

## Volatile Gases (Energy)

### BIOREFINING PROCESS SOURCE

#### Combustion

### DESCRIPTION

Volatile gases are the primary product of pyrolysis. Unlike **gasification**, which extracts these gases in the absence of oxygen, combustion necessarily exposes them to oxygen, and their oxidation as they escape from the pyrolyzed biomass causes flaming combustion. Under theoretically ideal conditions, volatile gases would combust only into carbon dioxide and water, but in practical application, byproducts like carbon monoxide, polycyclic aromatic hydrocarbons and chlorinated hydrocarbons are produced. Many of these are pollutants, and some, like furans and dioxins, are hazardous. The gases cannot be extracted, but the heat of their combustion is valuable.

### REFERENCES

Brown, Robert C. 2003. Biorenewable Resources Engineering New Products from Agriculture, Iowa State Press, Ames IA.