

SECTION 15 FIRE BEHAVIOR (FIRE SCIENCE)

The Certification Board suggest it will take a class of **40** individuals **16** hours to cover the following objectives in this section (actual time may vary based on class size).

BASIC

15-01.01* Trainee shall define heat and fire.

15-01.02* Trainee shall define the fire triangle and tetrahedron.

15-01.03* Trainee shall identify two (2) chemical, mechanical, and electrical energy heat sources.

15-01.04* Trainee shall define the following stages of fire:

- | | |
|-------------------|--------------------------|
| A. incipient | E. steady state |
| B. flame spread | F. clear or free burning |
| C. hot smoldering | G. back draft explosion |
| D. flashover | |

15-01.05* Trainee shall define the three (3) methods of heat transfer.

15-01.06* Trainee shall define the three (3) physical states of matter in which fuels are commonly found.

15-01.07* Trainee shall define the hazard of finely divided fuels as they relate to the combustion process.

15-01.08* Trainee shall define:

- | | |
|----------------|-------------------------------------|
| A. flash point | C. ignition temperature |
| B. fire point | D. upper and lower explosive limits |

15-01.09* Trainee shall define concentrations of oxygen in air as it affects combustion.

15-01.10* Trainee shall identify three (3) products of combustion commonly found in structural fires which create a life hazard.

15-01.11* Trainee shall identify characteristics of water as it relates to its fire extinguishing potential.

INTERMEDIATE

15-02.01 Trainee shall define the following units of measurements:

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|-------------------------------|----------------------------------|
| A. British Thermal Unit (BTU) | D. Calorie (C) |
| B. Fahrenheit (F°) | E. Joule, the SI unit for energy |
| C. Celsius (C°) | |

15-02.02 Trainee shall define thermal balance and imbalance.

ADVANCED

15-03.01 Trainee shall identify chemical by-products of combustion.

15-03.02 Trainee shall define the diffusion flame process.

15-03.03 Trainee shall define the fire extinguishment theory.

15-03.04 Trainee shall identify pressure and velocity.