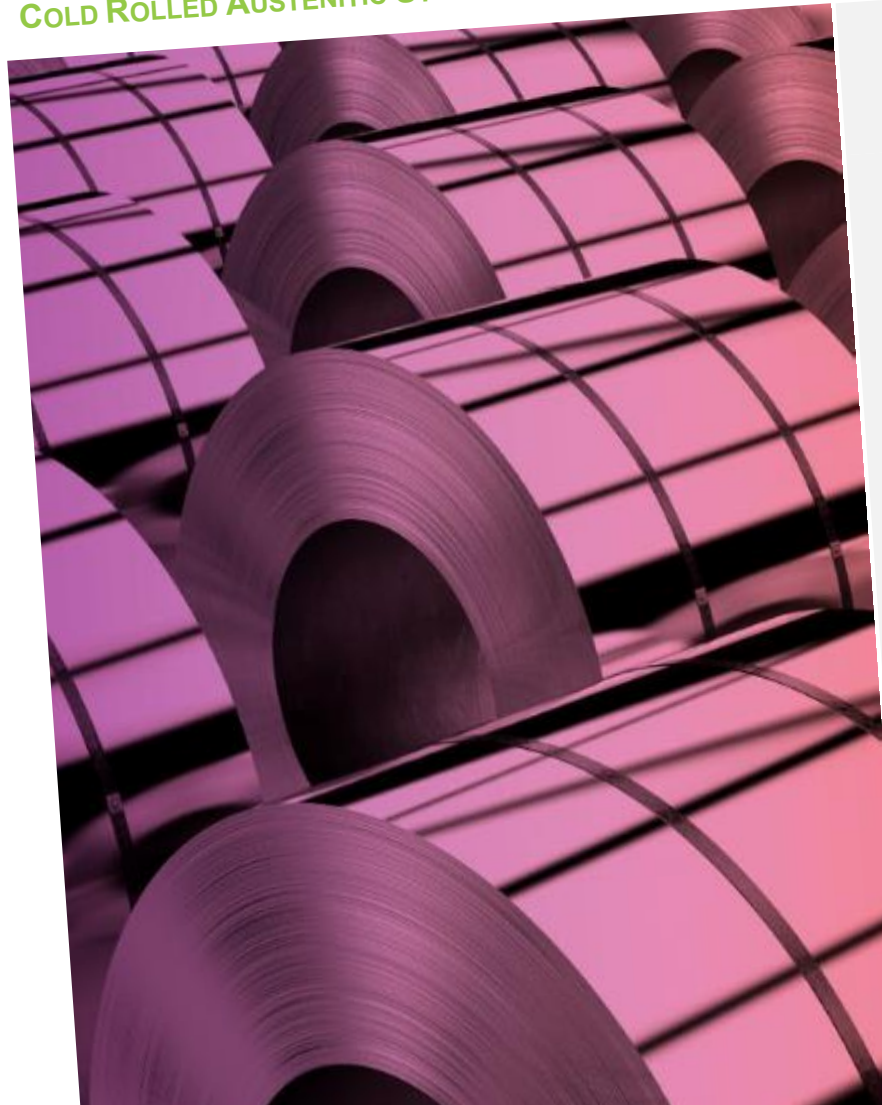


ENVIRONMENTAL PRODUCT DECLARATION
COLD ROLLED AUSTENITIC STAINLESS STEELS - APERAM 304



Aperam is a world-leading stainless-steel company with sustainability at its heart. As part of our environmental stewardship efforts, we use Environmental Product Declarations (EPD) to communicate about the environmental impact our products have across their lifecycle – including total carbon footprint and energy use throughout the supply chain.

Based on an independently verified lifecycle assessment (UL 14025), these EPDs allow our customers to make informed decisions about the environmental impact of their purchases. It also allows them to calculate the environmental impact of their own application's lifecycle. This last point can be of great interest to the building and construction industry when working under a 'green building' regulation.

The EPD, together with Aperam being the first stainless steel company to be certified by ResponsibleSteel™, the industry's first global multi-stakeholder standard and certification program, further demonstrates our strong commitment to sustainability.



Wie man unsere EPDs liest



Wie Sie von unseren EPDs profitieren



EPDs beschreiben die Auswirkungen, die Produkte während ihres gesamten Lebenszyklus auf die Umwelt haben. Sie helfen auch unseren Kunden, fundierte Entscheidungen über den von ihnen gekauften nichtrostenden Stahl zu treffen.

Aperam ist ein weltweit führender Hersteller von nichtrostendem Stahl. Nachhaltigkeit nimmt bei uns eine zentrale Stellung ein. Im Rahmen unserer Bemühungen um den Umweltschutz verwenden wir Umwelt-Produktdeklarationen (EPDs), um über die Umweltauswirkungen unserer Produkte über ihren gesamten Lebenszyklus hinweg zu informieren – einschließlich des vollständigen Kohlenstoff-Fußabdrucks und des Energieverbrauchs in der Lieferkette.

Aber unsere EPDs sind nicht nur für uns von Bedeutung – sie kommen auch unseren Kunden zugute.

