



# The new Audi A8

## Life Cycle Assessment



# Audi A8 – the life cycle assessment



Audi has compiled a detailed life cycle assessment for the new Audi A8. One of the bestselling models of the previous model series, the Audi A8 3.0 TDI quattro 193 kW tiptronic (fuel consumption combined: 6.0 – 5.7 l/100 km; CO<sub>2</sub> emissions combined: 157 – 149 g/km; hereinafter: predecessor), was compared with its counterpart in the new model series, the Audi A8 50 TDI quattro tiptronic (210 kW) (fuel consumption combined: 5.8 – 5.6 l/100 km; CO<sub>2</sub> emissions combined: 152 – 145 g/km; hereinafter: new Audi A8).

With the new Audi A8\*\*, Audi has advanced from the aluminum space frame body to multi-material construction with the four materials aluminum, steel, magnesium and carbon-fiber reinforced polymers (see graphic on page 3), while the mild hybrid technology (MHEV, mild hybrid electric vehicle) represents another step in the systematic electrification of the drive systems.

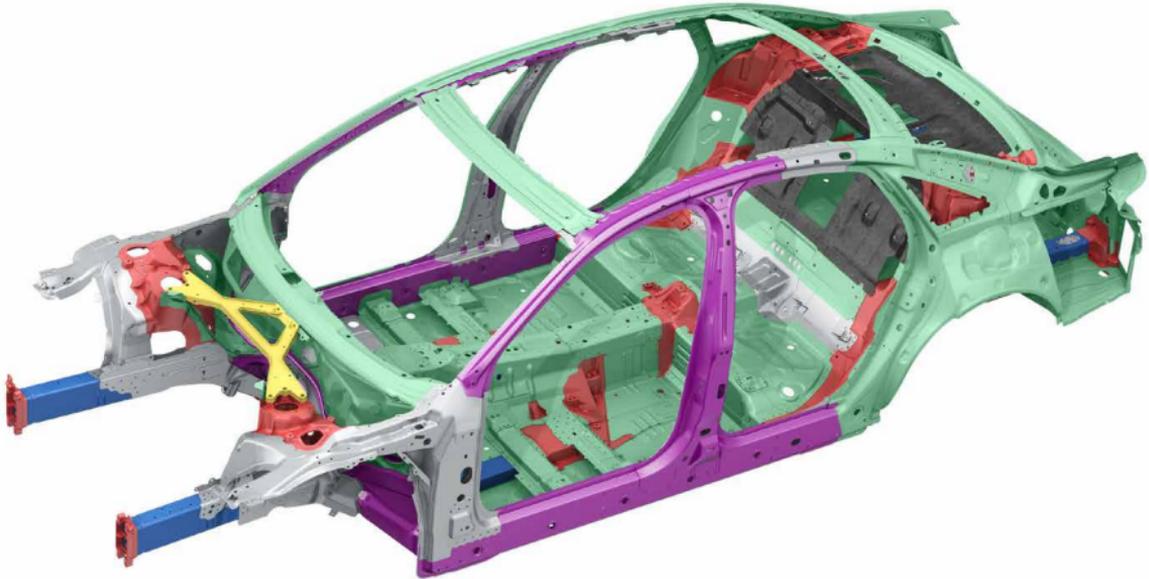
What effect the changes in the material mix of the body and the hybridization of the drive have on the life cycle assessment is described and explained in more detail on the following pages.

## Fuel consumption and emission values:

- \* Audi A8 3.0 TDI quattro 193 kW tiptronic (predecessor):  
fuel consumption combined: 6.0 – 5.7 l/100 km; CO<sub>2</sub> emissions combined: 157 – 149 g/km
- \*\* Audi A8 50 TDI quattro tiptronic (210 kW) (new Audi A8):  
fuel consumption combined: 5.8 – 5.6 l/100 km; CO<sub>2</sub> emissions combined: 152 – 145 g/km

Fuel consumption and CO<sub>2</sub> emission figures given in ranges depend on the tires / wheels used.

