

PLEASE READ ENTIRE DOCUMENT BEFORE INSTALLING ANY STONE AGE MANUFACTURING, INC. PRODUCT.

There are certain characteristics common to all concrete masonry products, regardless of brand or manufacturer, or whether scratch-built materials or pre-engineered kits, including the appliances manufactured by Stone Age. A natural metamorphosis takes place with all concrete masonry products when exposed to heat, thermal cycling, freeze thaw cycling, moisture, over firing etc. Since the appliances Stone Age manufactures are designed and engineered to be a burn product or an outdoor living environment fixture these factors should be considered before installation to ensure the finished structure meets the expectations of the installer and the homeowner/end user.

Depending on the expectation, acceptable tolerances, region, climate, exact location in its permanent environment, surrounding structures, along with many other possible scenarios and factors will dictate the exact construction technique and overall labor and material cost of the finished structure. These expectations and other contributing factors vary on every project and are out of the control of Stone Age Manufacturing Inc.

All of Stone Age Manufacturing Inc.'s appliances that are engineered for burning a fire are made from raw materials that are designed to withstand the heat and endure the thermal cycling that takes place during and after use without failure or thermal breakdown. Stone Age appliances are designed and engineered to be used indoors or outdoors. Stone Age appliances are sold nationally and internationally in all regions and climates. Stone Age appliances meet thousands of different installers, construction techniques with foreign materials incorporated into the construction of each unique and custom project. Stone Age Manufacturing Inc. is not present during the purchase of products, construction process or the chain of events that take place from start to finish of a project. Therefore it is important for all parties involved in each individual project to discuss the scenarios that apply specifically to their project before the purchase of product and start of construction.

This document is an attempt to make consumers aware of common factors that may not have originally been considered but does not claim to address every possible natural or unnatural occurrence that could have an effect on a concrete masonry product. All local building codes, climates, soil conditions, surrounding structures, product location to existing structures, etc. should be considered. It is also recommended that the advice of local trade professionals be pursued for consultation before the purchase of product and beginning of any project.

#1 – CONCRETE & HEAT – (EXPANSION AND CONTRACTION) – It is natural and common knowledge that heat causes materials like metal, soil, glass, wood and CONCRETE to expand, contract, warp, melt, change shape, etc. This is a law dictated by nature and not Stone Age Manufacturing Inc. Exterior veneers compatible with concrete and masonry can be applied directly to any Stone Age appliance and will adhere and be structurally sound. If your Stone Age product expands and contracts it can cause hairline cracks in the exterior veneer of the appliance that are cosmetic and not structural failures of the Stone Age appliance. Expansion cracks most commonly appear in the mortar joints, normally in the area closest to where the fire is being burned and is the area that endures the highest heat. If these visible expansion cracks in the exterior veneer are unacceptable a barrier around the appliance should be created to allow the product to expand and contract that separates the exterior veneer from direct adhesion to the Stone Age manufactured appliance. Some common trade techniques used to create a shell are (A) cover the burn appliance in a thermal ceramic blanket wrapped with metal lathe that's scratch coated with Stone Age All Purpose Ready-Mix or equivalent heat tolerant cement and adhere finish veneer to the outer shell, (B) Encapsulate the appliance with concrete block leaving a minimum 2" dead air space between the appliance and concrete block shell. Be sure no materials get lodged between the interior of the block shell and exterior of the appliance. Exterior veneer can be applied to the outside of the block shell, (C) Full bed depth veneer stone or brick.

Some of these methods can also be used to alter the profile of the appliance if a custom design is specified or preferred.

#2 – CONCRETE & HEAT – (MOISTURE) - Concrete, moisture and heat do not work well together. Heat and moisture create steam and steam has the ability to move the concrete and an overabundance can cause damage. Concrete will absorb moisture from rain, snow, human watering and moist humid air. Never use a Stone Age burn appliance that does not have the exterior veneer applied and that has not set for 28 days after construction to give the mortar joints and exterior veneer ample time to cure. Stone Age recommends water proofing the exterior veneer of any product for the best preservation and longest lifespan of the product. Exterior veneer materials vary greatly in composition with some being much more absorbent than others. Understand the type of veneer materials you are using on your particular project. Always use a spark arrester/chimney cap on all fireplaces and pizza ovens and cover fire-pits when not in use, leaving weep holes and sufficient drainage as necessary. If a Stone Age appliance is going to be used after being exposed to moisture start a small fire and heat appliance up slowly and avoid large fires until the unit has had ample opportunity to dry from the inside out. This may take several hours depending on the amount of moisture the unit has been exposed to so when you intend to use your appliance plan accordingly. When properly maintained, concrete will withstand the harshest of climates, it will not rust and offers the longest lifespan of any material available for outdoor living environments.