Auf der Grundlage einer von unabhängiger Seite verifizierten Ökobilanz nach ISO 14025 erhalten unseren Kunden fundierte Umweltdaten als Basis für Ihre Werkstoffentscheidung. Diese Angaben helfen unseren Kunden zudem, die lebensdauerbezogenen Umweltauswirkungen ihrer eigenen Produkte zu berechnen. Dieser letzte Punkt kann für den Bausektor von besonderem Interesse sein, wenn nach Maßstäben des „grünen Bauens“ gearbeitet wird.

Branchenübergreifend helfen unsere EPDs allen Endverbrauchern, nachhaltiger zu werden. Mit den in diesen Dokumenten enthaltenen Informationen können die Kunden sicherstellen, dass ihre Lieferanten von nichtrostendem Stahl sowohl effizient als auch nachhaltig arbeiten. Außerdem können sie so das Herkunftsland des Materials auf ihren eigenen Produkten und Lösungen angeben.

Mit anderen Worten: Unsere EPDs verschaffen Ihnen einen einzigartigen Wettbewerbsvorteil.



ENVIRONMENTAL PRODUCT DECLARATION



Cold Rolled Austenitic Stainless Steels – Aperam 304

According to ISO 14025.
EN 15804. and ISO21930:2017

EPD Program and Program Operator Name, Address, Logo, and Website	UL Provided
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	UL Provided
MANUFACTURER NAME AND ADDRESS	Aperam 24-26 Boulevard d'Avranches L-1160 Luxembourg LUXEMBOURG
DECLARATION NUMBER	UL Provided
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	Cold Rolled Austenitic Stainless Steels - Aperam 304; 1 metric ton
REFERENCE PCR AND VERSION NUMBER	PCR - Part A: Life Cycle Assessment Calculation Rules and Report Requirements. Version 3.2. September 2018. UL Environment. PCR - Part B: Designated Steel Construction - Product EPD Requirements, Version 2.0. August 2021. UL Environment.
DESCRIPTION OF PRODUCT APPLICATION/USE	Stainless steel for building construction use
PRODUCT RSL DESCRIPTION (IF APPL.)	N/A
MARKETS OF APPLICABILITY	North America/Europe/Global
DATE OF ISSUE	UL Provided
PERIOD OF VALIDITY	UL Provided
EPD TYPE	Product-specific
RANGE OF DATASET VARIABILITY	N/A
EPD SCOPE	Cradle to gate with C and D steps in options
YEAR(S) OF REPORTED PRIMARY DATA	2020
LCA SOFTWARE & VERSION NUMBER	SimaPro 9.1
LCI DATABASE(S) & VERSION NUMBER	ecoinvent 3.6
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1
The PCR review was conducted by:	UL Provided UL Provided UL Provided
This declaration was independently verified in accordance with ISO 14025: 2006. The UL Environment "Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report," v3.2 (December 2018), in conformance with ISO 21930:2017, serves as the core PCR, with additional considerations from the USGBC/UL Environment Part A Enhancement (2017)	UL Provided
<input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	

Diese verpflichtenden Angaben finden sich immer auf der ersten Seite der EPD. Sie besagen, dass sich alle in dieser EPD enthaltenen Informationen auf eine Tonne kaltgewalzten Stahl der Sorte Aperam 304 (EN 1.4301) beziehen.

Daraus können Sie ersehen, wann die EPD herausgegeben wurde und wann die darin enthaltenen Informationen veralten oder ungültig werden.

Name und Kontaktinformationen des unabhängigen externen Anbieters, der überprüft hat, ob die in der EPD enthaltenen Informationen der Norm ISO 14025 entsprechen.

Aperam is a global player in stainless, electrical and specialty steel, with customers in over 40 countries. The business is organized in three primary operating segments: Stainless & Electrical Steel, Services & Solutions and Alloys & Specialties.

Aperam has a flat Stainless and Electrical steel capacity of 2.5 million tons in Brazil and Europe and is a leader in high value specialty products. In addition to its industrial network, spread over six production facilities in Brazil, Belgium, and France, Aperam has a highly integrated distribution, processing and services network and a unique capability to produce stainless and special steels from low-cost biomass (charcoal made from its own FSC-certified forestry).

In 2020, Aperam achieved sales of 3.6 billion euros and shipped 1.68 million tons of steel.

1.2. PRODUCT DESCRIPTION

1.2.1. PRODUCT IDENTIFICATION

This EPD is related to the products manufactured in the Belgian and French factories.

