Environmental Product Declaration
Steel Color Spa manufactured stainless steel sheets

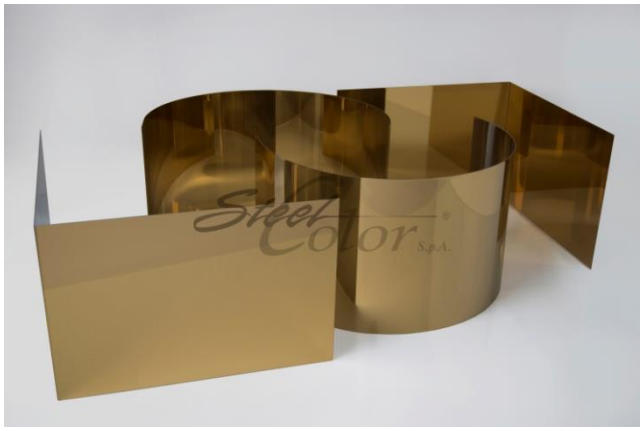
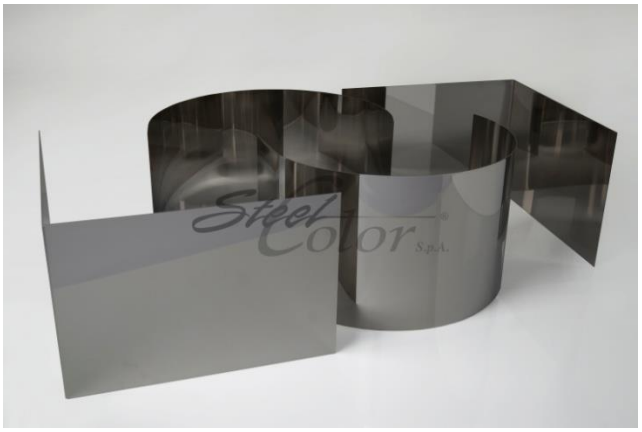
TSteel SuperMirror, SuperMirror, Colored Mirror and Patterned sheets

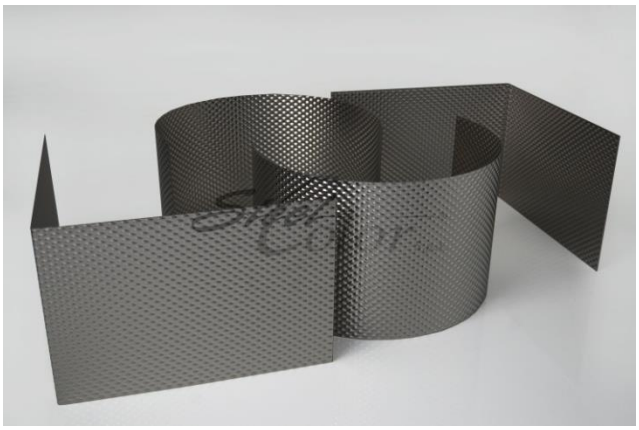
UN CPC 412, 422 & 429 "Fabricated steel products, except construction products, machinery and equipment"- PCR 2014:10-version 2.0 dated October 4th 2017
Declared Unit: 1.000 Kg of manufactured stainless steel
System limits: "cradle-to-gate"
Geographic application area: all the world
Publication date: 02/03/2015
Valid until: 12/06/2021
Registration number: N° S-P-00690
Revision 7 dated 04/09/2020

If you need any further information about EPD program, please visit the website:
www.environdec.com

INTRODUCTION

THE COMPANY AND THE PRODUCT



The company

Steel Color Spa operates since 1979 in the field of surface treatment, coloring and screen printing /chemical etching of stainless steel and non-ferrous metals, mainly intended for the lift industry, construction and furniture componentsfield.

The productive plant was located in Italy up to December 2000, in Cignone (Corte de' Cortesi), in a location where the productive needsof the company were not met.

In order to rationalize the productive cycle and improve employees' working conditions, the company decided to transfer the production department in the new Pescarolo warehouse. The transfer took place in January 2001.

The establishment carries out surface processing of stainless steel sheets and, even to a lesser extent, aluminium and brass products through the machining, polishing, electro-coloration and decoration phases.

Stainless steel is well known for its valuable mechanical and physical properties, which make it a considerable choice in several application fields. Due to resistance to corrosion, it is a suitable material to be used everywhere environmental conditions are particularly aggressive, both in construction and industry fields. It is highly elastic and fire resistant, which make it particularly functional for the realization of anti-seismic structures. It is easy to be processed and cleaned and its hygienic properties allow the use in the food industry as well as the health field.

