

Sustainable Structural Steel Material Attributes

- Recycled content of 93.3%, the highest of any building framing material
- Recycling rate of 98%, also the highest of any building framing material
- High strength-to-weight ratio coupled with a low carbon footprint (0.73 tons of CO₂ per ton of steel) results in an overall reduction of the embodied carbon of a typical structure as compared to buildings constructed with other framing materials
- Significant potential for material reuse
- While other products can only be recycled into a lower quality product (down-cycled), steel can be recycled over and over again and remade into new members without any loss of quality (multi-cycled). This makes it the first and only true cradle-to-cradle building framing material
- Superior water resource management: 95% water recycling rate with no external discharges, resulting in a net consumption of only 70 gallons per ton

Sustainable Manufacturing Progress

- Increased productivity by a factor of 24 since 1980 (reduced labor hours per ton from 12 to 0.5)
- Increased material strength by 40% since 1990 (36 ksi to 50 ksi)
- Decreased energy use by 67% since 1980
- Decreased carbon footprint (per ton) by 47% since 1990
- Decreased energy intensity (per ton) by 29% since 1990
- Decreased greenhouse gas emissions (per ton) by 45% since 1975
- Exceeded Kyoto Protocol improvement goals by 240%
- Earned an EPA best industry performance designation

Sustainable Fabrication and Construction

- Structural steel is fabricated regionally in off-site facilities and erected on-site
- Minimal waste is generated at fabrication facilities and construction sites
- Any waste generated is fully recyclable and resalable
- Centralized, off-site fabrication minimizes employee travel
- Modern fabrication technology provides greater precision, productivity, and safety
- Steel members are efficiently transported by truck, rail, or barge

Sustainable Projects

- Steel buildings are easily deconstructed, enabling reuse of the steel members
- Minimal, if any, ongoing maintenance required
- Steel-framed buildings are highly durable and have a long life span
- Steel framing allows easy integration of mechanical systems, resulting in low floor-to-floor heights, less building volume, and lower energy consumption
- Steel framing systems allow for large window areas, resulting in plentiful natural lighting, higher occupant comfort, and reduced electrical consumption
- Established, high demand for steel scrap ensures future reuse/recycling of a steel building frame

Sustainable Future

- As the electric utility grid becomes more renewable, the embodied carbon in structural steel will continue to decrease
- Research is under way on new production processes with the goal of carbon-neutral steel
- The global steel industry is working together as a global manufacturing community to address sustainability issues, including environmental emissions
- The structural steel industry is committed to a sustainable future, and structural steel will remain *the* sustainable building material for generations to come

