Life Cycle Assessment (LCA)

ProTec 100 6 m

Product information

ProTec 100 is a narrow and light barrier with a small working width, made of concrete with a galvanized steel frame and rubber-coated steel feet. The construction combined with the low weight facilitates transport, which ensures quick installation. The barrier's containment capacity prevents road users from leaving the carriageway and colliding with oncoming traffic, while also providing safe working conditions on site.

*Table 1: Content declaration of **ProTec 100 6 m.***

Product components	Weight (kg)
Steel	166.6
Concrete	582
Rubber	1.4
Zinc coating	6.226
Total	756

LCA information

Declared unit: 1 piece of ProTec 100 6 m.

Reference service life: 30 years.

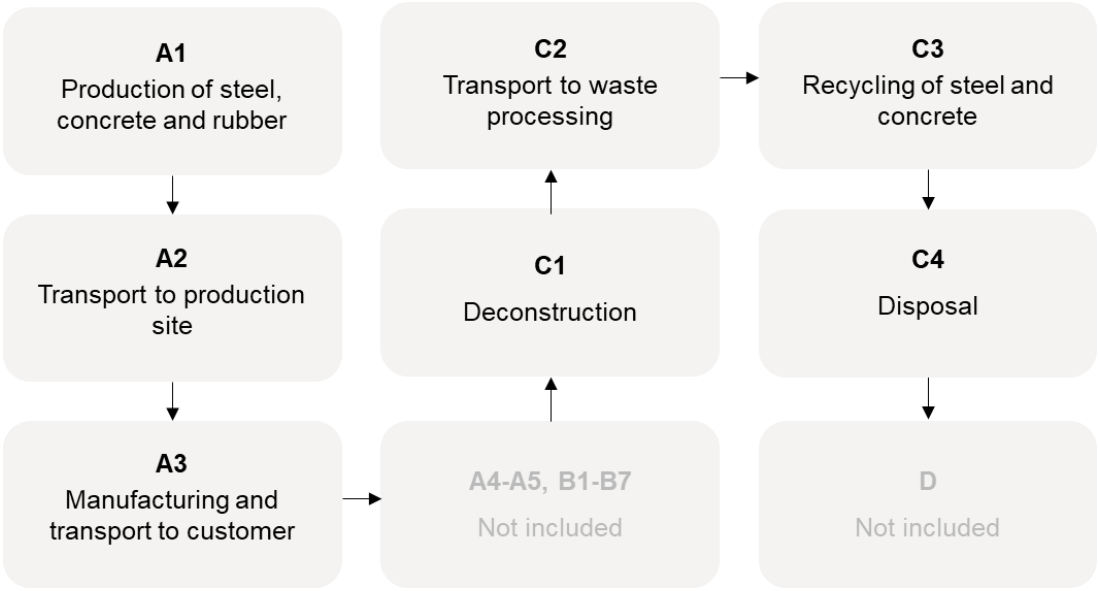
Geographical scope: Global raw material supply and Swedish sales.

Database and LCA software used: Ecoinvent v3 and SimaPro.

System boundaries

Description of system boundaries: The choice of system boundaries is based on the obligatory modules for construction products according to EN 15804, with the exception of module D.

Figure 1: Visualization of the system boundaries.



Production stage (A1-A3)

This stage includes the extraction of raw materials and the production of steel, concrete and rubber (A1), transportation to the factory gate and internal transport (A2), manufacturing of products and transport to customer (Ramuddens depots) (A3).

End-of-life stage (C1-C4)

At the end-of-life stage the barriers are sent to material recycling. This stage includes transportation of the discarded product to the recycling site (C2). It also includes the pre-treatment of concrete crushing and the recycling of concrete and steel (C3).