Stainless steel is also an environmentally sustainable choice, being completely recyclable endless times without losing its intrinsic characteristics[1].

Productive process

The following Life Cycle Assessment study is about the production of 4 different types of stainless steel sheets, which can be distinguished for their different surface treatments that allow to realize a huge range of polishing, brushing and decorations.

The productive process includes:

- specific surface treatments of the stainless steel
- primary packing with plastic protection
- secondary packing on customized pallets following the specific dimensions of the product.

Hereby the chemical composition (casting analysis) and the main mechanical and functional properties of the stainless steels at room-temperature regarding the alloys under consideration, according to the norms UNI EN 10088-1 and UNI EN 10088-2:

CHEMICAL COMPOSITION (CASTING ANALYSIS)

AISI	C	Si	Mn	P max	S	N	Cr	Mo	Nb	Ni	Altri
304	≤0,07	≤1,00	≤2,00	0,045	≤0,015	≤0,11	da 17,5 a 19,5	-	-	da 8,0 a 10,5	-
316	≤0,07	≤1,00	≤2,00	0,045	≤0,015	≤0,11	da 16,5 a 15,5	da 2,00 a 2,50	-	da 10,0 a 13,0	-
430	≤0,08	≤1,00	≤1,00	0,04	≤0,015	-	da 16,0 a 18,0	-	-	-	-
441	≤0,030	≤1,00	≤1,00	0,04	≤0,015	-	da 17,5 a 18,5	-	da [3xC+0,30] a 1,00	-	Ti da 0,10 a 0,60

[1]The stainless steel quality and recyclability declarations are extracted from the Centro Inox Servizi publications (Italian association for stainless steel development); further technical information is available on the official web site: http://www.centroinox.it/pubblicazioni

CHEMICAL AND FUNCTIONAL PROPERTIES:					
AISI	**Unit Load proof strength at 0,2% $R_{p0,2}$**	**Unit Load proof strength at 0,1% $R_{p1,0}$**	**Tensile Strength Rm**	**Elongation after rupture**	**Intergranular Corrosion Resistance**
	MPa min. transversal		**MPa**	**A80 %min. (transversal)**	**At the supply state**
304	230	260	da 540 a 750	45	si
316	240	270	da 530 a 680	40	si
430	280	-	da 450 a 600	20	si
441	250	-	da 430 a 630	18	si

Cleaning instructions

After taking the coating off, if you can still see any marks and/or stains, firstly clean the steel with a nitro solvent and secondly with neutral soap or a liquid detergent, only using soft cloths and always following the finishing direction and never with a circular movement or transversely with respect to the finishing.

For routine cleaning, it is recommended to use neutral soap or liquid detergents, use soft cloths and always wipe following the finishing direction and never with a circular movement.

Cleaning should be done before a visible build-up of dirt causes abrasive phenomena, so asto minimize the risk of scratching or altering the appearance of the surface.

The exposure to aggressive environments, such as those laden with industrial pollutants and/or air pollution and traffic film, requires cleaning to be done at regular intervals to avoid excessive accumulation of dirt.

Before washing, remove any dust particles by air or vacuum, so as to prevent friction of the particles on the surface.

If the water has been used to clean or rinse, especially in significant limestone areas, it is recommended to dry the surface to prevent any spot creation.
To avoid iron contamination, make sure that the tools chosen for cleaning have not been previously used on other metals or alloys.

The materials used for the cleaning of stainless steel products are to be reserved exclusively for this purpose.

During routine cleaning particular attention must be given to covered areas to ensure that accumulations of contaminants are removed from the air flow.

Shown below we describe in more details the productive processes of the four kinds of stainless steel sheets under study.

TSteel sheet®SM, dimensions 1250x2500 mm, mirror colored PVD finish

Starting from the stainless steel coil it is possible to obtain the sheets in the required length through the decoiling plant.

Thus, the obtained sheet is first processed through supermirror polishing and then to pvd coloring plant (physical vapor deposition).

The coloration of the stainless steel is obtained through the deposition of a plasma which allows the synthesis of nano-structured thin film coatings. This process occurs within vacuum chamber where the vaporized and activated metal ions condense on the surface of the stainless steel sheet, forming coatings of different nature (oxides, nitrides, carbides). The nanometric thickness of the coating adheres perfectly to the stainless steel substrate and does not change the aspect of the metal base finish. Thereforewe can obtain as many products as the possiblecombinations ofcolors and finishes.

