Aperam Austenitic Stainless Steel 304/304L Flat Bars

LCA Management Summary

5 December 2025

1 Declaration of General Information

This LCA management summary is intended for external communication by Aperam for their Austenitic Stainless Steel 304/304L Flat Bars 1D. This document is based on the EPD guidelines listed in prEN 17662:2021 and EN 15804:2012+A2:2019. It can be considered as a light version of a formal EPD.

Aperam Austenitic Stainless Steel 304/304L Flat Bars 1D grades are produced by Aperam at Aperam Châtelet, Aperam Genk, Aperam Gueugnon and Aperam Rodange. This LCA management summary covers the environmental impact of production at Aperam, transport and assembly as well as end-of-life processing. The results are listed per 1 ton of steel.

Demonstration of verification

Core PCR:	CEN standard EN 15804 2012 + A2 2019
Reference PCR:	prEN 17662:2021 – Execution of steel structures and aluminum structures – Environmental Product Declarations – Product category rules complementary to EN 15804 for Steel, Iron, and Aluminum structural products for use in construction works
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	Maria Agudelo, TAUW France Stef Waegemans, TAUW Belgium Julia Opdam, TAUW Netherlands
This declaration was independently verified in accordance with ISO 14025:2010:	Internal reviewer: Julia Opdam, TAUW Netherlands
Third party verifier:	This LCA has not been externally reviewed.

General information:

Manufacturer Name and Address:	Aperam 24-26 Boulevard d'Avranches 1160 Luxembourg Luxembourg
Declared Product(s)	Aperam Austenitic Stainless Steel 304/304L Flat Bars 1D
Description of declared product(s)	Use, main components and materials
Site(s) for which this EPD is applicable	Aperam Châtelet, Aperam Genk, Aperam Gueugnon, Aperam Rodange
Declared unit:	1 ton stainless-steel including end-of life processing
EPD program and program operator name	Not applicable
Market(s) of applicability	Europe
Date of issue	2-12-2025 (LCA management summary without external verification)
Period of validity	5 years
EPD type	Product specific
EPD scope	Cradle to gate with options (End of life and Module D)
Year(s) of reported primary data	2023
LCA software and version number	SimaPro 10.2
LCI database(s) and version number	EcoInvent 3.10 (2024)
LCIA methodology and version number	Bepalingsmethode 'set 2' & param, EF3.1 (NMD 3.9) V1.01 / MKI single score calculation method[1]
Limitations	The environmental impact results of steel products in this document are based on a declared unit and therefore do not provide sufficient information to establish comparisons. The results shall not be used for comparisons without knowledge of how the physical properties of the steel product impact the precise function at the construction level. The environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Environmental declarations from different programs (ISO 14025) may not be comparable.

[1] The following substances were not included in the impact category "Resource use, fossil" in the calculation method. They were added manually with the characterization factor included in their names (e.g. a characterisation factor a 36 MJ/m³ for "Gas, natural, 36 MJ per m3") and a characterisation factor of 1 MJ/MJ for "Energy, unspecified"

-Energy, unspecified
-Gas, natural, 36 MJ per m3
-Gas, mine, off-gas, process, coal mining, 36 MJ per m3
-Uranium oxide, 332 GJ per kg, in ore
-Uranium ore, 1.11 GJ per kg
-Oil, crude, 43.4 MJ per kg

2 Declaration of Environmental Parameters derived from LCA

The table below indicates which phases of the product's lifecycle have been included in the LCA. The following page lists the results for the Flat Bars grades. The results are listed per 1 ton of steel.

Declared product stages for Austenitic Stainless Steel 304/304L Flat Bars 1D (X: stage taken into account, ND: Not declared)

Production phase				Construction phase		Use phase					End of life phase				Beyond system boundary
Module:	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	D
	Raw material extraction	Transport	Production/manufacturing	Transport	Construction	Use	Maintenance	Replacement	Repair	Refurbishment	De-construction Demolition	Transport	Waste processing	Disposal	Reuse, recovery, recycling potential
Cradle-to-gate with options	X	X	X	X	X	ND	ND	ND	ND	ND	X	X	X	X	X

