

## TherMix: The "Thermal Bridge" Between Chimney Liners and Masonry

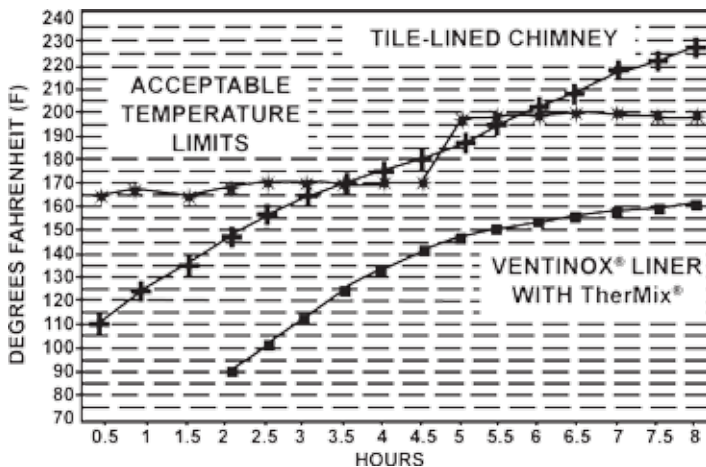
TherMix lowers temperatures on liners during over firing or chimney fires: Allows heat to be slowly absorbed into the entire mass of a chimney, where it is safely dissipated over a large surface area.

TherMix maintains higher temperatures on liners when flue gas temperatures are low: Maintaining flue gas temperatures above dew point, (~128°F), is essential to avoid condensation. The insulating mass of TherMix retains the maximum available heat close to the liner: the flue stays warm for a longer period of time after the appliance shuts down. With oil and gas appliances, keeping the flue warmer between firing cycles greatly reduces the possibility of momentary flue gas spillage which occur at the start of the next cycle. With wood burning applications, warmer flues help eliminate back puffing and other draft related problems.

TherMix minimizes fluctuations of liner surface temperatures during heating cycles. This is critical when draft must be established quickly each time an appliance fires up and when minimizing condensation within the entire height of the flue is important.

\*NOTE: To comply with the specifications of a UL Listed, zero clearance solid flue installation, a minimum thickness of 1" of TherMix must be installed between a listed stainless steel liner and a 4" thick masonry chimney wall. In verifiable code-complying, clay-tile-lined chimneys, no minimum thickness of TherMix is required.

Graph 1: UL Heat Transfer Test



This graph shows how TherMix reduces heat transfer to combustible material surrounding a masonry chimney. The data is an actual UL test where chimney flue gasses were maintained at 1000°F for an eight-hour period. The (+) line shows temperatures on a plywood enclosure located at one-inch from a code approved, tile-lined chimney. The (■) line shows temperatures with a Ventinox liner, which is insulated with TherMix at the same thermocouple location. The (\*) line shows acceptable temperature limits specified by the UL standard, (90°F plus ambient for the first 4.5 hours and 117°F plus ambient for the remainder of the test).

There is no change in consistency of TherMix over time. Even after exposure to many high temperature tests at UL, the structural integrity, chemical composition, and insulating qualities remained consistent over time, every time.

- TherMix insulated chimneys can be used right after the installation is complete, as long as flue gas temperatures do not exceed 1000°F during the first 48 hours of actual use. Please note that drying and curing are two separate processes:
- Curing or hardening of TherMix takes place over a 28-day period, with 65% to 75% of this process occurring the first week.
- Drying time depends on the thickness TherMix, the permeability of the chimney, and weather conditions. The drying process is enhanced and completed over time by using the heating appliance.

## TherMix Field Benefits

	TherMix	Ceramic Blankets
Zero-clearance to combustibles	Yes	Yes
Ease-of-installation	Yes	Yes
Difficulties with Offsets	No	Yes
Seals dangerous cracks and voids in chimneys	Yes	No
Eliminates air leakage into chimney	Yes	No
Eliminates moisture buildup between liner & chimney structure	Yes	No
Ships UPS/FedEx (Boxes Only)	Yes	Yes
Accepted by building code officials	Yes	Yes
Can be removed	Yes	Yes
Avoids reliance on respirator during installation	Yes	No
Eliminates the need for reflective surfaces to reduce heat transfer	Yes	No
Poured method means one size fits all insulation	Yes	No
Holds liner in place	Yes	No

- When using TherMix, there is no need to purchase spray adhesives, tapes, wire, mesh, and/or sheet metal parts which add to the cost and time to complete a job.
- TherMix can be used to insulate modular masonry fireplaces.
- TherMix stays in place when installed but can be easily removed. Dry weight per cubic foot installed is ~20lbs.