Then, the product is protected with a specific plastic film and packed on a wooden pallet, ready to be sent to the customer.

Thanks to the versatility and the intrinsic properties of the stainless steel, TSteel® sheets can satisfy several aesthetical needsin architecture and design fields (coatings for internal and external areas, pieces of furniture).

Electro-colored sheet, dimensions 1250x2500 mm, polishing finish

Starting from the stainless steel coil it is possible to obtain the sheets in the required length through the decoiling plant. Thus, the obtained sheet is first processed through mirror polishing and then colored. The stainless steel coloring consists in the immersion of the stainless steel sheet in several galvanized baths; a surface conversion phenomena determines the color, given that a molecular change on the surface creates different oxide layers which are overlapping to the passivation film, typical of the stainless steel. The formation of the colors is made by “interference”, taking advantage of the difference in phase of the rays of light refracted by the layers of oxide and the rays reflected by the surface of the underlying metal.

Then, the product is protected with a specific plastic film and packed on a wooden pallet, ready to be sent to the customer.

Patterned / Embossed sheet, dimensions 1250x2500 mm, patterned finish

The patterned sheet is obtained by lamination, done with double rollers which imprint an embossed design on the stainless steel coil; this decoration can be impressed on both sides or only one side, depending on the customer's request. Then it is possible to obtain the sheets in the required length through the decoiling plant.

Then, the product is protected with a specific plastic film and packed on a wooden pallet, ready to be sent to the customer.

Supermirror sheet, dimensions 1250x2500 mm, supermirror manufacture

Starting from the stainless steel coil it is possible to obtain the sheets in the required length through the decoiling plant. Thus, the obtained sheet is processed with a supermirror finish using damp polishing heads.

Then, the product is protected with a specific plastic film and packed on a wooden pallet, ready to be sent to the customer.

Content of materials and chemical substances

The following charts show the percentage by weight of the different materials making up the products under the LCA study.

In order to distribute to the final customer or to the supplier, the products are preserved with plastic film (polyethylene) and transported on wooden pallets protected with cardboard corners (for shipments in Italy) or wooden cases (for foreign shipments). In addition, as requested by the PCR, the dangerousnessinformation of these materials and the chemical substances listed below is indicated, according to the European Regulation no. 1907/2006 (REACH) and the European Regulation no. 1272/2008 (CLP).

List of materials that originate the products under the LCA study			
Type of product	**material/substance**	**% by weight**	**kg**
stainless steel sheet	Stainless steel AISI 304,316,430 and 441	100	1000
primary packaging	Polyethylene plastic film (PE)	100	12 (*)
secondary packaging	Wooden pallet	75	254 (*)
	Iron cross support	1	4 (*)
	Cardboard corners	1	2 (*)
	Wooden cases	23	77 (*)

(*) average value

For secrecy reasons, the finish used with these substances is not specified, even when the final product does not contain them:

List of risk information of auxiliary substances used in production	
substance	**risk information (REACH & CLP)**
acetylene	• Flammable Gases - Category 1 - Danger (H220) • Gases under pressure – Dissolved Gases - Attention (H280) • May react explosively even in the absence of air (H230)
argon	• Gases under pressure – Dissolved Gases - Attention (H280)
nitrogen	• Gases under pressure – Dissolved Gases - Attention (H280)
oxygen	• Flammable Gases - Category 2- it can cause or increase a fire; combustive agent (H270) • Gases under pressure – Dissolved Gases - Attention (H280)
nitric acid	• It can increase a fire; combustive agent (H272) • It causes severe skin burns and severe eye damage (H314) • It can be corrosive for metals (H290)
chromic acid	• It can cause a fire or an explosion;very combustive agent (H271) • Toxicifingested (H301) • Fatal in contact with skin (H310) • Fatal if inhaled(H330) • It causes severe skin burns and eye damage (H314) • It can cause an allergic skin reaction (H317) • Causes serious eye damage (H318) • It can cause allergy or asthma symptoms or breathing difficulties if inhaled(H334) • It can cause genetic damage (H340) • It can cause cancer (H350) • It suspected of damaging fertility or the unborn child (H361) • It can cause respiratory irritation (H335) • It causes damage to organs in the event of prolonged or repeated exposure(H372) • Very toxic to aquatic life (H400) • Very toxic to aquatic life with long lasting effects (H410)
Sulphuric acid	• It causes severe skin burns and severe eye damage (H314)

