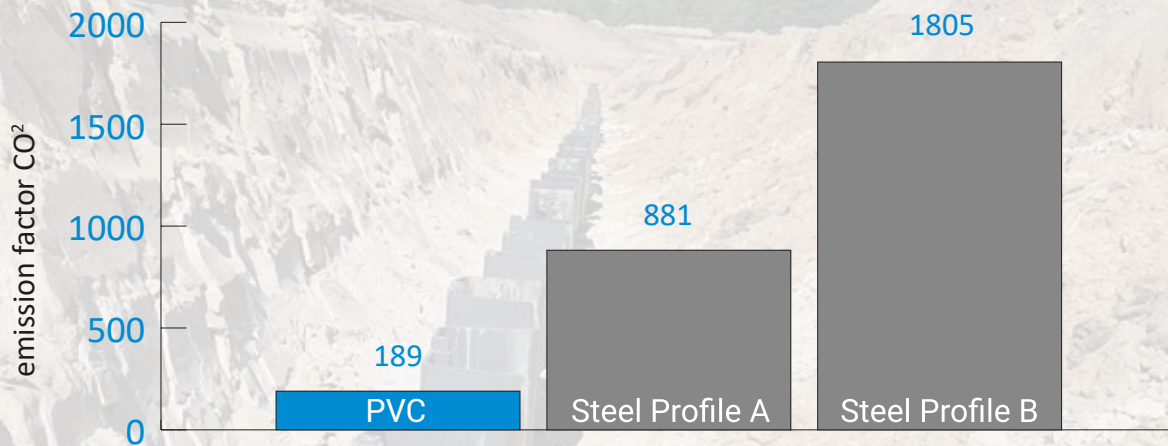


# Carbon Dioxide emissions: Steel vs PVC

Comparative assessment of the carbon footprint of retaining walls made of pvc and steel.



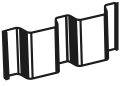



Taking into significantly the global warming potential, the environmental impact of steel profiles is considerably higher as compared to similar profiles made of PVC. It is shown in the values of the global warming indicators expressed as the Carbon Dioxide equivalent.



Carbon dioxide emissions: the life-cycle of constructions made of PVC sheet piling and steel piling.

## Functional unit:

A 50-year life cycle of a 1 km retention wall constructed along an embankment, made of 5 metre long profiles.

	<b>Profile</b>	PVC: GW-610/6,4	<b>Steel Profile A:</b> Thickness: 6.2 mm – for the least aggressive environment (5 mm + 2 · 0.6 mm <sup>3</sup> ) <sup>1</sup>	<b>Steel Profile B:</b> Thickness: 12.5 mm – for the most aggressive environment (5 mm + 2 · 3.75 mm <sup>3</sup> ) <sup>2</sup>
	<b>Weight of 1m<sup>2</sup>:</b>	15,92 kg	73,5 kg	150,7 kg
	<b>Weight per functional unit:</b>	79,6 t (15,92 kg/m <sup>2</sup> · 5 000 m <sup>2</sup> )	367,5 t (73,5 kg/m <sup>2</sup> · 5 000 m <sup>2</sup> )	753,5 t (150,7 kg/m <sup>2</sup> · 5 000 m <sup>2</sup> )
	<b>Place of manufacturing:</b>	Błaszki (Central Poland)	Cracow (Southern Poland)	Cracow (Southern Poland)
	<b>Distance from destination:</b>	1 240 km	1 050 km	1 050 km
	<b>Transport volume:</b>	83 580 t/km (79,6 t · 1 050 km)	455 770 t/km (367,5 t · 1 240 km),	934 340 t/km (753,5 t · 1 240 km)

1. Undisturbed natural soils (sand, silt, clay, schist, etc.) was assumed, in which one-sided loss of thickness due to corrosion within 50 years is 0.6 mm<sup>3</sup>.

2. Sea water in temperate climate in the zone of high attack (low water and splash zones) was assumed, where one-sided thickness loss due to corrosive impact during 50 years is 3.75 mm<sup>3</sup>.