Our 304 grades of stainless steel are a general-purpose grade offering:

- > Excellent resistance to pitting and crevice corrosion
- > Good ductility
- > Can easily be welded and polished
- > 304L and 304M have a very good resistance to intergranular corrosion
- > 304D, 304ED and 304M have very good drawability

TABLE 1: DECLARED PRODUCTS IDENTIFICATION

Grade designation	European designation	American designation	Finishing (according to EN 10088)					
			2B	2D	2E	2H	2J	2M
304	X5CrNi18-10 / 1.4301 ⁽¹⁾	UNS 30400 / Type 304 ⁽²⁾	✓	✓	✓	✓	✓	✓
304D	X5CrNi18-10 / 1.4301 ⁽¹⁾	UNS 30400 / Type 304 ⁽²⁾	✓	✓		✓		
304ED	X5CrNi18-10 / 1.4301 ⁽¹⁾	UNS 30400 / Type 304 ⁽²⁾	✓	✓				
304H	X6CrNi18-10 / 1.4948 ⁽¹⁾	UNS 30409 / Type 304 ⁽²⁾	✓	✓				
304L	X2CrNi18-9 / 1.4307 ⁽¹⁾	UNS 30403 / Type 304L ⁽²⁾	✓	✓	✓	✓		
304M	X2CrNi19-11 / 1.4306 ⁽¹⁾	UNS 30403 / Type 304L ⁽²⁾	✓	✓				
304LN	X2CrNiN18-10 / 1.4311 ⁽¹⁾	UNS 30453 / Type 304LN ⁽²⁾	✓		✓			
	X5CrNiN19-9 / 1.4315 ⁽¹⁾	UNS 30451 / Type 304N ⁽²⁾						

Hier eine detaillierte Liste der Produkte (Sorten und Ausführungen), die von EPDs abgedeckt werden.

⁽¹⁾According to EN 100088-2; ⁽²⁾According to ASTM A240

2B: Cold-rolled, annealed, pickled and skin passed; **2D:** Cold-rolled, annealed and pickled, not skinpassed, and Uginox Access; **2E:** Cold-rolled, rough, matt; **2H:** Work hardened; **2J:** Uginox Rolled-On, and Scotch-Brite; **2M:** Uginox Linen, Uginox Squares, Uginox Lozenge, and Uginox Leather.



4. ENVIRONMENTAL INDICATORS DERIVED FROM LCA

TABLE 7: DESCRIPTION OF THE SYSTEM BOUNDARY MODULES

	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Raw material supply	Transport	Manufacturing	Transport from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use During Product Use	Building Operational Water Use During Product Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
Declared modules	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

MND: Modules Not Declared

Die Module

Vorgelagert

Aperam

Da dies je nach Verwendungszweck unterschiedlich ist, werden solche Informationen nicht in die EPD aufgenommen.

Die Prozesse, die nach Ende der Nutzungsdauer eines Produkts folgen, d. h. von der Erfassung des Schrotts bis zu seiner Einschmelzung

Das Einsparungspotenzial durch Wiederverwendung von Schrott

4.1. LIFE CYCLE IMPACT ASSESSMENT RESULTS

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

TABLE 8: NORTH AMERICAN LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.90E+02
ODP [kg CFC-11 eq]	7.78E-05	9.62E-06	1.57E-04	8.35E-07	3.39E-06	1.84E-06	1.15E-07	-7.19E-05
AP [kg SO ₂ eq]	1.73E+01	6.07E-01	2.18E+00	3.51E-02	4.99E-02	1.39E-01	2.22E-03	-3.89E+00
EP [kg N eq]	7.80E-01	4.04E-02	3.26E-01	3.09E-01	6.99E-03	1.71E-02	2.65E-04	-6.23E-01
SFP [kg O ₃ eq]	8.31E+01	1.27E+01	4.80E+01	1.08E+00	1.09E+00	1.73E+00	5.47E-02	-5.16E+01
ADP _{fossil} [MJ, LHV]	8.46E+02	8.59E+01	1.22E+03	7.46E+00	3.04E+01	2.56E+01	1.07E+00	-5.46E+02

These six impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes.

TABLE 9: EU LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.90E+02
ODP [kg CFC-11 eq]	6.16E-05	7.27E-06	1.38E-04	6.28E-07	2.55E-06	1.42E-06	8.61E-08	-6.38E-05
AP [kg SO ₂ eq]	1.93E+01	5.51E-01	1.90E+00	2.73E-02	4.44E-02	1.36E-01	1.89E-03	-3.82E+00
EP [kg (PO ₄) ⁻³ eq]	7.36E-01	7.33E-02	3.50E-01	5.98E-03	7.28E-03	1.55E-02	3.33E-04	-5.09E-01
POCP [kg ethane eq]	1.23E+00	4.73E-02	2.53E-01	4.30E-03	8.37E-03	8.89E-03	2.98E-04	-1.34E+00
ADP _{elements} [kg Sb-eq]	4.61E-02	3.04E-04	6.15E-03	5.67E-06	2.33E-04	5.63E-05	2.41E-06	-2.52E-03
ADP _{fossil fuels} [MJ, LHV]	1.42E+04	6.22E+02	8.24E+03	5.01E+01	2.08E+02	3.47E+02	7.28E+00	-1.11E+04

TABLE 10: REST OF WORLD LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.89E+02
ODP [kg CFC-11 eq]	6.16E-05	7.27E-06	1.38E-04	6.28E-07	2.55E-06	1.42E-06	8.61E-08	-6.38E-05
EP [kg (PO ₄) ⁻³ eq]	7.36E-01	7.33E-02	3.50E-01	5.98E-03	7.28E-03	1.55E-02	3.33E-04	-5.09E-01
AP [kg SO ₂ eq]	1.93E+01	5.51E-01	1.90E+00	2.73E-02	4.44E-02	1.36E-01	1.89E-03	-3.82E+00
POCP [kg ethane eq]	1.23E+00	4.73E-02	2.53E-01	4.30E-03	8.37E-03	8.89E-03	2.98E-04	-1.34E+00

Comparability: Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted.

