

# Automotive Research

**SATS**

Consortium of 30 steel companies invested \$20M to “prove steel’s preeminence” ULSAB



Steel \$989/451lbs = \$2.20/lb



**Aluminum**



## Lean Design & Manufacturing



Made entirely from carbon fiber composites, General Motors' Ultralite body structure weighs only 420 pounds. The carbon fiber material is half the weight of aluminum -- yet has two times the stiffness. It also has one-quarter the density of steel with slightly better stiffness. However, the material cost alone for the Ultralite structure was approximately \$13,000 -- several times the cost of aluminum, steel or fiberglass.



**2 Piece (50+Parts)**  
**Material / Labor cost**  
**235 lb (ALCOA?)**