## The new Audi A8 – Multimaterial Audi space frame



■ Aluminum sheet

■ Ultra-high strength steel (hot-formed)

■ Magnesium

■ Aluminum section

■ Conventional steel

■ Aluminum castings

■ Carbon fiber-reinforced polymers (CFRP)

# Audi A8 – the materials

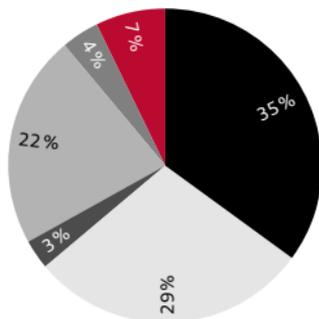
The materials that are used have a major influence on the results of the life cycle assessment. For example, more energy is consumed when producing polymer materials such as carbon-fiber-reinforced polymers (CFRP) or light metals such as aluminum and magnesium than for steel; this has the effect of increasing greenhouse gas emissions during their production phase.

The inventory of materials was determined for the models under examination and summarized according to VDA classification 231-106.

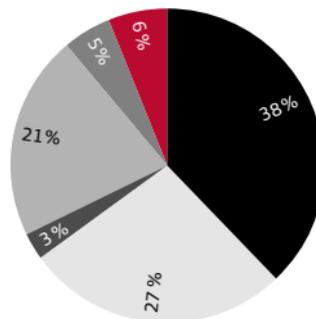
There have been several changes in the material composition between the two models considered. The proportion of steel and iron materials in the new Audi A8\*\* has increased by three percent. In turn, the proportion of light metals has been reduced by two percent. This is due primarily to the changes in the body, away from the pure aluminum space frame body on the predecessor\* to a body with multi-material construction on the new Audi A8\*\*. There was also a shift of one percent in each of three other material categories. Polymer materials and process polymers as well as the operating fluids have been reduced compared to the predecessor\*, but the proportion of other materials and electrics /electronics has increased. The higher proportion of electrics /electronics is mainly due to the MHEV system of the new Audi A8\*\*.

## Material inventory of the analyzed models

**Audi A8 3.0 TDI quattro 193 kW  
tiptronic (predecessor\*)**



**Audi A8 50 TDI quattro tiptronic  
(new Audi A8\*\*)**



- 1. Steel/Iron
- 2. Light metals
- 3. Non-ferrous
- 4. Special purpose metals
- 5. Polymers
- 6. Process polymers
- 7. Other materials
- 8. Electronics/electrics
- 9. Fuels and auxiliary means

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# Audi A8 – the results of the life cycle assessment

Over its entire life cycle, the new Audi A8\*\* causes one metric ton less of greenhouse gas emissions than its predecessor\*, which represents a reduction of around two percent.

In the production phase, greenhouse gas emissions from the new Audi A8\*\* are with approx. 12.5 metric tons of CO<sub>2</sub> equivalents slightly higher than these of the predecessor\*. These higher emissions, which are mainly caused by changes in the material mix and the MHEV system, have been amortized below 40,000 km (break-even-point). From this point, the greenhouse gas balance becomes more positive with every kilometer. Whereas the predecessor\* generated about 46.4 metric tons of CO<sub>2</sub> equivalents over the entire life cycle, the new Audi A8\*\* generates about 45.3 metric tons of greenhouse gases.

In the other environmental effect categories, the environmental impact of the new Audi A8\*\* was maintained at about the same level as the predecessor\*. Only in the case of ozone depletion potential was there a clear increase with 13 percent. In absolute terms, however, the emissions of both models are significantly lower than those of past life cycle assessments. This can be seen therefore as an improvement despite the increase compared to the predecessor\*.