Da in den verschiedenen Regionen unterschiedliche Regeln für die erforderlichen Berechnungen gelten, hat Aperam seine Tabellen entsprechend angepasst, um allen Kunden weltweit gerecht zu werden.



4.1. LIFE CYCLE IMPACT ASSESSMENT RESULTS

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

TABLE 8: NORTH AMERICAN LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.90E+02
ODP [kg CFC-11 eq]	7.78E-05	9.62E-06	1.57E-04	8.35E-07	3.39E-06	1.84E-06	1.15E-07	-7.19E-05
AP [kg SO ₂ eq]	1.73E+01	6.07E-01	2.18E+00	3.51E-02	4.99E-02	1.39E-01	2.22E-03	-3.89E+00
EP [kg N eq]	7.80E-01	4.04E-02	3.26E-01	3.09E-03	6.99E-03	1.71E-02	2.65E-04	-6.23E-01
SFP [kg O ₃ eq]	8.31E+01	1.27E+01	4.80E+01	1.08E+00	1.09E+00	1.73E+00	5.47E-02	-5.16E+01
ADP _{fossil} [MJ, LHV]	8.46E+02	8.59E+01	1.22E+03	7.46E+00	3.04E+01	2.30E+01	1.07E+00	-5.46E+02

These six impact categories are globally deemed mature enough to be included in LCA, defined and LCA should continue making advances in their development. However, the

GWP 100: Treibhauspotential, **ODP:** Potenzial für den Abbau von Ozon in der Stratosphäre, **AP:** Versauerungspotenzial für Boden und Wasser, **EP:** Eutrophierungspotenzial, **SFP:** Smogbildungspotenzial, **ADP_{fossil}:** abiotisches Ressourcenerschöpfungspotenzial für nicht erneuerbare (fossile) Energieressourcen.

TABLE 9: EU LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.89E+02
ODP [kg CFC-11 eq]	6.16E-05	7.27E-06	1.38E-04	6.28E-07	2.55E-06	1.42E-06	8.61E-08	-6.38E-05
AP [kg SO ₂ eq]	1.93E+01	5.51E-01	1.90E+00	2.73E-02	4.44E-02	1.36E-01	1.89E-03	-3.82E+00
EP [kg (PO ₄) ⁻³ eq]	7.36E-01	7.33E-02	3.50E-01	5.98E-03	7.28E-03	1.55E-02	3.33E-04	-5.09E-01
POCP [kg ethane eq]	1.23E+00	4.73E-02	2.53E-01	4.30E-03	8.37E-03	8.89E-03	2.98E-04	-1.34E+00
ADP _{elements} [kg Sb-eq]	4.61E-02	3.04E-04	6.15E-03	5.67E-06	2.33E-04	5.63E-05	2.41E-06	-2.52E-03
ADP _{fossil fuels} [MJ, LHV]	1.42E+04	6.22E+02	8.24E+03	5.01E+01	2.08E+02	3.47E+02	7.28E+00	-1.11E+04

TABLE 10: REST OF WORLD LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.90E+02
ODP [kg CFC-11 eq]	6.16E-05	7.27E-06	1.38E-04	6.28E-07	2.55E-06	1.42E-06	8.61E-08	-6.38E-05
EP [kg (PO ₄) ⁻³ eq]	7.36E-01	7.33E-02	3.50E-01	5.98E-03	7.28E-03	1.55E-02	3.33E-04	-5.09E-01
AP [kg SO ₂ eq]	1.93E+01	5.51E-01	1.90E+00	2.73E-02	4.44E-02	1.36E-01	1.89E-03	-3.82E+00
POCP [kg ethane eq]	1.23E+00	4.73E-02	2.53E-01	4.30E-03	8.37E-03	8.89E-03	2.98E-04	-1.34E+00

GWP 100: Treibhauspotential, **ODP:** Potenzial für den Abbau von Ozon in der Stratosphäre, **AP:** Versauerungspotenzial für Boden und Wasser, **EP:** Eutrophierungspotenzial, **POCP:** Photochemisches Oxidantienbildungspotenzial, **ADP_{elements}:** Abiotisches Erschöpfungspotenzial für nichtfossile Rohstoffe, **ADP_{fossil fuels}:** Abiotisches Erschöpfungspotenzial für nicht erneuerbare (fossile) Energieressourcen.

Comparability: Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted.



