

AUTO ALUMINUM USE TO AGGRESSIVELY ACCELERATE



Automakers are accelerating their shift to aluminum away from other materials for new car and light truck construction, as they seek to safely and cost-effectively lower the weight of vehicles and provide consumers with the fuel efficient vehicles they demand. According to a new survey of North American automakers conducted by Ducker Worldwide, automakers will increase their use of aluminum from 327 pounds in 2009 to 550 pounds in 2025; doubling aluminum's percent of vehicle curb weight from 8 to 16 percent.

New, stringent federal fuel economy regulations, coupled with increasing consumer demand for more fuel efficient vehicles, is leading automakers to move quickly with a total rethinking of vehicle design as they also push ahead with alternate powertrains, new technologies and advanced

materials. In terms of boosting fuel economy and cutting tailpipe emissions, aluminum offers automakers the fastest, safest, most environmentally-friendly and cost-effective way to get the job done. Low-density aluminum is a game-changer and automakers are taking full advantage of all the consumer benefits it provides.

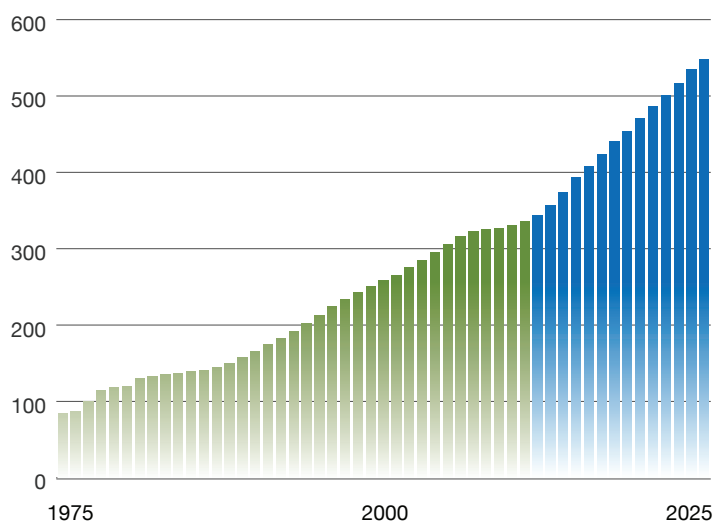
Following are the key highlights from the survey of automakers commissioned by the Aluminum Association's Aluminum Transportation Group:

ALUMINUM HOODS, TRUNKS AND BUMPERS DRIVE GROWTH

- ▶ Currently the leading material in powertrain and wheel applications, aluminum is quickly gaining market share in hoods, trunks, doors and bumpers.
- ▶ Body, bumper and closure content grew by 58 percent from 2009 to 2012.
- ▶ On 2012 vehicles, 30 percent of all hoods will be aluminum; saving a total of 100 million pounds of vehicle weight across the entire fleet. Twenty percent of all bumpers will also be aluminum.
- ▶ Future growth in auto aluminum usage will be primarily driven by applications being converted from steel. For example, the trend line for aluminum hood penetration predicts a minimum share for aluminum of 41 percent by 2017 and 53 percent by 2025.

Aluminum Pounds per Light Vehicle

-History and Forecast-



LEADERS IN ALUMINUM USAGE

- ▶ General Motors is the aluminum content leader at 366 pounds per vehicle in 2012.
- ▶ Honda leads aluminum content as a percent of curb weight at 10.7 percent in 2012.
- ▶ The latest model vehicles boasting above average aluminum content (more than 9 percent of vehicle curb weight) include the Chevrolet Malibu, Cadillac CTS, Ford Explorer, Ford Focus, Ford Escape, Lincoln MKZ, Chrysler C sedan, Honda Civic/CR-V, Honda Accord, Nissan Altima, Toyota Avalon and Fiat 500.
- ▶ On a segment basis, the survey points to future growth areas in mid-size and large sedans as well as full-size full frame vehicles (i.e. light-duty pick-up trucks) mainly due to the comfort, safety and functionality requirements expected from the customer.

COST COMPETITIVE WEIGHT SAVINGS

- ▶ As automakers apply aluminum to reduce the weight of their vehicles, the focus is increasingly toward the system cost, which allows aluminum to compete successfully with other materials because of the advantages it brings in primary and secondary weight savings, fuel savings, structural performance and design flexibility.

- ▶ Secondary cost savings that come from using auto aluminum can offset cost premiums helping make it a more cost-effective solution.
- ▶ Weight reduction with aluminum is one of the most cost effective weight reduction opportunities available to the automotive industry. By 2025, increased use of aluminum is projected to result in average vehicle weight reduction of 281 pounds at a net cost increase of \$0.70 per pound weight saved.

OTHER HIGHLIGHTS

- ▶ The average increase in aluminum content since 1975 has been seven pounds per year, per light vehicle.
- ▶ Automakers will, on average, seek to lower the weight of cars and light trucks by at least 10 percent by 2025.
- ▶ Market factors already in place are projected to push aluminum content to 400 pounds per vehicle in 2015/2016.

