



Life-cycle assessment

Két Márton Kft.

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ABOUT CARBON SOLUTIONS GLOBAL LTD.

Carbon Solutions Global Ltd. (CSG) is a full service carbon management and carbon offset services provider, with office locations in the United Kingdom, Hungary, Romania, Slovakia and China. We deliver carbon management solutions to corporate clients, public institutions, government ministries and individuals.

Our services include:

- a) Greenhouse gas audits for SMEs and large Enterprises.
- b) Reductions strategies within energy and carbon management.
- c) Online carbon footprint calculator for SMEs, (world’s first online business calculator validated by Bureau Veritas in April 2013)
- d) Carbon offsetting services, (with the most transparent online offsetting procedure on the OTC market validated by Bureau Veritas in April 2013.)
- e) Marketing & communications for low-carbon and carbon neutral companies
- f) Bespoke training to implement in-house carbon management programmes
- g) Consultancy within the field of sustainability

CSG has signed a contract of cooperation with Két Máté Ltd. . In the framework of this contract, CSG has undertaken to assess and offset operational carbon footprint of a roll cage production and shipment.

SURVEYING AND LIFE-CYCLE ASSESSMENT

This study presents the carbon emission of roll cage manufacture and shipping of Audi 100 S4 C4 No.: 2013001.

Boundary of the emission inventory

Material consumption covers all greenhouse gas emissions from the point of raw material extraction through to the point at which a finished good is manufactured and provided for sale. Commercial enterprises may therefore use these stages into their boundary to estimate the impact of goods they procure (the red/grey stages are not included).

The total GHG emissions of production of Roll cage are equivalent to 94,8787 kilogram of CO₂e plus the transport of it, what is equivalent to 0,3 ton of CO₂e. So the final value is **0,395 ton of CO₂e**.

Area	Emission Value
Roll cage	0.095 tone CO ₂ e
Transport	0.3 tone CO ₂ e
Total	0,395 tone CO₂e
Rounded	1 tone CO₂e

Results of roll cage

Material of roll cage	Calculated kg CO2	Literature
Slovak import steel tube 45x2,5	6,856	Worldsteel LCA Methodology Report
Slovak import steel tube 40x2	42,85	Worldsteel LCA Methodology Report
Steel tube transportation	0,2752	LCA Center, Greenhouse Gas Protocol
Hungarian plate Thk 3	0,919	Worldsteel LCA Methodology Report
Hungarian plate Thk 1,5	0,4595	Worldsteel LCA Methodology Report
Welding wire d 0,8	2,571	Worldsteel LCA Methodology Report
Energy consumption	40,948	Greenhouse Gas Protocol
TOTAL	94,8787	

Material name	Material quantity	Material type	GWP	Unit	Calculated kg CO2
Roll cage					
Slovak import steel tube 45x2,5	8000 g	Steel tube	0,857	kg CO2/ kg	6,856
Slovak import steel tube 40x2	50 000 g	Steel tube	0,857	kg CO2/ kg	42,85
Steel tube transportation	2,419435 MJ	Energy HUN	0,11374	kg CO2/ MJ	0,2752
Hungarian plate Thk 3	1 000 g	Steel plate	0,919	kg CO2/ kg	0,919
Hungarian plate Thk 1,5	500 g	Steel plate	0,919	kg CO2/ kg	0,4595
Welding wire d 0,8	3 000 g	Steel	0,857	kg CO2/ kg	2,571
Energy consumption	100 kW	Energy HUN	0,40948	kg CO2/ kWh	40,948
TOTAL			94,8787		

train transportation	Roll Cage
unit	260 km
MJ Energy consumption / kg cargo	0,041714
kg Steel	58
MJ Energy	2,419435

Transport of the car

The roll cage and the other components of race car are about 500 kilogram. These are transported circa 4000 kilometers away by truck. It means that direct and indirect greenhouse gas emissions of the transportation is 0,3 ton of CO₂e.

REFERENCES

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2012 Greenhouse Gas Protocol

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2011 Worldsteel Association– Life Cycle Assessment Methodology Report