ENVIRONMENTAL PRODUCT DECLARATION



Cold Rolled Austenitic Stainless Steels – Aperam 304

According to ISO 14025.
EN 15804 and ISO 21930:2017

Any comparison of EPDs shall be subject to the requirements of ISO 21930. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate and could lead to erroneous selection of materials or products which are higher impact, at least in some impact categories.

4.2. LIFE CYCLE INVENTORY RESULTS

TABLE 11: LIFE CYCLE INVENTORY RESULTS: RESOURCE USE

Parameter	A1	A2	A3	C1	C2	C3	C4	D
RPR _E [MJ]	2.45E+03	1.71E+01	1.12E+03	2.73E-01	2.67E+00	4.65E+01	5.95E-02	-6.18E+02
RPR _M [MJ]	0.00E+00	0.00E+00	5.86E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRPR _E [MJ]	1.60E+04	6.53E+02	1.60E+04	5.04E+01	2.12E+02	4.21E+02	7.36E+00	-1.25E+04
NRPR _M [MJ]	0.00E+00	0.00E+00	6.07E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SM [kg]	8.83E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF [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
NRSF [MJ]	0.00E+00	0.00E+00	1.37E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RE [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
FW [m ³]	7.29E+00	1.29E-01	6.17E+00	2.19E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RPR_E: erneuerbare Primärrohstoffe, die als Energieträger (thermisch) verwendet werden, RPR_M: erneuerbare Primärrohstoffe mit Energiegehalt, die stofflich verwendet werden, NRPR_E: nicht-erneuerbare Primärrohstoffe, die als Energieträger (thermisch) verwendet werden, NRPR_M: nicht-erneuerbare Primärrohstoffe mit Energiegehalt, die stofflich verwendet werden, SM: Sekundärrohstoffe, RSF: erneuerbare Sekundärbrennstoffe, NRSF: nicht-erneuerbare Sekundärbrennstoffe, RE: zurückgewonnene Energie, FW: Verwendung von Netto-Süßwasserressourcen

TABLE 12: LIFE CYCLE INVENTORY RESULTS: OUTPUT FLOWS AND WASTE CATEGORIES

Parameter	A1	A2	A3	C1	C2	C3	C4	D
HWD [kg]	8.15E+02	7.45E-01	2.51E+02	3.18E-02	1.31E-01	1.36E+00	4.34E-03	-4.13E+01
NHWD [kg]	9.30E+02	1.39E+01	1.19E+02	1.96E-01	1.94E+01	2.04E+01	5.00E+01	-8.37E+02
HLRW [kg]	7.19E-03	1.14E-04	2.29E-02	1.32E-06	1.48E-05	3.06E-04	2.83E-07	-4.62E-03
ILLRW [kg]	3.30E-02	4.16E-03	9.28E-02	3.49E-04	1.43E-03	1.02E-03	4.81E-05	-2.46E-02
CRU [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR [kg]	1.58E+01	0.00E+00	2.95E+02	0.00E+00	0.00E+00	1.00E+03	0.00E+00	0.00E+00
MER [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

HWD: entsorgte gefährliche Abfälle, NHWD: entsorgte nicht gefährliche Abfälle, HLRW: hochradioaktive Abfälle, konditioniert, zur Endlagerung, ILLRW: mittel- und schwachradioaktive Abfälle, konditioniert, zur Endlagerung, CRU: Komponenten für die Wiederverwendung, MR: Materialien für das Recycling, MER: Materialien für die Energierückgewinnung, EE: zurückgewonnene Energie, die aus dem Produktsystem exportiert wird.

Abbreviations used in the results tables:

GWP₁₀₀: Global Warming Potential, ODP: Ozone Depletion Potential, AP: Acidification Potential, ADP_{fossil}: Abiotic Resource Depletion Potential of Non-renewable (fossil) energy resource

GWP₁₀₀: Global Warming Potential, ODP: Depletion potential of the stratospheric ozone layer, AP: Acidification Potential of soil and water, EP: Eutrophication

4.1. LIFE CYCLE IMPACT ASSESSMENT RESULTS

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

TABLE 8: NORTH AMERICAN LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.90E+02
ODP [kg CFC-11 eq]	7.78E-05	9.62E-06	1.57E-04	8.35E-07	3.39E-06	1.84E-06	1.15E-07	-7.19E-05
AP [kg SO ₂ eq]	1.73E+01	6.07E-01	2.18E+00	3.51E-02	4.99E-02	1.39E-01	2.22E-03	-3.89E+00
EP [kg N eq]	7.80E-01	4.04E-02	3.26E-01	3.09E-03	6.99E-03	1.71E-02	2.65E-04	-6.23E-01
SFP [kg O ₃ eq]	8.31E+01	1.27E+01	4.80E+01	1.08E+00	1.09E+00	1.73E+00	5.47E-02	-5.16E+01
ADP _{fossil} [MJ, LHV]	8.46E+02	8.59E+01	1.22E+03	7.46E+00	3.04E+01	2.30E+01	1.07E+00	-5.46E+02

Der Cradle-to-Gate-Umfang entspricht der Summe der Module A1, A2 und A3.

