



## Wood Fired Ovens

Larkin Refractory Solutions, Inc. is an authorized dealer for BrickWood Ovens.

The purpose of this paper is to provide some useful information to guide one in designing and constructing a wood fired oven for cooking or baking.

The theory of a wood fired oven is to burn wood to create heat energy which is to be stored in the hot face layer (floor, walls and roof). In order to store it so it can do work, there needs to be sufficient backup insulation to help retain as much heat as possible and minimize the amount of wood required to cook.

Begin by determining how large the cooking surface needs to be and how long the cooking process will be. These two factors will affect the overall size of the oven and the thicknesses of the hot face layer (dense) and the insulating layer (lightweight).

For most backyard ovens, the general rule for thicknesses is 4 ½ inches of hot face and 4 to 5 inches of backup insulation. Note: more insulation is desirable. For large commercial ovens the thicknesses increase to 6 to 9 inches for each layer.

There are many shapes of ovens ranging from rectangular having a sprung arch roof (which requires external steel support for the arch), to a barrel arch with vertical end walls, to various dome or igloo shapes.

The sprung arch and barrel arch designs can be constructed with medium or high duty firebrick entirely for the hot face. The dome type can use either firebrick (which requires a lot of cutting) or can be cast utilizing a high temperature concrete which is properly called castable. Firebrick is still required for the hearth when casting an oven.

In order to cast a dome, one needs a form which could be made from wood, styrofoam or compacted wet sand. Cover the form with polyethylene sheeting to keep the water from the castable from being absorbed by the form.

The insulating layer is typically a lightweight insulating castable (25 to 30 pounds per cubic foot density) rated to 1800 to 2000 degrees Fahrenheit. This castable should be used on top of the concrete block or poured concrete base. It is also used over the outside of walls and roof that were built with firebrick or dense castable. To minimize potential cracking of the lightweight

castable over the outside walls and roof, using a 1" layer of 6# density ceramic fiber blanket first and then putting the light weight castable on top is a good solution.

The hot face hearth can be constructed with larger firebrick tiles to minimize joints in the cooking surface versus regular firebrick. Note: Refer to the paper on Buying Firebrick and Economical Composition for Kilns on our website to gain a further understanding of sizes and shapes available.

All mating brick surfaces should be mortared using a refractory air set mortar. The joints are thin, typically 1/16<sup>th</sup> to 1/8<sup>th</sup> inches thick.