TherMix is delivered in a strong poly-lined bag or box containing all ingredients except water, which must be added to moisten the material. Proper consistency is achieved when the material feels damp but still granular (~7 to 9 gallons of water per bag/box). \*When a handful of properly moistened TherMix is squeezed hard, little to no water appears between the fingers. During the installation, correctly prepared TherMix pours like "loose fill." TherMix is distributed within the chimney cavity by vibrating the liner. \*Do not tamp or compress TherMix.



## TherMix Buyers Guide

- \*Use Table 1 to estimate the number of TherMix bags or boxes needed to do the job.
- Find the flue opening that comes closest to the one being lined, the left hand column.
- Find the size of the liner to be installed across the top line.
- Where the values intersect, read the cubic foot volume of TherMix per foot of chimney height.
- Multiply this volume by the height (in feet) of the chimney.
- Divide the cubic feet calculated in the previous step by 3.25. This answer will determine the number of bags/boxes of TherMix needed.

**Table 1: TherMix Volume Per One Foot of Chimney Height**

Flue Opening	Diameter of Liner					
	5"	6"	7"	8"	10"	12"
7.5" x 7.5"	.25	.20	--	--	--	--
7.5" x 11.5"	.46	.40	(Ovalized) .38	(Ovalized) .32	--	--
8.5" x 8.5"	.36	.30	.23	--	--	--
8.5" x 11.5"	.54	.48	.41	(Ovalized) .36	(Ovalized) .33	--
9.5" x 9.5"	.49	.43	.36	.27	--	--
11.5" x 11.5"	.78	.72	.65	.60	.37	--
11.5" x 16.5"	1.18	1.12	1.05	.96	.77	--
12.5" x 12.5"	.95	.88	.82	.73	.53	--
14.5" x 14.5"	1.30	1.26	1.20	1.10	.92	.65
14.5" x 18.5"	1.70	1.66	1.60	1.50	1.30	1.04

### Example:

A 28' chimney with a flue opening of 8.5" x 8.5" is to be lined with a 6" liner. As shown in Table 1, .30ft<sup>3</sup> of TherMix is needed per foot of chimney height. Multiply .30 by 28 (the height of the chimney), to get 8.4ft<sup>3</sup>. Now divide 8.4 by 3.25 (the approximate volume yield per bag of TherMix), to obtain 2.6 bags/boxes of TherMix to complete the installation.

\*Masonry chimneys are not uniform structures. Have extra bags/boxes available in case you need them. If there is an installation not covered by table 1, refer to the formula below:

$$\text{Packages of TherMix} = \frac{(W \times D \times H) - (CS \times H)}{1728 \text{ cu. in.}} \div 3.25$$

W = Width of flue opening (in inches)  
 D = Depth of flue opening (in inches)  
 H = Height of flue (in inches)  
 CS = Cross Section areas of chimney liner (table 2)

**Table 2: Cross Section Area of Liner**

Liner Size	CS Area	Oval Liner Size	Oval Dimensions	CS Area
Round 5"	19.62in <sup>2</sup>			
Round 6"	28.46in <sup>2</sup>	Oval 6"	(4.2" x 7.2")	24.60in <sup>2</sup>
Round 7"	38.46in <sup>2</sup>	Oval 7"	(4.2" x 9.1")	32.20in <sup>2</sup>
Round 8"	50.25in <sup>2</sup>	Oval 8"	(4.2 x 10.3")	37.20in <sup>2</sup>
Round 9"	62.50in <sup>2</sup>			
Round 10"	78.50in <sup>2</sup>	Oval 10"	(4.2" x 13.3")	49.50in <sup>2</sup>
Round 12"	113.22in <sup>2</sup>			