Die Module C1 bis D sind optional und können je nach Art der verfügbaren Daten berücksichtigt werden.

These six impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes.

TABLE 9: EU LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.89E+02
ODP [kg CFC-11 eq]	6.16E-05	7.27E-06	1.38E-04	6.28E-07	2.55E-06	1.42E-06	8.61E-08	-6.38E-05
AP [kg SO ₂ eq]	1.93E+01	5.51E-01	1.90E+00	2.73E-02	4.44E-02	1.36E-01	1.89E-03	-3.82E+00
EP [kg (PO ₄) ⁻³ eq]	7.36E-01	7.33E-02	3.50E-01	5.98E-03	7.28E-03	1.55E-02	3.33E-04	-5.09E-01
POCP [kg ethane eq]	1.23E+00	4.73E-02	2.53E-01	4.30E-03	8.37E-03	8.89E-03	2.98E-04	-1.34E+00
ADP _{elements} [kg Sb-eq]	4.61E-02	3.04E-04	6.15E-03	5.67E-06	2.33E-04	5.63E-05	2.41E-06	-2.52E-03
ADP _{fossil fuels} [MJ, LHV]	1.42E+04	6.22E+02	8.24E+03	5.01E+01	2.08E+02	3.47E+02	7.28E+00	-1.11E+04

TABLE 10: REST OF WORLD LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.89E+02
ODP [kg CFC-11 eq]	6.16E-05	7.27E-06	1.38E-04	6.28E-07	2.55E-06	1.42E-06	8.61E-08	-6.38E-05
EP [kg (PO ₄) ⁻³ eq]	7.36E-01	7.33E-02	3.50E-01	5.98E-03	7.28E-03	1.55E-02	3.33E-04	-5.09E-01
AP [kg SO ₂ eq]	1.93E+01	5.51E-01	1.90E+00	2.73E-02	4.44E-02	1.36E-01	1.89E-03	-3.82E+00
POCP [kg ethane eq]	1.23E+00	4.73E-02	2.53E-01	4.30E-03	8.37E-03	8.89E-03	2.98E-04	-1.34E+00

Ein negativer Wert bedeutet, dass kein CO₂ emittiert wird.

Comparability: Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted.

4.1. LIFE CYCLE IMPACT ASSESSMENT RESULTS

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

TABLE 8: NORTH AMERICAN LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.90E+02
ODP [kg CFC-11 eq]	7.78E-05	9.62E-06	1.57E-04	8.35E-07	3.39E-06	1.84E-06	1.15E-07	-7.19E-05
AP [kg SO ₂ eq]	1.73E+01	6.07E-01	2.18E+00	3.51E-02	4.99E-02	1.39E-01	2.22E-03	-3.89E+00
EP [kg N eq]	7.80E-01	4.04E-02	3.26E-01	3.09E-03	6.99E-03	1.71E-02	2.65E-04	-6.23E-01
SFP [kg O ₃ eq]	8.31E+01	1.27E+01	4.80E+01	1.08E+00	1.09E+00	1.73E+00	5.47E-02	-5.16E+01
ADP _{fossil} [MJ, LHV]	8.46E+02	8.59E+01	1.22E+03	7.46E+00	3.04E+01	2.30E+01	1.07E+00	-5.46E+02

These six impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes.

TABLE 9: EU LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.90E+02
ODP [kg CFC-11 eq]	6.16E-05	7.27E-06	1.38E-04	6.28E-07	2.55E-06	1.42E-06	8.61E-08	-6.38E-05
AP [kg SO ₂ eq]	1.93E+01	5.51E-01	1.90E+00	2.73E-02	4.44E-02	1.36E-01	1.89E-03	-3.82E+00
EP [kg (PO ₄) ⁻³ eq]	7.36E-01	7.33E-02	3.50E-01	5.98E-03	7.28E-03	1.55E-02	3.33E-04	-5.09E-01
POCP [kg ethane eq]	1.23E+00	4.73E-02	2.53E-01	4.30E-03	8.37E-03	8.89E-03	2.98E-04	-1.34E+00
ADP _{elements} [kg Sb-eq]	4.61E-02	3.04E-04	6.15E-03	5.67E-06	2.33E-04	5.63E-05	2.41E-06	
ADP _{fossil fuels} [MJ, LHV]	1.42E+04	6.22E+02	8.24E+03	5.01E+01	2.08E+02	3.47E+02	7.28E+01	

Wenn man zum Beispiel das CO₂-Äquivalent, das für unsere Sorte 304 CR (EN 1.4301 kaltgewalzt) im Rahmen des Cradle-to-Gate-Ansatzes emittiert wird, aus der Perspektive eines europäischen Interessenvertreters betrachtet, würde man die Summe der Module A1, A2 und A3 heranziehen.

$$1,24E+03 \Rightarrow 1,24 \times 10^3$$

$$1240 + 47,3 + 737 = 2024,3 \text{ kg CO}_2\text{-Äquivalent für 1 Tonne 304 CR (EN 1.4301 kaltgewalzt)}$$

