



Light. Strong. Sustainable.
Steel is everything you need it to be.

STEEL SUSTAINABILITY IN THE AUTO MARKET



The North American steel industry continues to work to develop revolutionary new, advanced steel products for the automotive sector. Advanced high strength steels (AHSS) help auto manufacturers to reduce the mass of vehicles while maintaining safety standards — thereby increasing fuel economy and reducing tailpipe emissions. The use of current grades of AHSS can reduce a vehicle's structural weight by as much as 25 percent and can cut total life cycle CO₂ emissions by up to 15 percent more than any other automotive material. The added strength of AHSS allows automakers to deliver vital performance and safety benefits with lighter weight products, while lessening their overall environmental impact.

Automobiles are the most recycled consumer product. Each year the steel industry recycles more than 14 million tons of steel from end-of-life vehicles. This is equivalent to the steel required for nearly 13 million new automobiles. When comparing the amount of steel recycled from automobiles each year to the amount of steel used to produce new automobiles that same year, automobiles maintain a recycling rate of nearly 100 percent.

The life cycle assessment methodology looks at the total greenhouse gas emissions (GHGs) from all phases of a vehicle's life — from its manufacture through its disposal — and can help automakers make better decisions in the selection of

Steel's attributes, including its inherent durability and recyclability, make it vital to modern society. The North American steel industry is committed to manufacturing innovative products and implementing processes that achieve environmental, social and economic sustainability.

LIFE CYCLE ASSESSMENT (LCA)



- Material production can account for a significant portion of overall vehicle life cycle emissions.
- As fuel efficiency improves, production emissions become an even higher percentage of total vehicle emissions.
- Pound-for-pound, production of primary aluminum in North America emits four to five times more GHGs and requires seven times more energy to produce than steel.
- Current emissions for making steel in North America averages 1.9 kg of CO₂e/kg of material for steel versus 8.9 kg CO₂e/kg for aluminum.

materials for future cars and trucks. When one considers the total vehicle life cycle, steel is the most environmentally effective choice due to its relatively low energy and emissions during the manufacturing phase, significant mass reduction during the driving phase and full recyclability at the end of the vehicle's life.

A peer-reviewed study demonstrates the use of AHSS for automotive lightweighting results in an immediate and sustained decrease in GHG emissions, whereas the use of aluminum for lightweighting the same vehicle fleet results in a dramatic increase in overall GHG emissions lasting for several decades. According to the LCA study, lightweighting a studied vehicle fleet with AHSS results in savings of approximately 260 million metric tons of GHG emissions by 2053, when compared to not lightweighting at all. When comparing lightweighting with AHSS vs. lightweighting with aluminum, the use of AHSS results in even greater savings -- a total of 400 million metric tons of GHG emissions savings over the same time period through 2053.

Recent reporting has also suggested increased demand for aluminum sheet in North America has resulted in lower levels of recycling for aluminum cans and increased imports of aluminum sheet. Imported sheet likely has a higher level of life cycle GHG emissions than sheet produced in North America.

Another peer-reviewed study comparing hot-dip galvanized steel coils produced in North America, primarily used in the construction and automotive sectors, to the same product produced in China and shipped to the North American market found that the coil sourced from China results in nearly 50 percent higher GHG emissions.



Steel currently makes up about 54 percent weight of the average North American vehicle. We depend on automobiles to keep us and our family safe when we're behind the wheel. In addition to its strength, durability and dependability, steel is also the key to recycling your car at the end of its long life as it is continuously recyclable.



With more than 3,500 steel grades available, approximately 75 percent of modern steels have been developed in the past 20 years. And 50 percent of the more than 200 automotive sheet steel grades available have been developed in the past 20 years! These products can help the automotive industry lightweight vehicles thus reducing fuel consumption and can help reduce energy consumption and GHG emissions throughout the economy.

Steel Sustains. For more information on steel's sustainable properties and performance, please visit Steel.org/Sustainability or contact Tyler Hengen, AISI Director of Sustainability (thengen@steel.org).