ENVIRONMENTAL PERFORMANCE DECLARATION

Methodology

In order to value the datareported in this environmental product declaration, we have used the standard methodology LCA **(Life Cycle Assessment)**, according to the Regulations **ISO 14040:2006** (Environmental management - Life cycleassessment - Principles and frame work) and **ISO 14044:2006/Adm1:2017+Adm2** (Environmental management - Life cycleassessment - Requirements and guidelines) and concerning the evaluation of the environmental impact associated to each phase of a product life cycle. Moreover, we have considered the PCR references indications for stainless steel products: **UN CPC 412, 422 & 429 "Fabricated steel products, except construction products, machinery and equipment".**

The LCA methodology allows to determine the environmental impacts of a product or service in terms of resource consumption and environment emissions and production of waste during the life cycle ("cradle to gate").

The declared unit is **1000 kg of manufactured stainless steel**.

It should be noted that the manufactured stainless steel sheets are produced ranging in size from 0,6 up to 3 mm thickness, from 1000 to 1500 mm width and up to 6000 mm length; these variations depend on the final customer/ supplier's requests.

The calculation was performed through the SimaPro 8.2.3.0 software, using the EPD 2013 method (update V1.04).

The data used to realize the analysis include site-specific data, directly collected in steel Color Spa warehouse, located in Pescarolo ed Uniti (CR), and generic data (selected generics and other generics) that come from the Ecoivent 3.2 data bank, integrated in the SimaPro 8.2.3.0 software used to elaborate the results.

Conforming to the PCR 2014:10 version 2.0 dated 04/10/2017 "Fabricated steel products, except construction products, machinery and equipment", the contribution of other generic data does not exceed the 10% of the total environmental impacts.

System limits

As indicated in the PCR references ("PCR 2014:10 – Version 2.0 "Fabricated steel products, except construction products, machinery and equipment") shown here below, system limits of stainless steel include the production and the transport of the raw material, the stainless steel surface manufacturing and the packaging of the stainless steel scheets.

In details, the processes to consider for the assessment of the life cycle of the stainless steel sheets are branched as follows:

UPSTREAM MODULE

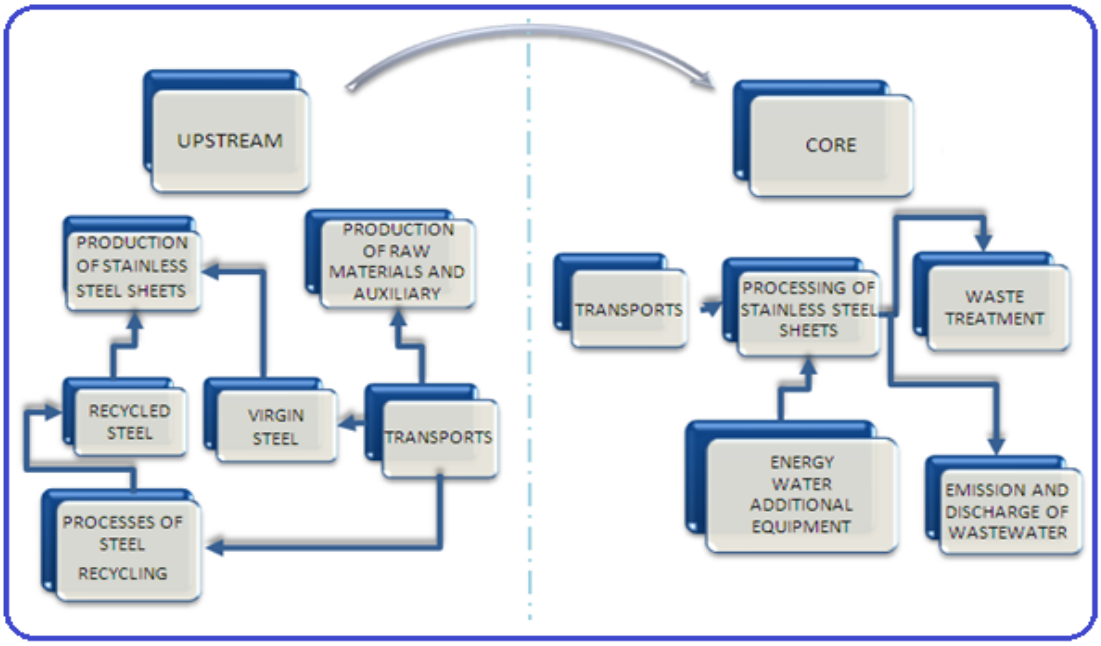
They are the "upstream" processes of the stainless steel sheets manufacturing in the Steel Color Spa's warehouse and include:

