

The Value of Cold-formed Steel

In today's market, there are many types of framing materials, yet one material stands out as superior: Cold-formed steel (CFS). The value of CFS is found in its use of top-quality alloys and corrosion-resistant finishes, thus creating a strong, durable product, which outlasts most other building materials.



COST-SAVINGS – There are many ways to save by using CFS, such as building, energy, and insurance costs. Cost-savings are realized through shorter construction cycles with panelized CFS methods and less waste than other building materials. The Metal Roofing Alliance states, customers save up to 40% in annual energy costs. Cool-metal roofing uses a reflective solar coating designed to minimize heat buildup and reduce air conditioning cost.¹ Fire risk is also minimized by using CFS to reduce builder's insurance costs incurred by construction companies, which can be passed onto building owners.



DEFYING THE ELEMENTS – Extreme weather can wreak havoc on most traditional building materials; however, steel has a unique ability to defy the elements.

The Metal Roofing Alliance suggests that steel is “practically impervious to a wide-range of extreme climate conditions.”² Take fire for instance, the melting point of cold-formed steel compared to wood is a ratio of about 27:4, thus, “the melting point of steel [is] approximately 2700°F, which means that it will not melt in a building fire, where temperatures average 1000°F and almost never exceed 1800°F. And while the yield strength of steel is reduced at elevated temperatures, modern building codes and fire protection methods take this into account.”³

DURABILITY – The durability of steel can be attributed to its chemical composition and inorganic matter, which resists termites, pests mold and rot. Protective layers such as zinc and aluminum-zinc (AL-ZN) coatings add to the long-term durability of steel, which decreases decay and improves overall lifespan to well beyond standard building materials.



Wood post shown with pest damage.

In addition, “of all commonly used construction materials, steel has the highest strength-to-weight ratio. When cold-formed steel sheet is formed into a C-shape, like a stud, the bends act as stiffeners and increase the strength of the steel sheet dramatically, providing a strength-to-weight ratio that is up to seven times greater than that of dimensional lumber.”⁴



Architects and engineers like the consistency of steel because it doesn't have the same issues with expansion and contraction as wood, or other materials, which can lead to cracks, warps, and other defects in both internal and external finishes. Architects and designers also enjoy the flexibility of CFS as it can be used in longer spans and provides more creativity in the design process.



SUSTAINABILITY – The Steel Network reports, “65 million tons of steel are recycled annually, and steel coils used by manufacturers typically contain a minimum of 25 percent recycled material.”² Steel is 100% recyclable⁴ and can be recycled an unlimited number of times.

Demand for greater transparency into green building options has led architects and builders alike to recognize the direction in which the green building envelope has been heading. With the advent of the U.S. Green Building Council (USGBC) and other green building programs, incentives, such as LEED and the Living Building Challenge have defined credits to be earned for green building ratings for CFS projects.



VERSATILITY. Steel is a versatile material. Architects looking to make bold statements have been seen all over the world using steel in their designs. As an everyday use, CFS can easily complement any building project.

When choosing to build, or rebuild, the value of Cold-formed steel is more than an aesthetic decision.

SOURCES:

1. [MRA \(Metal Roofing Alliance\), Metal Roofing Benefits](#)
2. [The Steel Network, 5 Reasons Cold Formed Steel is Better than Wood for Mid-Rise Construction](#)
3. [SFAIA \(Steel Framing Industry Association\), Unparalleled Fire Safety](#)
4. [SFAIA \(Steel Framing Industry Association\), Strong and Resilient](#)