

# LCA/Carbon footprint

# VOLVO ELECTRIC COMPACT EXCAVATORS

In this document, the LCA/ Carbon footprint results for Volvo Electric Compact Excavators are presented.

In the table below, carbon dioxide emissions from *cradle to gate* (raw materials processing, component manufacturing and machine assembly) for each excavator can be found.

Cradle to gate		Emissions [kg CO2-eq per machine]	
Model [Analysis year]	EC18 [2024]	ECR18 [2024]	
Upstream (Scope 3)	25 800	22 800	
Core (Scope 1, 2 & 3.3)	200	200	
Total:	26 000	23 000	

In the table below, *cradle to grave* (all steps from extraction of raw materials to recycling and end of life) emissions per hour used for the same electric excavator models are summarized. The use-phase of the electric compact excavators is calculated both based on the average electricity mix for EU and for renewable electricity.

Cradle to grave		Emissions [kg CO2-eq per operating hour]											
Model [Analysis year]		EC18 [2024*]						ECR18 [2024*]					
Emission factor (gCO2e/kWh)		290			20			290			20		
Operating hours/year	300	500	700	300	500	700	300	500	700	300	500	700	
Manufacturing	8,67	5,20	3,71	8,67	5,20	3,71	8,53	5,12	3,65	8,53	5,12	3,65	
Use (incl. outbound & service)	2,85	2,76	2,73	0,39	0,31	0,27	2,85	2,76	2,73	0,39	0,31	0,27	
End of Life *	0,09	0,05	0,04	0,09	0,05	0,04	0,09	0,05	0,04	0,09	0,05	0,04	
Total:	11,61	8,01	6,48	9,15	5,56	4,02	11,47	7,94	6,42	9,01	5,48	3,96	

Please note that the use phase calculation is presented in 3 different use scenarios depending on how many operating hours the machine is used/year.

To obtain a site-specific carbon footprint, specific studies on the site are required.

(\* Analyses from 2024 has a new End of Life calculation method following the Circular Footprint Formula (CFF))

## Comparing life cycle assessment results

There is currently no agreed industry standard methodology for construction equipment LCAs and assessments can be performed in various ways. Methodology choices, such as system boundaries and input data, can differ and influence the results. Therefore, LCAs conducted by different OEMs with different methodologies are not comparable.

## For more information

The methodology behind these calculations is presented in the document *“Methodology for Volvo CE’s LCA/carbon footprint calculations”* that can be obtained on our website [www.volvoce.com/global](http://www.volvoce.com/global). For other information, please contact your Volvo CE representative, who will put you in contact with the Volvo CE LCA team.

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In the table below, carbon dioxide emissions from *cradle to gate* (raw materials processing, component manufacturing and machine assembly) for each excavator can be found.

Cradle to gate		Emissions [kg CO2-eq per machine]	
Model	ECR25		
[Analysis year]	[2021]		
Upstream (Scope 3)	14 300 **		
Core (Scope 1, 2 & 3.3)	270		
Total:	14 570		

In the table below, *cradle to grave* (all steps from extraction of raw materials to recycling and end of life) emissions per hour used for the same electric excavator models are summarized. The use-phase of the electric compact excavators is calculated both based on the average electricity mix for EU and for renewable electricity.

Cradle to grave		Emissions [kg CO2-eq per operating hour]											
Model		ECR25						[2021]					
Emission factor (gCO2e/kWh)		290			20								
Operating hours/year	300	500	700	300	500	700							
Manufacturing	4,85	2,91	2,08	4,85	2,91	2,08							
Use (incl. outbound & service)	3,24	3,14	3,10	0,46	0,36	0,31							
End of Life *	0,21	0,13	0,09	0,21	0,13	0,09							
Total:	8,3	6,2	5,3	5,5	3,4	2,5							

Please note that the use phase calculation is presented in 3 different use scenarios depending on how many operating hours the machine is used/year.

To obtain a site-specific carbon footprint, specific studies on the site are required.

(\* Analyses from 2024 has a new End of Life calculation method following the Circular Footprint Formula (CFF))

(\*\* The producer of battery cells has used renewable electricity)

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