

## WHAT IS...

# Fuel Moisture Content?

## FIRE FACT SHEET

**F**uel Moisture Content (FMC) is a measure of the amount of water in a fuel, such as vegetation, available to a fire, and it is expressed as a percent of the dry weight of that specific fuel.

FMC is one of the primary variables in many wildfire behavior prediction models and fire danger indices, as FMC affects ignition, combustion, the amount of available fuel, fire severity and spread, and smoke generation and composition. Fire behavior prediction models increase firefighter safety and can help determine the most effective use of resources.

Fuel moisture is dependent upon both environmental conditions (such as weather, local topography, and length of day) and vegetation characteristics. FMC is usually separated into live fuel moisture content and dead fuel moisture content. All living vegetation is considered fuel for a fire, and all living vegetation has some level of moisture contained within it. Wood in tree trunks and branches, leaves and needles, twigs, living pine cones, grasses, forbs, shrubs and moss can all become fuel for a fire, but the moisture they contain must first be driven away. So, when fuel moisture content is high, fires do not ignite readily because the heat energy is driving water through evaporation out of the plant tissues before the plant can burn. The higher the fuel moisture the more resistant the vegetation is to heat injury. However, when the fuel moisture content is low, fires start easily and can spread rapidly because all the heat energy is available to feed the fire itself.

Dead fuel moistures are classed by timelag, which is a measure of the rate at which a given dead fuel gains or loses moisture.

### Timelag Categories

- » **1 hour — Fine flashy fuels**, dried herbaceous plants or round wood less than 1/4" diameter. Also includes the uppermost layer of litter on the forest floor. Responds quickly to weather changes. It varies greatly throughout the calendar day and is principally responsible for diurnal changes in fire danger. It is computed from observation, time, temperature, humidity and cloudiness.
- » **10 hour — Round wood 3/4" to 1" diameter** and the layer of litter that extends to 3" to 4" below the surface. It is computed from observation, time, temperature, humidity, and cloudiness, or may be a standard set of "10-Hr Fuel Sticks" that are weighed as part of the fire weather observation.
- » **100 hour — 1" to 3" diameter**. It is computed from 24 hour average boundary condition composed of day length, hours of rain, and daily temperature and humidity ranges.
- » **1000 hour — 3" to 6" diameter**. It is computed from a 7-day average boundary condition composed of day length, hours of rain, and daily temperature and humidity ranges.

### For more information:

LANL Fire Wildfire Management Planning Website: <http://www.LANLWildlandfire.com>