TABLE 10: REST OF WORLD LIFE CYCLE IMPACT ASSESSMENT RESULTS

Impact category	A1	A2	A3	C1	C2	C3	C4	D
GWP 100 [kg CO ₂ eq]	1.24E+03	4.73E+01	7.37E+02	3.62E+00	1.35E+01	3.17E+01	2.57E-01	-8.89E+02
ODP [kg CFC-11 eq]	6.16E-05	7.27E-06	1.38E-04	6.28E-07	2.55E-06	1.42E-06	8.61E-08	-6.38E-05
EP [kg (PO ₄) ⁻³ eq]	7.36E-01	7.33E-02	3.50E-01	5.98E-03	7.28E-03	1.55E-02	3.33E-04	-5.09E-01
AP [kg SO ₂ eq]	1.93E+01	5.51E-01	1.90E+00	2.73E-02	4.44E-02	1.36E-01	1.89E-03	-3.82E+00
POCP [kg ethane eq]	1.23E+00	4.73E-02	2.53E-01	4.30E-03	8.37E-03	8.89E-03	2.98E-04	-1.34E+00

Comparability: Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted.



5. LCA INTERPRETATION

The following graph shows for the non-zero indicators the distribution between the contributions of the different stages of the life cycle:

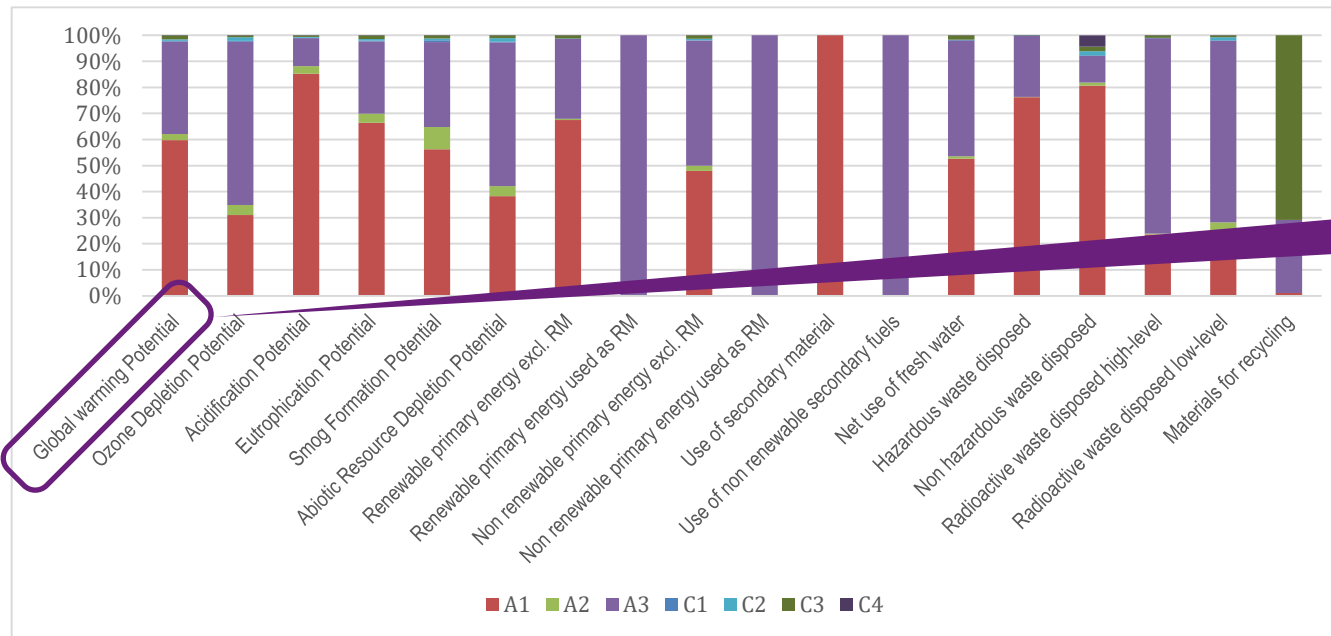


Figure 1: Distribution between the contributions of the different stages of the life cycle for non-zero indicators

Anhand dieser Tabelle lässt sich schnell erkennen, dass 60 % des Treibhauspotenzials des Produkts auf das Modul A1 entfallen, d. h. den Rohstoffeinsatz.