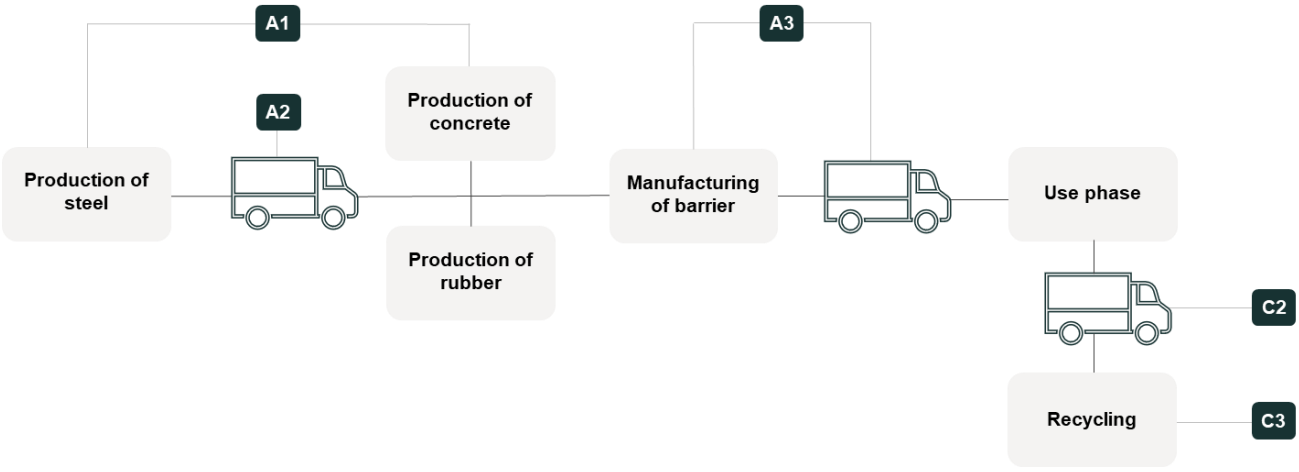
Main environmental impacts

ProTec 100 6 m

Figure 1: Global warming potential from 1 piece of ProTec 100 6 m.

Product stage			End-of-life stage				Beyond the system boundary
A1	A2	A3	C1	C2	C3	C4	D
4,27E+02	2,72E+01	8,45E+01	0,00E+00	7,84E+00	1,30E+01	0,00E+00	0,00E+00
Cradle to gate **539 kg CO_2 eq**			**20,84 kg CO_2 eq**				**0 kg CO_2 eq**
Cradle to grave **559,84 kg CO_2 eq**							**0 kg CO_2 eq**
Total global warming potential **559,84 kg CO_2 eq**							

Total Global Warming Potential 560 kg CO_2e



Total environmental impact

ProTec 100 6 m

Table 3: Environmental impacts from ProTec 100 6 m.

Indicator	Unit	A1-A3	C1	C2	C3	C4
Global warming potential – Fossil	kg CO2 eq	5,34E+02	0,00E+00	7,83E+00	1,30E+01	0,00E+00
Global warming potential – Biogenic	kg CO2 eq	4,26E+00	0,00E+00	4,19E-03	1,42E-03	0,00E+00
Global warming potential - Land use and LU change	kg CO2 eq	1,83E-01	0,00E+00	2,78E-03	1,13E-03	0,00E+00
Global warming potential - Total	kg CO2 eq	5,39E+02	0,00E+00	7,84E+00	1,30E+01	0,00E+00
Ozone depletion potential	kg CFC11 eq	4,86E-06	0,00E+00	1,63E-07	1,99E-07	0,00E+00
Acidification potential	mol H+ eq	3,80E+00	0,00E+00	1,85E-02	1,17E-01	0,00E+00
Eutrophication potential - Freshwater	kg P eq	1,97E-01	0,00E+00	5,51E-04	3,80E-04	0,00E+00
Eutrophication potential - Marine	kg N eq	4,81E-01	0,00E+00	4,85E-03	5,44E-02	0,00E+00
Eutrophication potential - Terrestrial	mol N eq	1,36E+01	0,00E+00	5,25E-02	5,96E-01	0,00E+00
Photochemical ozone formation	kg NMVOC eq	1,74E+00	0,00E+00	3,21E-02	1,78E-01	0,00E+00
Abiotic depletion potential - Minerals and metals	kg Sb eq	7,19E-03	0,00E+00	2,19E-05	4,64E-06	0,00E+00
Abiotic depletion potential - Fossil fuels	MJ	5,73E+03	0,00E+00	1,18E+02	1,70E+02	0,00E+00
Water deprevation potential	m3 depriv.	6,51E+01	0,00E+00	5,60E-01	3,68E-01	0,00E+00

"E" means exponent (10^x). For example, 5,34E+02 means $5,34*10^2$ and can be read as 534.