

Wisconsin Reinsurance Corporation

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Type: Loss Control—Loss Prevention

Subject: Solid Fuel Heating

Solid Fuel Heating

- A fire waiting to happen?
- What is clearance?
- Proper clearance for solid fuel heaters
- Can clearances be reduced?
- Reduced Clearances when using Protective Materials

A fire waiting to happen?



It's Novemburrrrrrr!

The temperatures are falling, the wind is blowing and it's time to start up that wood furnace. **BUT, is it SAFE?**

With cool temperatures beginning early this year, WRC is already seeing large losses resulting from improper use of solid fuel heating devices. The picture to the left is from an inspection that took

place earlier this year. This furnace is located in the basement of a rural home. The entire basement is full of firewood stacked to the ceiling with a small path leading from the steps to the furnace. There is newspaper resting on top of the logs in front of the furnace. Does this wood furnace have proper clearance?

What is clearance?

Clearance is the safe air space from the solid fuel heating device to a combustible surface. Examples of combustible materials include wood, newspaper, rugs, upholstered furniture, paneling, sheet rock (even fire rated) and plaster (lathe). Sheet rock on wood framing and imitation brick allow heat to pass through and do not protect combustible surfaces. The wood furnace pictured above has wood and newspapers located too close to the furnace. One spark from the furnace could easily ignite the nearby flammables. For this type of appliance, the wood should be stored a minimum of 48 inches from all sides of the furnace. Also the floor area surrounding the heating appliance should be clear of any debris.

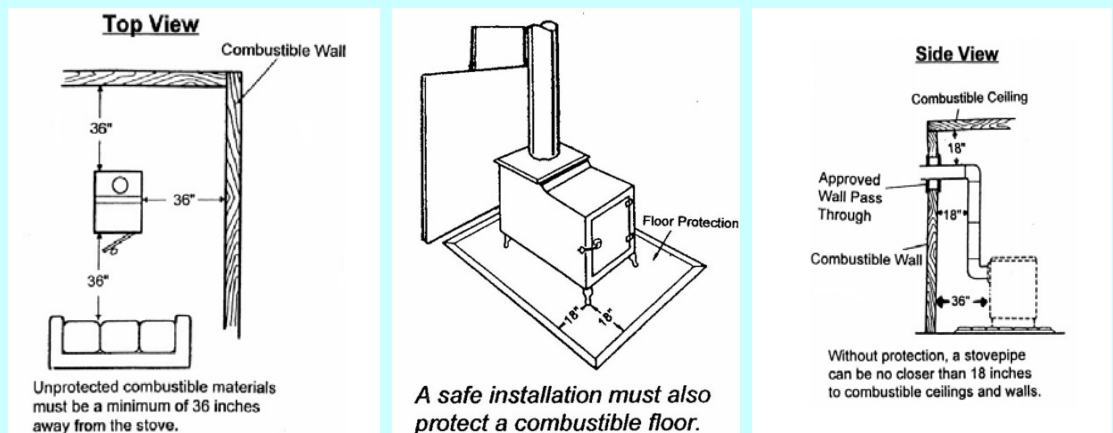
What is the proper clearance for solid fuel burning appliances?

Air space clearance requirements vary based on the type of solid fuel burning appliance. Newer appliances are usually tested by a recognized agency such as Underwriter Laboratories (UL). The tested appliances will have the clearance requirements posted on the appliance and in the owner's manual. It is recommended that only tested appliances be purchased and installed according to the appliance's requirements. Proper installation and fuel storage is crucial for safe and efficient operation. The National Fire Protection Association (NFPA) is the authority on fire, electrical and building safety. The table below shows the NFPA minimum clearance requirements for wood burning appliances.

Type of Appliance	Above top of appliance	front	back (I)	from side(I)
Room heaters, fireplace stoves	36 in.	36 in.	36 in.	36 in.
Furnaces	18 in.	48 in.	18 in.	18 in.
Steam & water boilers	6 in.	48 in.	6 in.	6 in.
Steam boiler - 16psi				
Water boiler - 250 deg. F max				
Water boiler - 200 deg. F max				
All Water Walled or Jacketed				

(I) Provisions for fuel storage must be located at least 36" from any side of the appliance

The illustrations below are examples of proper clearances.



Can the clearance requirements be reduced?

It is possible to reduce the manufacturer's or the NFPA's 36 and 18 inch minimum recommended air space clearance from wood burning appliances by installing protective materials on combustibles that surround the appliance. The following are NFPA suggested methods to reduce clearance requirements.

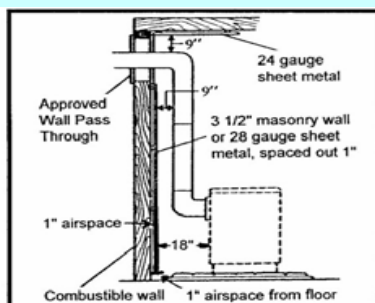
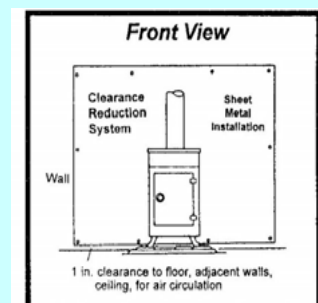
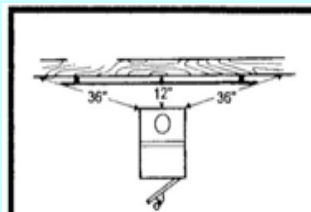
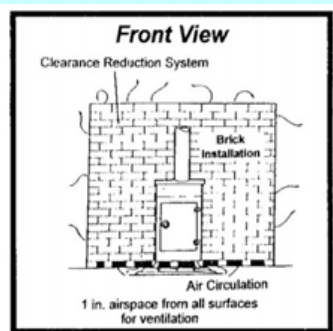
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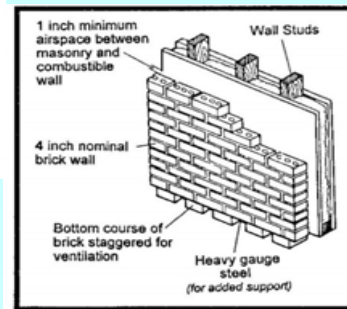
Reduced Clearances When Using Protective Materials

Combustible Surface Covering	Wall Protector (Stove)	Ceiling Protector (Stove)	Wall or Ceiling Protector (stove pipe)
3 1/2 inch thick masonry wall Without ventilated air space	24 in.	————	12 in
1/2 inch thick noncombustible Insulation board over 1 inch glass Fiber or mineral wool batts without Ventilated air space	18 in	24 in	9 in
3 1/2 in thick masonry wall with 1 in. Ventilated air space	12 in	————	9 in
24 gauge sheet metal with 1 inch Ventilated air space	12 in.	18 in.	9 in.
1/2 inch noncombustible insulation board With 1 inch ventilated air space	12 in.	18 in.	9 in.
1 inch glass fiber or mineral wool batts Sandwiched between two sheets of 24 Gauge sheet metal with 1 inch ventilated air space	12 in.	18 in.	6 in.

See illustrations below



A clearance reduction system using sheet metal or masonry can be used to safely shorten the distance from stove to combustibles.



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Sources:

National Fire Protection Association
www.nfpa.com

Wausau Stettin Mutual Insurance
www.wsmic.com

www.hearth.com

Fire Safety in Solid Fuel-Burning
Systems

RAM Mutual Insurance Company

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