- ✓ extraction/ production of raw material;
- ✓ recycle processes of the recycled material used in the product;
- ✓ transport of raw material to the suppliers;
- ✓ Production of the primary packaging (protective film) and the secondary packaging (wooden pallet and protective cases).

CORE MODULE

They are the processes related to the production and they include:

- ✓ transport of the raw material from suppliers to Steel Color SpA;
- ✓ manufacturing activity and possible assembly;
- ✓ treatment of the waste generated during the production;
- ✓ Impacts due to the production of electric energy, in agreement with the hypothesis of the fuel mix used.



Limits of the under study system

The following items are not included in the system, based on what specified in the PCR:

- ✓ the construction of the establishment, the production of manufacturing equipment and other capital goods with an average duration of life beyond three years;
- ✓ research and development activities;
- ✓ Staff activities and business trips.

If compared to the previous version, an assessment of the product life cycle has been carried out based on the "cradle-to-gate" method. The product life cycles ends when the product is ready to be transferred to the next operator of the supply chain. This choice was made due to fact that Steel Color S.p.A. is not always related to the end-use of the product and this leads to the impossibility to obtain objective information on the end life phase.

In accordance with Regulation (EC) No 1907/2006, the articles covered by this Environmental Product Declaration do not contain neither substances intended to be released during normal and reasonably foreseeable conditions of use nor substances of very high concern (SVHC) included in the identifying substances list above a concentration of 0,1 % weight by weight (w/w).

Data representativeness

The year to which the site-specific data collected in Steel Color Spa warehouse (Pescarolo ed Uniti - CR) refers is **2019**.
The remaining generic data are taken from the Ecoinvent v. 3.2 bank data, chosen considering the under listed quality requirements and by following the principles of accuracy, completeness, representativeness, consistency and reproducibility:

- time factors: the data relate to the last three years maximum;
- geography: the data refers to the country of origin or, failing this, it refers to the geographical continental area that the country of origin belongs to.
- Technology: the data regard a combination of technologies, that is the average weight of the available technologies, except for transport for which, in absence of detailed information, we considered the more unfavorable technology as a precaution.

As regards the cut-off, this has not been applied because we considered all the production processes.

Environment performance

The following chart resumes the results of the evaluation of the four products under study life cycle.
More specifically, for each life cycle phase of the manufactured stainless steel sheet, the environmental impact data was recorded through quantification of:

- ✓ greenhouse gas emissions (kg CO2eq);
- ✓ emissions of acidifying gases (kg SO2eq);
- ✓ gas emissions that contribute to create a ground-level of ozone (kg C2H4eq);
- ✓ emissions of substances that are responsible for the eutrophication process (kg PO43-eq);
- ✓ consumption of renewable and non-renewable material resources (kg);
- ✓ consumption of renewable (MJ) and non-renewable energy resources (kg);
- ✓ consumption of secondary material resources (kg);
- ✓ consumption of secondary energetic resources (MJ);
- ✓ recovered energy flows (MJ);
- ✓ products waste (kg), divided in dangerous, non-dangerous and radioactive;
- ✓ water consumption and direct water consumption of the productive processes (l).

The impacts related to the renewable energies consumption (hydroelectric, wind, solar, etc…) as well as renewable material resources consumption have been calculated with SimaPro 8.2.3.0 software integrated with Ecoinvent v. 3.2. database.

All data contained in the following charts are related to the declared unit (1000 kg of manufactured stainless steel).

Environmental results

The following schedules express the **potential environmental impacts** of the four products under study, according to the categories in the PCR references.