Interpretation:

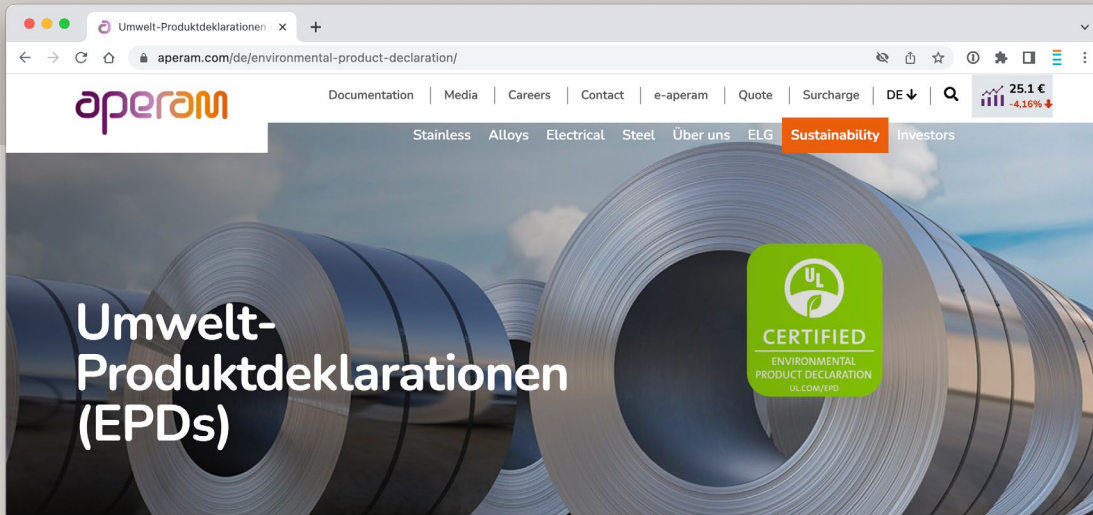
- The main contributor to environmental impacts is the manufacture of raw materials (A1), especially specific filler metals such as chromium or nickel.
- The significant energy consumption for melting scrap and filler metals and shaping steel coils is the second largest contributor (A3).
- The transport of raw materials is a minority contributor, although a significant portion of the materials come from all over the world.
- The indicative end-of-life scenario for this cradle-to-gate EPD highlights the low environmental impacts of preparing steel for recycling and the substantial gains outside the system boundaries (D).

The following table presents the weighted coefficient of variation of the LCIA results for all products included in the weighted average declaration:

TABLE 13: NORTH AMERICAN LIFE CYCLE IMPACT ASSESSMENT RESULTS: WEIGHTED COEFFICIENTS OF VARIATION

Impact category	Weighted coefficient of variation
GWP 100 [kg CO ₂ eq]	2.90%
ODP [kg CFC-11 eq]	7.35%
AP [kg SO ₂ eq]	0.89%
EP [kg N eq]	4.27%
SFP [kg O ₃ eq]	3.66%
ADP _{fossil} [MJ, LHV]	6.23%





Home → Umwelt-Produktdeklarationen (EPDs)

So profitieren Sie von unseren EPDs

Angebot anfordern



EPDs beschreiben die Auswirkungen, die Produkte während ihres gesamten Lebenszyklus auf die Umwelt haben. Sie helfen auch unseren Kunden, fundierte Entscheidungen über den von ihnen gekauften nichtrostenden Stahl zu treffen.

Aperam ist ein weltweit führender Hersteller von nichtrostendem Stahl. Nachhaltigkeit nimmt bei uns eine zentrale Stellung ein. Im Rahmen unserer Bemühungen um den Umweltschutz verwenden wir Umwelt-Produktdeklarationen (EPDs), um über die Umweltauswirkungen unserer Produkte über ihren gesamten Lebenszyklus hinweg zu informieren – einschließlich des gesamten Kohlenstoff-Fußabdrucks und des Energieverbrauchs in der Lieferkette.

Aber unsere EPDs sind nicht nur für uns von Bedeutung – sie kommen auch unseren Kunden zugute.

Auf der Grundlage einer von unabhängiger Seite verifizierten Ökobilanz nach ISO 14025 erhalten unseren Kunden fundierte Umweltdaten als Basis für Ihre Werkstoffentscheidung. Diese Angaben helfen unseren Kunden zudem, die lebensdauerbezogenen Umweltauswirkungen ihrer eigenen Produkte zu berechnen. Dieser Letzter Punkt kann für den Bausektor von besonderem Interesse sein, wenn er im Rahmen einer Green Building™-Verordnung arbeitet.

Branchenübergreifend helfen unsere EPDs allen Endverbrauchern, nachhaltiger zu werden. Mit den in diesen Dokumenten enthaltenen Informationen können die Kunden sicherstellen, dass ihre Lieferanten von nichtrostendem Stahl sowohl effizient als auch nachhaltig sind. Außerdem können sie so das Herkunftsland des Materials auf ihren eigenen Produkten und Lösungen angeben.

Mit anderen Worten: Unsere EPDs verschaffen Ihnen einen einzigartigen Wettbewerbsvorteil.

EPDs sind jetzt für diese Sortenreihen verfügbar (die Produkte von Aperam Stainless Europe):

- Kaltgewalzt – 304/304D/304ED (EN 1.4301) – 304H (EN 1.4948) – 304L (EN 1.4307) – 304M (1.4306) – 304LN (EN 1.4311/1.4315)



304 series - Cold Rolled



K30 series - Cold Rolled



Alle unsere EPDs sind auf [unserer Website](https://www.aperam.com/de/environmental-product-declaration/) verfügbar:

<https://www.aperam.com/de/environmental-product-declaration/>



K41 series - Cold Rolled



304 series - Hot Rolled



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