

FOR IMMEDIATE RELEASE

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American Galvanizers Association Releases Results of Environmental Life-Cycle Assessment Study on Hot-Dip Galvanized Steel

CENTENNIAL, CO – The American Galvanizers Association (AGA) in conjunction with the International Zinc Association (IZA) have completed a life-cycle assessment (LCA) study for hot-dip galvanized steel. Life-cycle assessment is a standardized scientific method for the systematic analysis of all mass and energy flows as well as environmental impacts attributed to a product system, from raw material acquisition to end-of-life management. LCA is emerging as specifiers’ preferred objective and measurable indicator of a product or material’s greenness.

LCA accounts for not only the energy and material inputs and emission outputs during production of a material, but also the impacts while in use and at the end-of life. Because many products can contribute as much or more environmental impact after production, an LCA provides a more complete measurement of a product’s sustainability. An LCA not only benchmarks the current impact of a particular product, but can also highlight areas for improvement to reduce the environmental impact in the future.

The AGA and IZA collected worldwide data from hot-dip galvanizers and zinc producers and hired two renowned environmental firms, Five Winds International and PE International to perform the study. To build the foundation for the LCA, first the firms conducted three life-cycle inventories (LCIs) on steel production, utilizing published environmental data from the GaBi database; zinc smelting, and the hot-dip galvanizing process itself. Life-Cycle Inventory (LCI) is the study and measurement of the material flows, energy flows, and environmental releases for the production of a defined amount of a product. Combining the three LCI’s, they were able to establish the environmental impact of producing hot-dip galvanized steel (see table).

Production Phase	Primary Energy Use^a	Global Warming Potential (GWP) (CO₂ equiv.)	Acidification Potential (AP) (SO₂ equiv.)	Photo Chemical Ozone Creation Potential (POCP) (ethene equiv.)
1 kg of HDG Steel	25.9 MJ	1.801 kg	0.00615 kg	0.000824 kg

^a 10⁶ Joules (unit of energy)

With the production impact defined, Five Winds and PE International began to study the environmental impact of hot-dip galvanized steel during use and the end-of-life management. Hot-dip galvanized steel is somewhat unique in that it lasts for 70 years or more without maintenance, meaning no additional impact is accrued during the use phase. Additionally, because both zinc and steel are 100% recyclable without the loss of any properties, there is also no additional impact at the end-of-life. In fact, because of the recyclability of the product, hot-dip galvanized steel actually receives an energy credit at the end-of-life. Therefore, the total impact of hot-dip galvanized steel is isolated to the production phase, and the total LCA values mirror the production phase, with the exception of the energy credit.

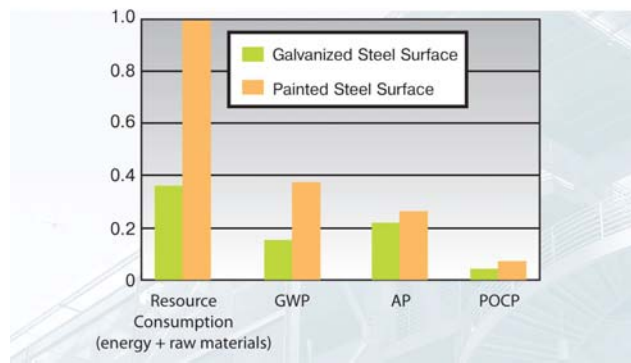
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Complete Life-Cycle	Primary Energy Use ^a	Global Warming Potential (GWP) (CO ₂ equiv.)	Acidification Potential (AP) (SO ₂ equiv.)	Photo Chemical Ozone Creation Potential (POCP) (ethene equiv.)
1 kg of HDG Steel	17.3 MJ	1.801 kg	0.00615 kg	0.000824 kg

^aComplete life-cycle energy use reflects production, use, and end-of-life credit

In addition to the LCA study, the AGA has also released two LCA case studies comparing the environmental impact of hot-dip galvanizing and paint. The case studies demonstrate that although the steel makes up the majority of both products, the coating plays a significant role in the environmental impact of the structure. Additionally, the side-by-side comparisons highlight the environmental impact of continual maintenance of paint, which significantly increase over time.

Comparison of Hot-Dip Galvanizing & Paint for Four Environmental Impact Factors



The AGA has published the results of the new LCA study as well as the two environmental case studies in a new comprehensive publication and continuing education seminar. The publication, *Hot-Dip Galvanizing for Sustainable Design*, is available for free on the AGA website (www.galvanizeit.org) to download in PDF or you can request a complimentary printed copy. For more information about the new publication or to request a free printed copy, please email marketing@galvanizeit.org. The free continuing education seminar, *Hot-Dip Galvanizing & Sustainable Development*, has been approved by the American Institute of Architects (AIA) and the National Council of Examiners for Engineering and Surveying (NCEES) for sustainable design (SD) or health, safety, and welfare (HSW) credits. To learn more about the seminar or request a free lunch-and-learn at your office, visit www.galvanizeit.org/seminar.

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The American Galvanizers Association (AGA), headquartered in Centennial, Colo., is a not-for-profit trade association dedicated to serving the needs of specifiers, architects, engineers, contractors, and fabricators throughout North America. Since 1933, the AGA has provided information on the most innovative applications and state-of-the-art technological developments in hot-dip galvanizing for corrosion protection. Created to educate and train in the specification and use of hot-dip galvanized steel, the AGA maintains a large technical library, distributes numerous industry publications, offers free educational seminars, and provides toll-free technical support to the specifying community. For more information about the AGA, please visit www.galvanizeit.org.

With years of technical experience and expertise, the AGA staff is willing and able to provide informative, custom articles for your publication, upon request. Please contact the AGA if you would like a full article on the LCA study or another topic.