#3 – CONCRETE - (THERMAL CYCLING) - Thermal cycling is a process of alternatively cooling and heating material. This enhances the strength and performance of materials thereby improving longevity and stress bearing qualities. This process induces what is known as molecular reorganization, optimizing a material's molecular structure and making it denser and more uniform. This process involves heating the part repeatedly, and then allowing it to return to ambient temperature. Extreme heat will almost

always create hairline cracks in any refractory material but the proprietary mix design Stone Age uses allows its appliances to withstand this heating and cooling process without experiencing thermal breakdown or structural failure and will actually gain strength and density each time it is fired. Standard cement and concrete mixtures will not withstand this process and will experience thermal breakdown and structural failure. In certain scenarios standard cement mixtures can even explode because the expansion process happens so quickly. Each time standard cement is heated above a certain temperature it is stressed and as it begins to cool back down to ambient temperature it is weakened and over a series of uses it will eventually experience failure. Standard cement mixtures not exposed to extreme heat naturally gain strength for a period of years and reaches a peak then begins to experience a decline in strength. This peak and decline vary greatly depending on a multitude of variables and influencing factors but still have a long life expectancy when not exposed to intense heat.

#4 – CONCRETE & HEAT – (COLD TEMPERATURES) - When the ambient temperature of a Stone Age appliance is 40 degrees and below special consideration should be taken when preparing to use the appliance. Heating a concrete appliance to quickly no matter what the ambient temperature is can cause damage but is much more likely when the appliance is below 40 degrees. The colder the ambient temperature of the appliance the more cautious you should be when building a fire. This is not to say that you cannot use your Stone Age appliance in cold temperatures. It is recommended that you build a small fire in the beginning and heat the appliance slowly until it reaches normal operating temperatures. This may take several hours depending on the ambient temperature so when you plan to use your appliance plan accordingly. Once an appliance has reached normal operating temperatures it can be used for multiple hours or days.

#5 – CONCRETE & HEAT – (OVERFIRING & ACCELERANTS & EXTINGUISHING) - Even though the Stone Age appliances are made of heat tolerant refractory materials they can be damaged from over firing. All materials have their limitations on the amount of heat they can endure and can be damaged if they are operated beyond those limitations. Always burn a fire in the center of an appliance on a log grate and away from the walls. Always read the full owner's manual of the appliance or appliances you intend to use as the firing requirements may vary depending on the appliance. To prevent over firing, never burn more wood at one time than the log grate is capable of holding. Use common sense. Never use accelerants like gasoline, alcohol, oil or any liquid that could be absorbed into the concrete to light or enhance the size of a fire. This could severely damage the Stone Age appliance and also creates the risk of an explosion and bodily harm. Never extinguish a fire using water, liquid or any suppressant that would create an immediate temperature contrast. Never leave a fire unattended and once your finished using the appliance always make sure the fire has gone out and that there is a cover or screen in place to contain the coals and ashes from unintentionally escaping the burn chamber of the appliance.

Stone Age Manufactured pre-engineered refractory concrete products have superior structural strength and durability advantages over competitive pre-engineered products or scratch built masonry. When properly built, concrete masonry should offer a longer life expectancy than your home and will add more value to your home than inferior lower quality products available in the market place. Masonry construction methods have been in use for centuries and offer the consumer the highest quality and longest lifespan of products available. Stone Age Manufacturing Inc.'s products are an evolution of

modern scratch build masonry methods that offer the consumer the latest advancements in masonry technology.

This document is intended to educate consumers about the nature of masonry and concrete products and the expectations you should have with the finished product incorporated into your personal project. For questions or further explanation of any part of this document please contact Stone Age Manufacturing Inc. directly.