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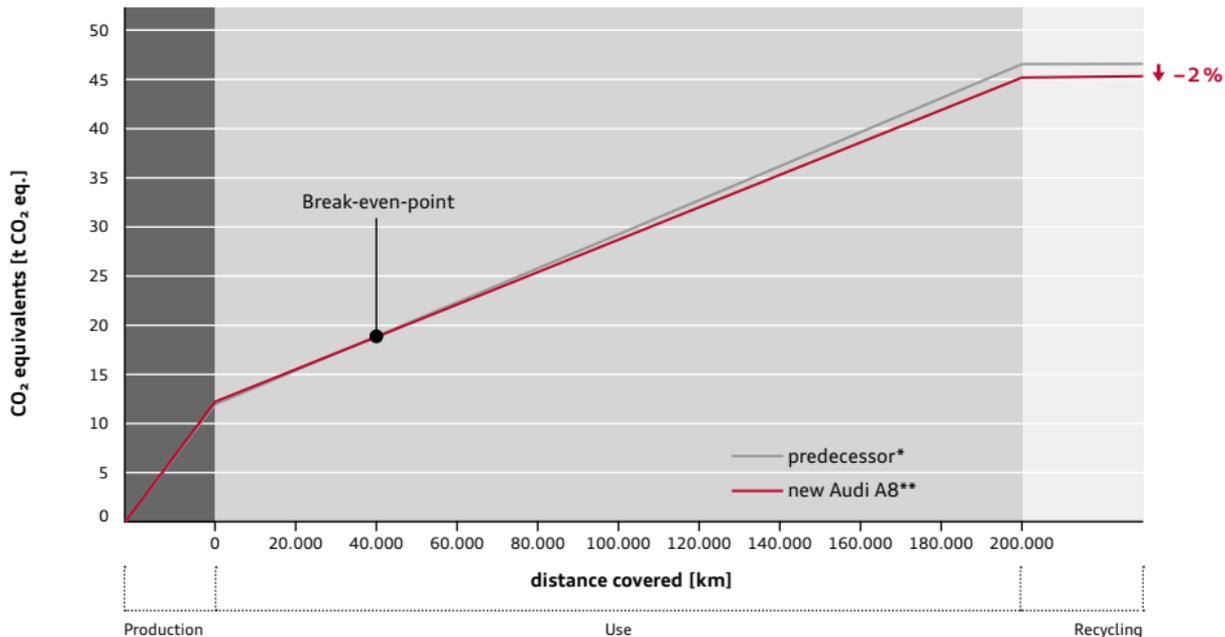
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## Results of all assessed effect categories

Greenhouse gas potential	- 2 %
Eutrophication potential	+ 1 %
Ozone depletion potential	+ 13 %
Photochemical ozone creation potential	+ 1 %
Versauerungspotenzial	+ 2 %

## Greenhouse gas emission values of the entire life cycle of the Audi A8



The additional burden during the production phase of the new Audi A8\*\* is amortized just under 40,000 kilometers.

# Conclusion

The public today tends to judge vehicles to a large extent by their fuel consumption. Here too, Audi looks one step ahead. Its life cycle assessment analyzes effects on the environment for the vehicle's entire lifetime.

The life cycle assessment that Audi has prepared for the new Audi A8\*\* shows that this model has also improved in the globally effective category of greenhouse gas potential. Despite many technological innovations, the emissions in the other environmental impact categories have also been maintained at a level similar to that of the predecessor\*. Efficient motors and hybridization play a significant role in compensating for higher emissions in the production phase. The advantages of hybridization, in particular, have their greatest impact in real-world driving, so that the effect there is even more pronounced.

These results demonstrate that Audi is on the right track towards sustainable and resource-conserving mobility.

## **Fuel consumption and emission values:**

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Further information on official fuel consumption figures and the official specific CO<sub>2</sub> emissions of new passenger cars can be found in the 'Guide on the fuel economy, CO<sub>2</sub> emissions and power consumption of all passenger car models', which is available free of charge at all sales dealerships and from DAT Deutsche Automobil Treuhand GmbH, Helmuth-Hirth-Str. 1, 73760 Ostfildern-Scharnhausen, Germany ([www.dat.de](http://www.dat.de))

This information brochure is intended for the German market. All details on the vehicles and technical data apply to the features of the German market.