NATIVE WOODS FOR FUEL

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It is not generally known that the native Idaho wood species compare very favorably with coal in heating value, but the following data collected from various sources (see also references) indicate this to be true.

The average heating value of dry wood is about 8,030 British thermal units per pound, as compared to 12,040 per pound for coal. In general, two pounds of dry wood give off as much heat as one pound of good coal. One cord of the heavier woods such as maple and hickory, or two cords of cedar, spruce, cottonwood, and other light woods equal in heat value one ton of coal.

Douglas fir, western larch, and ponderosa pine, commonly known as western yellow or bull pine, are good fuel woods. They give off intense heat but vary in such qualities as ignition, uniform burning, and rapid burning. The pine varieties, such as ponderosa, burn more rapidly but give off a quicker, hotter fire. Woods like Douglas fir and larch burn more slowly but hold fire longer. Woods containing resin or oil are proportionately better. Dense pines containing 30 per cent resin, for example, have a relative fuel value considerably above that of hickory.

Moisture content, weight, amount of oils, and resins and special uses for which heat is required should all be carefully considered when judging fuel values of various woods. The dry weights of various woods per given volume give a good indication of their relative values for fuel. Equal weights of the same woods containing no oils or resins give off about the same amount of heat when burned. A hundred pounds of dry cottonwood should

give as much heat as a hundred pounds of dry hickory. Heavy wood will average 4,000 pounds per cord of 80 cubic feet; medium 3,000; light, 2,000. Part of the aversion to the use of wood as fuel is due to the fact that the wood is not properly seasoned. Green wood, beside being harder to ignite, is from 5 to 25 per cent less valuable for heating purposes than dry wood. Green wood is also heavier to handle, for nearly a thousand pounds of moisture is lost from a cord of green wood during seasoning.

The relative fuel values of various woods per unit volume when dry are listed in the following list of averages: hickories, 100; birch 87; ponderosa pine, (10 per cent resin) 84; Mountain ash, 80; larch, (tamarack) 76; Douglas fir, 65; western hemlock, 61; lodgepole pine, 58; white pine, 56; aspen 56; white fir, 55; spruce, 52; cottonwood, 50; alpine fir, 48.

The fuel value of wood is often rated lower than it should be on account of the method used in burning it. The stove or furnace, to give the greatest head, should be kept filled with closely packed wood and the drafts carefully regulated. By removing the grate bars of a coal furnace and laying fire brick on the floor of the ash pit, and by tightly closing the ash pit door and opening the ventilator in the fuel door, wood can be burned at a slow rate for heating purposes. Special grates and appliances for burning briquettes and other wood fuel in stoves and fireplaces are now available to the housekeeper.

There are more ways than one in which local woods may be used as fuel. In some regions charcoal is sold for fuel purposes as well as for technical use, and certain industrial plants use wood gas produced from waste wood. "Green" sawdust and hogged fuel are frequently made use of in

such gas producers at considerable savings. Because wood is cleaner, many baking establishments continue to use wood in their bake ovens in preference to other fuels.

In certain regions where lumber mills and industrial plants are located, large quantities of sawdust, shavings, and mill trimmings are used successfully as fuel for developing both heat and power. At Lewiston, Idaho, a highly efficient fuel briquette selling for about 6 to 8 dollars per ton is being manufactured out of sawdust and shavings for use in large and small furnaces, stoves, and fireplaces. This compressed fuel has two-thirds the heating value of hard coal and in addition it is clean and easy to handle. There is little smoke, no clinkers, and very little ash. The Forest Service tells us that a cord of hardwood, for example, will produce only about 60 pounds of ash, while a ton of hard coal will leave, after burning, from 200 to 300 pounds of ash.

In the more densely populated regions where forest wood may be scarce a special type of wood briquette is made in small quantities for automobile tourist use.

The tourist or camper often searches for fuelwood with which to cook his meals or to keep him warm. Nine times out of ten he fails to select his fuel but gathers the nearest material, which is often lying on the ground and therefore likely to be wet. Contrary to general belief, a standing dead tree, unless decayed, furnishes excellent fuel because it is dry; and a dry stump often contains good kindling wood.

For some purposes, such as camp fires and bonfires, it is always helpful to know which woods are most likely to throw sparks; and for the cooking fire, those woods which burn rapidly or those which produce the best

bed of coals. The following native species of wood are common to the Idaho recreational regions:

Spark-throwers: Box elder, maple, red cedar, spruce, hemlock, balsam, and larch. (Several woods when wet will "pop" a great deal.)

Kindling Woods: Pitchy pieces, dry pieces of ponderosa pine, spruce, lodgepole pine, cedar, birch bark, alder.

For coals: Aspen, mountain maple, cottonwood, dogwood, mountain ash, mountain mahogany, western yew, larch, Douglas fir.

On a rainy day when a camp fire is the one thing you need most and you want it quickly, it is well to know just what kind of tinder to look for and where. Dry cones of conifers; pitchy stumps; dry mosses, or lichens on the lower dead branches of living trees; pine, fir or cedar needles which are dry and have turned red or brown; and the inner bark of dry, standing dead trees are all useful as tinder for starting your fire.

References: The Use of Wood for Fuel, U.S.D.A. Bulletin 753.

The Fuel Value of Wood, Iowa State College, Extension Bulletin 111.