – Other

Explain what is meant by diffusion and premixed flames

#### Solution:

**Diffusion flame** is a flame in which the oxidizer combines with the fuel by diffusion. As a result, the flame speed is limited by the rate of diffusion. Diffusion flames tend to burn slower and to produce more soot than premixed flames because there may not be sufficient oxidizer for the reaction to go to completion, although there are some exceptions to the rule. The soot typically produced in a diffusion flame becomes incandescent from the heat of the flame and lends the flame its readily identifiable orange-yellow color. Diffusion flames tend to have a less-localized flame front than premixed flames

A **premixed flame** is a flame in which the oxidizer has been mixed with the fuel before it reaches the flame front. This creates a thin flame front as all of the reactants are readily available. If the mixture is rich, a diffusion flame will generally be found farther downstream.