TSTEEL®SM SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
POTENTIAL ENVIRONMENTAL IMPACTS	Acidification	kg SO_2eq	**39,41**	34,44	1,29	3,68
	Eutrophication	kg PO_4^{3-} eq	**14,49**	10,75	3,03	0,71
	Greenhouse gas emission	kg CO_2eq	**6794,50**	5768,36	232,16	793,98
	Photochemical oxidation	kg C_2H_4eq	**1,89**	1,61	0,11	0,18

ELECTRO-COLORED POLISHED SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
POTENTIAL ENVIRONMENTAL IMPACTS	Acidification	kg SO_2eq	**44,41**	34,52	2,81	7,08
	Eutrophication	kg PO_4^{3-} eq	**19,39**	11,46	6,63	1,31
	Greenhouse gas emission	kg CO_2eq	**8406,20**	5864,64	507,53	2034,04
	Photochemical oxidation	kg C_2H_4eq	**2,26**	1,65	0,24	0,37

PATTERNED SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
POTENTIAL ENVIRONMENTAL IMPACTS	Acidification	kg SO_2eq	**40,39**	36,61	0,71	3,08
	Eutrophication	kg PO_4^{3-} eq	**26,98**	24,73	1,66	0,60
	Greenhouse gas emission	kg CO_2eq	**6454,42**	5641,74	127,47	685,21
	Photochemical oxidation	kg C_2H_4eq	**2,19**	1,99	0,06	0,15

SUPER MIRROR SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
POTENTIAL ENVIRONMENTAL IMPACTS	Acidification	kg SO_2eq	**47,67**	43,15	1,01	3,51
	Eutrophication	kg PO_4^{3-} eq	**79,60**	76,57	2,37	0,66
	Greenhouse gas emission	kg CO_2eq	**7222,65**	6304,74	181,31	736,61
	Photochemical oxidation	kg C_2H_4eq	**2,05**	1,79	0,09	0,17

Resource Consumption

The following charts show the **material and energy resource consumption** (renewable and non-renewable) regarding the life cycle of the four products under study.

TSTEEL®SM SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
ENERGY RESOURCES CONSUMPTION	**Non-renewable**	**Kg**	**2868,02**	**2457,24**	**124,55**	**286,23**
	Coal	Kg	2051,12	1829,13	90,86	131,13
	Natural Gas	Kg	508,11	381,48	11,13	115,50
	Oil	Kg	308,79	246,63	22,56	39,59
	Renewable	**MJ**	**26077,33**	**16762,56**	**110,96**	**530,36**
	Biomass	MJ	12129,71	3343,63	0,00	112,31
	Hydroelectric	MJ	13257,26	13015,43	76,28	165,55
	Other	MJ	690,67	403,50	34,68	252,49
MATERIAL RESOURCES CONSUMPTION	**Non-renewable**	**Kg**	**4728,77**	3781,82	877,58	69,28
	Calcite	Kg	393,13	382,87	4,62	5,64
	Chromium	Kg	273,79	273,65	0,11	0,04
	Gravel	kg	1828,13	1711,11	72,29	44,74
	Nickel	kg	699,60	699,11	0,27	0,12
	Carbon dioxide in air	Kg	1100,98	300,87	790,56	9,55
	Clay	Kg	93,23	89,85	2,30	1,08
	Other	Kg	161,62	148,70	6,27	6,66
	Renewable	**Kg**	**884,67**	**221,32**	**657,54**	**5,81**
CONSUMPTION SECONDARY RESOURCES	**Materials (steel)**	**Kg**	**553,00**	**553,00**	**0,00**	**0,00**
	Energy	**MJ**	**0,00**	**0,00**	**0,00**	**0,00**
RECOVERED ENERGY FLOWS		**MJ**	**0,00**	**0,00**	**0,00**	**0,00**

ELECTRO-COLORED POLISHED SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
ENERGY RESOURCES CONSUMPTION	**Non-renewable**	**Kg**	**3457,96**	**2522,68**	**272,29**	**663,00**
	Coal	Kg	2227,49	1871,88	198,65	156,96
	Natural Gas	Kg	860,71	393,95	24,33	196.67
	Oil	Kg	369,77	256,85	49,30	63,61
	Renewable	**MJ**	**36753,40**	**16983,41**	**242,55**	**601,21**
	Biomass	MJ	22329,03	3273,71	0,00	129,09
	Hydroelectric	MJ	13674,51	13295,10	166,71	212,70
	Other	MJ	749,86	414,59	75,85	259,42
MATERIAL RESOURCES CONSUMPTION	**Non-renewable**	**Kg**	**6220,87**	**4040,52**	**2265,89**	**611,01**
	Gravel	Kg	2079,50	1747,79	157,97	173,74
	Nickel	Kg	713,34	712,54	0,58	0,22
	Calcite	kg	465,19	395,53	10,11	59,55
	Bauxite	kg	356,52	351,99	2,56	1,98
	Chromium	Kg	284,78	281,57	0,23	0,07
	Carbon dioxide in air	Kg	2031,98	295,71	1725,09	11,17
	Other	Kg	289,56	255,38	19,91	14,27
	Renewable	**Kg**	**1664,61**	**223,17**	**1434,54**	**6,90**
CONSUMPTION SECONDARY RESOURCES	**Materials (steel)**	**Kg**	**564,00**	**564,00**	**0,00**	**0,00**
	Energy	**MJ**	**0,00**	**0,00**	**0,00**	**0,00**
RECOVERED ENERGY FLOWS			**0,00**	**0,00**	**0,00**	**0,00**

