

Data entry - Volume Limited Truck

1 Specification of the vehicle

Initial mass of vehicle - before ligh-weighing (kg)	7500
Energy consumption of vehicle per 100 km	
Litres Diesel	20
Percentage biofuel in gasoline or diesel	0%
primary energy for biofuel in MJ/l	20.1
life cycle GHG emissions for biofuel in kgCO2/l	1.46
Mass sensitive fuel consumption (%)	75%
Fuel savings (liter/100km/100kg)	0.200
Life time driving distance (km)	300,000

2 Specification of the Component

Component	All	
Mass of component (kg)	Aluminium 1,846	Steel 3,360
Portion of the component (%)		
...gained from aluminium sheet w/o continous heat treatment	0%	
...gained from aluminium sheet with continous heat treatment	40%	
...gained from extruded aluminium	30%	
...gained from forgings	0%	0%
...gained from castings	30%	30%
...produced from untreated flat mild steel		10%
...produced from hot-dip galvanized flat mild steel		40%
...produced from untreated long and special steel		0%
...produced from hot-dip galvanized long and special steel		20%
Percentage of indirect mass savings (%)	23%	

3 Production stage

Percentage of generated process scrap from forming and machining	20%	20%
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4 Recycled content of final component

Recycled content	Aluminium 50%	Steel 50%
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4 End-of-life stage

Recycling route	Aluminium Classical Shredding	Steel Classical Shredding
Total recycling rate	90%	90%

Results- Volume Limited Truck

1 Component information

Type of component	All	
Material option	Aluminium	Steel
Mass of the component (kg)	1846.00	3360.00
Mass difference (kg)		1514.00
Additional indirect savings		23%
Total mass savings aluminium vs. Steel (kg)		1862.22

2 Car information

Initial car mass - before light-weighting (kg)	7500
Life time driving distance (km)	300,000
Average fuel consumption (l/100km)	20
Average natural gas or LPG consumption (Nm ³ /100km)	0

Fraction of fuel consumption sensitive to the car mass (%)	75%
Fuel savings (litres/100km/100kg)	0.2

3 Recycling Information

Material option	Aluminium	Steel
Recycled content of component	50%	50%
End-of-life recycling rate of component	90%	90%
Credits for end-of-life recycling	40%	40%

4 Non-renewable primary energy for the full life cycle of the component (MJ)

	Aluminium	Steel	Indirect weight equivalent	Savings (incl. use stage)	Relative savings per kg Al (incl. use stage)
Primary metal supply	128,536	42,504	4,405	81,627	
Recycled metal supply	8,324	11,885	1,232	-4,793	
From ingot to finished product	44,550	37,109	1,303	6,138	
Use stage of the vehicle	NA	NA	NA	-449,501	-244
Total (cradle to gate)	181,410	91,498	6,940	-366,530	-199
Credits for end-of-life recycling	-96,230	-24,648	-2,554	-69,028	
Total (life cycle)	85,180	66,850	4,385	-435,557	-236

5 GHG emissions (carbon footprint) for the full life cycle of the component (kg CO₂-equiv.)

	Aluminium	Steel	Indirect weight equivalent	Savings (incl. use stage)	Relative savings per kg Al (incl. use stage)
Primary metal supply	9,548	3,395	352	5,801	
Recycled metal supply	557	742	77	-262	
From ingot to finished product	2,658	2,533	96	29	
Use stage of the vehicle	NA	NA	NA	-32,738	-18
Total (cradle to gate)	12,763	6,670	525	-27,170	-15
Credits for end-of-life recycling	-7,198	-2,136	-221	-4,840	
Total (life cycle)	5,565	4,534	304	-32,010	-17