

## Home is where the hearth is...

By Carol Lamkins, CID, CMKBD

A fireplace is a focal point of design. The warmth of a fire enhances the ambience and is the perfect atmosphere for social interaction. Watching the dancing flames awakens the senses of sight, of sound, smell and touch. It is not surprising that the design of a room frequently starts with the fireplace.

The level of technological development and structural design in fireplaces today has totally transformed the masonry and wood-burning appliances of yesterday, resulting in options for fireplaces and woodstoves that are modern, efficient, and environmentally friendly.



Courtesy of Warmington

Interior designers frequently change the materials on the hearth, mantle and the façade in a remodel project. This requires a basic knowledge of fireplace construction and the California building codes based upon guidelines established by the International Code Council, or ICC. The ICC develops safety and fire prevention codes and standards applied in residential and commercial buildings. Current building code considerations are noted in this article. However is always best to check with the local building department to find out what the specific rules are for installing or altering fireplaces in your area.

Masonry fireplaces have been replaced for the most part by pre-fabricated fireplaces in new construction. It is interesting to note that wood-burning fireplaces with their aesthetic appeal may actually remove more heat from a house than they produce. A typical, vertical-back fireplace with an open front is at best ten percent efficient in converting wood to energy and delivering it to a room. The rest of the heat escapes up the chimney. Pre-fabricated fireplaces are tested for safety and efficiency. Approvals come from specific agencies, such as the International Conference of Building Officials.

If the existing fireplace is not altered, then the interior designer may suggest several types of accessories that modestly improve the heating efficiency of a traditional wood-burning fireplace. A fireplace insert is the best option for a significant difference. Fireplace inserts are wood-, pellet-, or gas-fueled appliances that fit into a conventional open fireplace. Some models extend onto the hearth, while others stay flush with the front of the fireplace. Many inserts include aesthetic features such as decorative tile, cast iron, or enameled fronts, glass doors, and brass trim and handles. Some inserts have fans to circulate air around the unit and blow heated air into the room. Fans may

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improve heat distribution (not combustion efficiency) by 50% to 75%. A fan may not be necessary if the unit is in a small room.

Other options include:

- **Dampers** using a cast iron frame with a hinged lid that opens or closes, vary the chimney's throat opening. They are used to manually regulate the amount of air to control how much air the fire receives and the rate that it burns. The size of the damper opening should correspond to the size of the fire: a narrow opening for a small fire, wide for a big one. It is important to close the damper when a fire is not burning. This helps to minimize the loss of warm room air up the chimney. If a gas log or log lighter is used then the flue damper shall be blocked open as required by the manufacturer.
- **Glass doors** reduce heat loss and are required by California Building Codes. Glass doors have four major components: a frame with adjustable air intake slots or vents, tempered glass doors, an interior screen, and special brackets or anchor bolts to secure the frame to the fireplace. Most fireplace doors are made of tempered soda-lime glass. Tempered glass or safety glass, adds mechanical strength, making it more difficult to break than ordinary glass. When selecting fireplace doors, look for models with a rigid frame and a fiberglass seal that goes against the outside rim of the fireplace opening. The frame should fit securely, the doors should seal tightly, and the inlet vents should be adjustable. If selecting factory-built fireplaces, find out whether the unit is approved for use with glass doors.
- **Heat exchangers** consist of a series of large diameter pipes or tubes either in the chimney or around the firebox. Their purpose is to circulate room air through the hot tubes to pick up some additional heat. Some models have a fan to force air through the tubes, while others rely on natural convection to keep the air circulating.

The building and energy codes are very specific about replacing the oxygen consumed by fire in a closed space.

**Make-up air** from outside for both masonry and factory-built fireplaces shall be provided for proper fuel combustion or the room shall be mechanically ventilated and controlled for air pressure as per our building codes in California. This code is a result of a major suffocation concern when the consumed oxygen is not replaced in a room.



Courtesy of Warmington

Other building code considerations are:

- Fireplace hearths, which make up the floor area in front of the fire, must extend at least 16 inches from the front of the firebox into the room and 8 inches beyond each side of the fire box. If the fireplace opening is 6 square feet or larger, the hearth extensions shall be a minimum of 20" in front of the fireplace opening and 12" beyond each side.