PATTERNED SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
ENERGY RESOURCES CONSUMPTION	**Non-renewable**	**Kg**	**2737,15**	**2427,84**	**68,37**	**240,94**
	Coal	Kg	1945,37	1782,99	49,86	112,17
	Natural Gas	Kg	466,37	359,10	6,10	101,17
	Oil	Kg	325,41	285,75	12,42	27,24
	Renewable	**MJ**	**19871,73**	**14561,18**	**60,95**	**446,16**
	Biomass	MJ	8404,09	3513,10	0,00	87,55
	Hydroelectric	MJ	691,60	451,00	19,01	221,60
	Other	MJ	10776,04	10597,09	41,94	137,01
MATERIAL RESOURCES CONSUMPTION	**Non-renewable**	**Kg**	**4360,62**	**3823,12**	**485,51**	**84,92**
	Gravel	Kg	1579,51	1506,82	39,76	32,92
	Calcite	Kg	573,62	566,85	2,51	4,26
	Nickel	kg	477,78	477,53	0,15	33,02
	Chromium	kg	272,32	272,23	0,06	0,03
	Bauxite	Kg	193,23	191,36	0,64	1,23
	Carbon dioxide in air	Kg	762,89	317,58	437,72	7,60
	Clay	Kg	89,49	87,42	1,26	0,82
	Iron	Kg	80,51	74,95	2,29	3,26
	Titanium dioxide	Kg	148,29	148,27	0,003	0,02
	Other	Kg	182,98	180,10	1,12	1,76
	Renewable	**Kg**	**613,98**	**245,13**	**364,39**	**4,46**
CONSUMPTION SECONDARY RESOURCES	**Materials (steel)**	**Kg**	**549,00**	**549,00**	**0,00**	**0,00**
	Energy	**MJ**	**0,00**	**0,00**	**0,00**	**0,00**
RECOVERED ENERGY FLOWS			**0,00**	**0,00**	**0,00**	**0,00**

SUPER MIRROR SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
ENERGY RESOURCES CONSUMPTION	**Non-renewable**	**Kg**	**3030,24**	**2670,85**	**97,27**	**262,12**
	Coal	Kg	2177,84	1987,22	70,97	119,65
	Natural Gas	Kg	526,20	411,48	8,69	106,02
	Oil	Kg	326,19	272,13	17,61	36,45
	Renewable	**MJ**	**26004,36**	**18682,22**	**86,65**	**478,11**
	Biomass	MJ	10476,42	3620,29	0,00	98,74
	Hydroelectric	MJ	14838,50	14629,40	59,55	149,55
	Other	MJ	689,44	432,54	27,10	229,81
MATERIAL RESOURCES CONSUMPTION	**Non-renewable**	**Kg**	**4987,97**	**4239,73**	**683,87**	**64,35**
	Gravel	Kg	1938,85	1840,25	56,43	42,17
	Nickel	Kg	742,16	741,84	0,21	0,11
	Calcite	kg	445,10	436,37	3,61	5,12
	Chromium	kg	276,96	276,83	0,08	0,04
	Carbon dioxide in air	kg	950,11	325,70	615,93	8,48
	Clay	Kg	117,00	114,21	1,79	0,99
	Iron	Kg	77,78	70,78	3,27	3,73
	Magnesite	Kg	32,26	32,10	0,13	0,03
	Other	Kg	200,77	196,90	1,50	2,36
	Renewable	**Kg**	**757,91**	**240,64**	**512,16**	**5,11**
CONSUMPTION SECONDARY RESOURCES	**Materials (steel)**	**Kg**	**554,00**	**554,00**	**0,00**	**0,00**
	Energy	**MJ**	**0,00**	**0,00**	**0,00**	**0,00**
RECOVERED ENERGY FLOWS			**0,00**	**0,00**	**0,00**	**0,00**

Other impacted categories

The following chartsshow the **amount of waste produced** and the **volume of water consumed** along the life cycle of the four products under study.

