

Fire Resistance Details w' Video

Ai received the following question about the fire resistance details for an American Ingenuity concrete dome versus a Monolithic concrete dome. The question from Greg Legg is in regards to the YouTube Video posted below about a fire and concrete domes. "I'm looking at the differences between your domes and the monolithic dome in the video about a fast moving fire and wondering how important it is to water down the exterior if a fire is approaching. In the video the owner mentions that he was surprised the pvc exterior wasn't damaged during the fire. Not sure what he meant by pvc exterior but made me wonder.



I live in an area where the only water source is water wells using an electric pumps for pressure. During fires it's very easy to lose power from downed lines. If that was to happen there is no way I could hose down the exterior of the house. How would your exterior be any different in this situation?"

Greg Legg

Scroll down for YouTube Video

The American Ingenuity (Ai) dome is designed to be as safe and fireproof as possible, the dome exterior is entirely noncombustible concrete. The Ai dome exterior is fire resistant concrete reinforced with galvanized steel mesh that does not require watering down as the homeowner did for the PVC covering on the Monolithic Dome.

On site during the Ai dome panel assembly, the exterior seam areas between the prefab concreted panels consist of overlapped locked steel mesh filled with fiber concrete. The Ai dome shell is built by installing Ai's prefabricated concreted panels onto a temporary wooden rib system. After all the seam areas, entryways and dormers are concreted, the dome is self supporting and the temporary wooden system is removed. The exterior concrete is primed and painted. **There is no wood in or on the Ai dome shell to burn or to interrupt the insulation. There are no shingles to burn. The exterior concrete on the American Ingenuity Dome has no exposed PVC membrane or exterior material that needs to be watered down.**

Monolithic Dome Assembly per their website: In the monolithic dome assembly an Air Form is inflated, polyurethane foam is applied to the interior surface of the Airform, steel reinforcing rebar is attached to the foam using a specially engineered layout of hoop (horizontal) and vertical steel rebar and then Shotcrete – a special spray mix of concrete – is applied to the interior surface of the dome. The steel rebar is embedded in the concrete and then about three inches of shotcrete is applied. This method results in an exposed exterior PVC membrane or exterior material which was watered down in the dome video.

All the panels in the American Ingenuity dome kit come to your job site premarked with numbers and letters to match the **Nomenclature blueprint in the Building Plans**. An Assembly Manual is shipped with each Ai dome kit. The kit is assembled

by the owner builder or the owner hires a builder. If desired a [Kit Assembly Consultant](#) can be hired to supervise the workers during kit assembly. The [process of stacking the panels](#), overlapping/locking the steel mesh of adjacent panels and filling the seams with special fiber concrete, produces the structural components of the home, the finished concrete surface, installs the R28 insulation and all the dome shell 1/2" drywall.

What are the American Ingenuity triangular and rectangular shaped [prefab panels](#) made from? Center core of 7" Expanded Polystyrene R-28 Insulation (not Styrofoam!), exterior is $\frac{3}{4}$ " thick concrete reinforced with galvanized steel mesh with interior of 1/2" Georgia-Pacific DensArmor Plus High-Performance gypsum drywall board (which is moisture resistant, mold resistant gypsum and noncombustible).

After the mesh is overlapped and locked between panels, special fiber concrete mixed on site is hand trowelled in the seam areas in two applications – bonding agent is applied between the two layers. The seam areas are about 3" deep by 5" wide with average of 2" thick concrete.

To view examples of stock floor plan layouts for each of the eight dome kits, please click on [Geodesic Dome Home Plans](#). To view Sale pricing on the kit and the building plans, click on [Sale](#).