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- The hearth must be 4 inches thick in front of the firebox with the extensions being a minimum of 2 inches thick.
- Acceptable hearth materials include brick, stone, concrete, marble, slate, terrazzo or quarry tile.
- A masonry fireplace must have a minimum distance between an exposed combustible edge of sheathing material such as wood siding and the firebox in a masonry fireplace. Combustible material framing a firebox must clear by 6" on all sides and can be up to 1-1/2" from the face of the masonry. A combustible material such as a mantel that projects more than 1-1/2" must be a minimum of 12" directly above the firebox.
- Fireplace mantels must be a minimum of 6 inches from the top of the firebox opening to the trim and mantle.

There are exceptions to these building and energy codes as per the municipality and the interior designer must refer to the local building code department for details.



Courtesy of Warmington

Interior designers must also be concerned with specifying flat screen televisions over the mantles. Check the manufacturer's warranty for heat sensitivity of the television. Another consideration is the angle of the sightline to the television from the seating arrangement. Ergonomically, the sight line should be level and not cause the head to lean back stressing the neck for any length of time. This could lead to medical issues.



Courtesy of Warmington

Indoor pollution is a concern as described by the U.S. Environmental Protection Agency (EPA): "Indoor and outdoor wood-burning appliances and fireplaces may emit large quantities of air pollutants. Research shows that breathing wood smoke is not healthy. Wood smoke contains hundreds of chemical compounds, including nitrogen oxides, carbon monoxide, organic gases, and fine particles (also known as particulate matter or PM). Even limited exposure to smoke can be harmful to human health, particularly to the health of children, the elderly, and those with chronic conditions. Fine particles (i.e., particles smaller than 10 microns or about

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30 times smaller than a human hair), can aggravate heart or respiratory problems, such as asthma, in people of all ages.”

If the existing fireplace has draft or other construction problems, it can be converted to rocks or glass crystals. If there is not a gas connection, candles could be a solution. Environmental issues of burning wood have opened the industry to alternative solutions. Glass crystals are available recycled, crystal cut or tumbled as pebbles in many colors and sizes.



Recycled Glass – courtesy of Fire on Glass



Fire Glass Crystals – courtesy of Fire on Glass



Courtesy of Fire on Glass



Courtesy of Warmington



Fire Glass Pebbles – courtesy of Fire on Glass



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Understanding fire place basic construction and building and energy code requirements is the starting point for utilizing the fireplace as the focal point of the room design. This technical knowledge is what sets the interior designer apart from the interior decorator.



Courtesy of Modern Flames

### Resources:

[http://www.ehow.com/list\\_6750207\\_california-building-codes-fireplaces.html](http://www.ehow.com/list_6750207_california-building-codes-fireplaces.html)

<http://www.rumford.com/code/2008CalifGreenBldgStdrCodea.pdf>

[http://www.archive.org/stream/gov.ca.bsc.title24.2010.part06/ca\\_2010\\_title24\\_06\\_djvu.txt](http://www.archive.org/stream/gov.ca.bsc.title24.2010.part06/ca_2010_title24_06_djvu.txt)

<http://greencodepro.com/code-summaries/california-green-building-standards-code/5-503-1-fireplaces>

[http://www.ehow.com/list\\_6750207\\_california-building-codes-fireplaces.html#ixzz1oabe3S8A](http://www.ehow.com/list_6750207_california-building-codes-fireplaces.html#ixzz1oabe3S8A)

<http://www.electricfireplacesdirect.com/EFD/articles/electric-fireplaces-improve-energy-efficiency.html>

<http://www.energyguide.com/library/EnergyLibraryTopic.asp?bid=tva&prd=10&TID=25708&SubjectID=10168>

[http://www.warmington.co.nz/webfiles/Warmington/files/Warmington\\_catalogue\\_06.pdf](http://www.warmington.co.nz/webfiles/Warmington/files/Warmington_catalogue_06.pdf)

<http://www.fireonglass.com/?gclid=CIWAxZzs68CFcoaQgod5RNFLQ>

CA Green Building Codes 2008

California Energy Code, Title 24, Part 6, Subchapter 7, Section 150.

U.S. DOE, Energy Efficiency and Renewable Energy Network, Consumer Energy Information