

A.2 POLYSTEEL FORMS PRODUCE STRONGER CONCRETE

PolySteel Forms provide the ideal conditions for curing concrete. This allows the concrete to achieve the greatest possible strength, creating a PolySteel wall that significantly out performs traditional construction methods.

Concrete is made possible as a result of the chemical reaction of cement and water. This reaction, called hydration, requires time and favorable conditions of temperature and moisture. Water is required initially to begin the process by making a cement paste. Once the compound is formed, hydration starts and continues as long as moisture remains. The process stops when moisture is removed by heat and evaporation, but can be restarted again by adding moisture, even though this is undesirable.

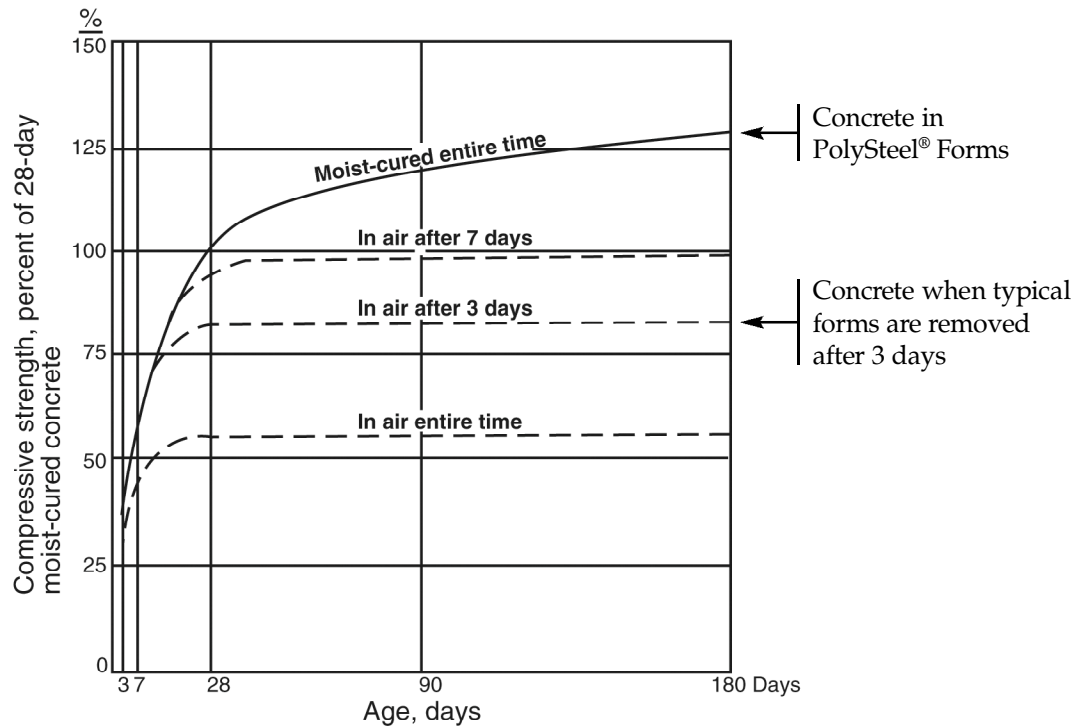
The chart in [Figure 1.1](#) shows the compressive strength that is formed under various conditions of hydration. When the hydration process is controlled for the first 28 days, that is, when moisture is continually available in the mass, 100 percent of the designed strength of the concrete is achieved. This is the standard applied to most concrete mix designs, e.g., a "2,500 psi concrete mix" is expected to achieve this strength when it is cured under these conditions for 28 days. If hydration is allowed to continue beyond that point, the strength of the concrete actually continues to increase, exceeding 125 percent of its design strength after 180 days. However, notice also in the graph that the full strength of the concrete design mix is not obtained if improper methods of curing are used.

This chemical action in the concrete mix can be sustained by:

1. Keeping the concrete wet 24 hours a day, using water and hoses.
2. Applying a curing compound or a plastic cover over the concrete, trapping the moisture within.
3. Covering the concrete with burlap, which is kept constantly wet.
4. Covering the concrete with fresh hay, which is kept wet. This method also aids against freezing.
5. Forming the concrete with PolySteel.

A.2 POLYSTEEL FORMS PRODUCE STRONGER CONCRETE (continued)

Figure 1.1 HYDRATION AT WORK.
(Courtesy of Portland Cement Association)



As you can see, the self-contained environment created by the PolySteel Form provides the ideal conditions for hydration to continue up to, and beyond, 180 days. This creates a compressive strength in the concrete that exceeds 125 percent of the designed strength provided by conventional concrete curing methods, and as much as 50% stronger than concrete placed in conventional formwork.