

Ask Jon Eakes

Fire Safety & Installing Wood Burning Appliances

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Wood heating appliances get hot -- that's why we use them -- but they also burn down houses. They are only safe if you install them safely.

-- Let's start with the fascinating process of how wood burns;

-- and now let's see how that process can happen inside your walls or floors near wood heating appliances in what we call spontaneous combustion -- or a very surprising house fire.

SPONTANEOUS COMBUSTION

This illustrates the great importance of keeping the heat of the wood fire safely away from combustible construction materials. It is not a question of a hot coal jumping out and starting a fire, it is question of constant high heat starting a fire right inside a wall or floor. In fact it is not uncommon that an installation that has functioned for years without a problem suddenly causes a hidden fire inside the wall or floor.

This happens when the house structure has spent years passively drying out and carbonizing from the heat coming through the wall or floor covering, all with reasonable heat loads. Then on an especially long holiday stretch, this appliance is used continuously for a couple of weeks at higher than normal temperatures. The wood, which has become ready to burn, now ignites without any contact with a flame. Radiation shields are important to reduce the carbonizing effect and to avoid temperatures conducive to spontaneous combustion.

CERTIFIED APPLIANCES

Certified appliances have built in safety measures and you should always place the appliance at the distances from combustible materials specified in the manufacturer's literature. Modern "zero clearance" wood burning appliances have several layers of protection that allow placing the unit right next to wooden studs safely, but even here follow the manufacturer's instructions to the letter.

UNCERTIFIED APPLIANCES

If you don't have the installation manual and can't find it on the web or otherwise from the manufacture, consider your appliance an "uncertified appliance".

Uncertified appliances require 4 feet (120cm) clearance from any combustible surface, special floor protection and single wall chimney connectors require 18 inches (45cm) clearance from any combustible surface.

There is not always that much space available so just as with the certified appliances, ways have been worked out to partially block the heat radiated out from the fire, in the same way that stepping into a shadow can save you from the hot burning sun on a summer day.

REDUCING CLEARANCE DISTANCES WITH SHIELDS

The distances between wood burning appliance and combustible construction materials can be reduced with the proper use of appropriate heat shields. Heat shields are required for the protection of the floor with all uncertified appliances and can be used to install the stove closer to walls as well. The graphics above show you how to move from the 4 foot safety distance to 2 feet, or 50% of the standard, and two ways to move even closer to 67% of the standard. Some commercially produced

heat shields exist as well -- check with a wood heating speciality store.

SINGLE-WALL FLUE PIPE CLEARANCES

Even a well protected stove may have a single walled flue pipe running through the room and it needs protection as well. The standard safe distance is 18 inches. Two of the graphics here show you how to shield the wall, or shield the pipe and cut that distance in half.

FLOOR PROTECTION

Spark protection is necessary in front of a wood burning appliance, basically non combustible material like ceramic tiles in front of the door.

For uncertified appliances the stove is usually mounted on a layer of bricks making a non-combustible floor where the holes in the brick are lined up horizontally to let air flow through to cool things down.

See the end of the video for details. Sometimes this ventilated brick floor is covered with ceramic tiles both for looks and to keep cinders from falling through to the wooden floor.

The above diagrams will give you a rough idea of what can be done to reduce clearances while maintaining safety. It is best to discuss the details of your installation with a wood heating specialist -- perhaps the salesman where you bought your stove.

For detailed information as well as professional resources, check out the WETT web-site: www.wettinc.ca -- Wood Energy Technology Transfer inc. certifies wood appliance installers in Canada.

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