Life cycle impact assessment results for 304

Impact category	Unit	Sum A1-3	A4	A5	B	C1	C2	C3	C4	Sum A-C	D	Total 304
051. Climate change	kg CO2 eq	2.46E+03	1.07E+02	1.43E+01	0.00E+00	1.64E+01	1.14E+01	3.14E+01	6.26E-02	2.64E+03	-1.25E+03	1386.56
052. Climate change - Fossil	kg CO2 eq	2.44E+03	1.07E+02	1.43E+01	0.00E+00	1.64E+01	1.14E+01	3.13E+01	6.25E-02	2.62E+03	-1.25E+03	1371.58
053. Climate change - Biogenic	kg CO2 eq	1.57E+01	5.54E-02	2.46E-02	0.00E+00	4.65E-02	5.87E-03	4.43E-02	8.62E-06	1.58E+01	-3.73E+00	12.10
054. Climate change - Luluc	kg CO2 eq	3.45E+00	3.67E-02	3.08E-03	0.00E+00	5.02E-03	3.89E-03	4.19E-02	3.22E-05	3.54E+00	-6.67E-01	2.87
055. Ozone depletion	kg CFC11 eq	3.78E-05	2.16E-06	2.20E-07	0.00E+00	2.62E-07	2.29E-07	1.97E-07	1.81E-09	4.09E-05	-6.79E-06	0.00
056. Acidification	mol H+ eq	2.11E+01	3.46E-01	1.27E-01	0.00E+00	1.42E-01	3.67E-02	1.52E-01	4.43E-04	2.19E+01	-4.27E+00	17.65
057. Eutrophication, freshwater	kg P eq	8.41E-02	8.36E-04	1.06E-04	0.00E+00	1.68E-04	8.86E-05	1.50E-03	6.15E-07	8.68E-02	-5.27E-02	0.03
058. Eutrophication, marine	kg N eq	2.19E+00	1.16E-01	5.76E-02	0.00E+00	6.38E-02	1.23E-02	2.76E-02	1.68E-04	2.47E+00	-8.28E-01	1.64
059. Eutrophication, terrestrial	mol N eq	2.54E+01	1.28E+00	6.32E-01	0.00E+00	7.00E-01	1.36E-01	3.06E-01	1.84E-03	2.85E+01	-9.70E+00	18.76
060. Photochemical ozone formation	kg NMVOC eq	8.53E+00	5.64E-01	1.88E-01	0.00E+00	2.10E-01	5.98E-02	9.09E-02	6.60E-04	9.64E+00	-3.20E+00	6.43
061. Resource use, minerals, metals	kg Sb eq	6.31E-02	2.89E-04	6.22E-06	0.00E+00	9.46E-06	3.07E-05	2.83E-05	9.77E-08	6.35E-02	-2.44E-04	0.06
062. Resource use, fossils	MJ	3.24E+04	1.55E+03	1.93E+02	0.00E+00	2.33E+02	1.65E+02	4.03E+02	1.53E+00	3.50E+04	-1.47E+04	20296.89
063. Water use	m3 depriv.	5.95E+02	7.40E+00	5.50E-01	0.00E+00	3.03E+00	7.84E-01	4.85E+00	6.70E-02	6.12E+02	-2.72E+02	339.85
064. Particulate matter	disease inc.	2.22E-04	1.06E-05	3.52E-06	0.00E+00	3.88E-06	1.13E-06	1.34E-06	1.01E-08	2.43E-04	-9.32E-05	0.00
065. Ionising radiation	kBq U-235 eq	1.41E+02	6.85E-01	1.59E-01	0.00E+00	2.81E-01	7.26E-02	1.62E+00	3.79E-04	1.44E+02	-4.14E+01	102.27
066.1. Ecotoxicity, freshwater - p1	CTUe	4.70E+03	1.04E+02	4.64E+00	0.00E+00	5.67E+00	1.10E+01	4.55E+01	5.90E-02	4.87E+03	-2.77E+03	2101.68
066.2. Ecotoxicity, freshwater - p2	CTUe	5.22E+03	7.91E+01	6.75E+00	0.00E+00	8.67E+00	8.38E+00	2.43E+01	6.97E-02	5.35E+03	-9.07E+02	4444.61
067. Human toxicity, cancer	CTUh	8.47E-06	1.75E-08	1.51E-09	0.00E+00	1.80E-09	1.85E-09	3.41E-09	1.14E-11	8.49E-06	-2.60E-06	0.00
068. Human toxicity, non-cancer	CTUh	3.74E-05	1.00E-06	2.68E-08	0.00E+00	3.50E-08	1.06E-07	1.72E-07	2.62E-10	3.88E-05	-5.31E-06	0.00
069. Land use	Pt	8.95E+03	1.56E+03	1.50E+01	0.00E+00	1.92E+01	1.66E+02	5.99E+01	3.02E+00	1.08E+04	-2.85E+03	7918.59
111. Energy, primary, renewable excl	MJ	5.03E+03	2.47E+01	4.48E+00	0.00E+00	7.77E+00	2.62E+00	4.86E+01	1.42E-02	5.11E+03	-1.21E+03	3901.41
113. Energy, primary, renewable, mat	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00
101. Energy, primary, renewable	MJ	5.03E+03	2.47E+01	4.48E+00	0.00E+00	7.77E+00	2.62E+00	4.86E+01	1.42E-02	5.11E+03	-1.21E+03	3901.41
112. Energy, primary, non-renew, exc	MJ	1.75E+04	1.28E+02	1.77E+01	0.00E+00	2.84E+01	1.36E+01	2.76E+02	9.50E-02	1.79E+04	-1.15E+04	6382.35
114. Energy, primary, non-renew, mat	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00
102. Energy, primary, non-renewable	MJ	1.75E+04	1.28E+02	1.77E+01	0.00E+00	2.84E+01	1.36E+01	2.76E+02	9.50E-02	1.79E+04	-1.15E+04	6382.35
108. Secondary material	kg	7.65E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.65E+02	0.00E+00	764.88
109. Secondary fuel, renewable	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00
110. Secondary fuel, non-renewable	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00
104. Water, fresh water use	m3	1.89E+01	2.32E-01	2.48E-02	0.00E+00	9.06E-02	2.46E-02	1.90E-01	1.60E-03	1.94E+01	-9.23E+00	10.21
106. Waste, hazardous	kg	2.65E-01	1.02E-02	1.26E-03	0.00E+00	1.44E-03	1.08E-03	6.69E-04	9.69E-06	2.80E-01	-1.22E-01	0.16
105. Waste, non hazardous	kg	1.79E+02	1.33E+02	1.39E-01	0.00E+00	1.99E-01	1.41E+01	6.24E-01	1.00E+01	3.36E+02	-2.86E+01	307.77
107. Waste, radioactive	kg	1.11E-01	4.67E-04	1.24E-04	0.00E+00	2.21E-04	4.95E-05	1.04E-03	2.38E-07	1.13E-01	-3.37E-02	0.08
120. Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.00E+01	4.00E+01	0.00E+00	40.00
121. Materials for recycling	kg	7.44E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.50E+02	1.69E+03	0.00E+00	1693.98
122. Materials for energy recovery	kg	3.08E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.08E+01	0.00E+00	30.80
123. Exported energy, electric	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00
124. Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00