TSTEEL®SM SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
WASTE PRODUCTION	Dangerous waste	kg	**0,11**	0,08	0,01	0,03
	Non-dangerous waste	kg	**6749,45**	6681,14	33,57	34,74
	Radioactive waste	kg	**0,24**	0,19	0,01	0,04
WATER CONSUMPTION	Total water consumption	l	**31482,93**	26909,82	1643,05	2930,06
	Direct water	l	**745,93**	0,00	0,00	745,93

ELECTRO-COLORED POLISHED SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
WASTE PRODUCTION	Dangerous waste	kg	**0,14**	0,09	0,01	0,04
	Non-dangerous waste	kg	**7233,15**	6830,87	73,37	328,90
	Radioactive waste	kg	**0,27**	0,20	0,02	0,05
WATER CONSUMPTION	Total water consumption	l	**63299,00**	28283,51	3597,71	31417,77
	Direct water	l	**27719,76**	0,00	0,00	27719,76

PATTERNED SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
WASTE PRODUCTION	Dangerous waste	kg	**0,13**	0,10	0,00	0,02
	Non-dangerous waste	kg	**5779,20**	5735,94	18,45	24,80
	Radioactive waste	kg	**0,26**	0,22	0,01	0,03
WATER CONSUMPTION	Total water consumption	l	**49373,02**	45932,87	895,42	2544,74
	Direct water	l	0,00	0,00	0,00	0,00

SUPER MIRROR SHEET (data refer to 1000 kg manufactured stainless steel)

IMPACT CATEGORIES		Measure Unit	Total	UPSTREAM		CORE
				Rawmaterial (production)	Packaging (production)	Production
WASTE PRODUCTION	Dangerous waste	kg	**0,11**	0,08	0,00	0,03
	Non-dangerous waste	kg	**7109,06**	7050,07	26,21	32,78
	Radioactive waste	kg	**0,25**	0,20	0,01	0,04
WATER CONSUMPTION	Total water consumption	l	**51588,13**	46859,61	1285,86	3442,66
	Direct water	l	**745,93**	0,00	0,00	745,93

Differences from the previous version of the Environmental Product Declaration

The following table shows the values of the environmental indicators compared to the values previously calculated for each finish for the two years and the percentage variations.

Steel Color product	Environmental impact	U.M.	TOTAL YEAR 2018	TOTAL YEAR 2019	CHANGE %
Electro colored polished sheet	Acidification	kg SO_2eq	41,92	44,41	5,95%
	Eutrophication	kg PO_4^{3-}eq	20,73	19,39	-6,46%
	Greenhouse gas emission	kg CO_2eq	7806,29	8406,20	7,68%
	Photochemical oxidation	kg C_2H_4eq	2,07	2,26	9,03%
Patterned sheet	Acidification	kg SO_2eq	37,83	40,39	6,77%
	Eutrophication	kg PO_4^{3-}eq	20,99	26,98	28,56%
	Greenhouse gas emission	kg CO_2eq	6189,64	6454,42	4,28%
	Photochemical oxidation	kg C_2H_4eq	2,03	2,19	8,03%
Supermirror sheet	Acidification	kg SO_2eq	41,19	47,67	15,72%
	Eutrophication	kg PO_4^{3-}eq	35,56	79,60	123,85%
	Greenhouse gas emission	kg CO_2eq	6825,37	7222,65	5,82%
	Photochemical oxidation	kg C_2H_4eq	1,91	2,045427	7,09%
Tsteel SM sheet	Acidification	kg SO_2eq	39,06	39,41	0,90%
	Eutrophication	kg PO_4^{3-}eq	16,96	14,49	-14,59%
	Greenhouse gas emission	kg CO_2eq	6768,49	6794,50	0,38%
	Photochemical oxidation	kg C_2H_4eq	1,88	1,89	0,73%

The variations are related to:

- use in greater quantities of 316 stainless steel alloy than 304 stainless steel alloy in the embossed sheet and Supermirror sheet finishes. The 316 stainless steel alloy, unlike the other alloys used, contains the chemical element Molybdenum which has increased the environmental impact;
- updating of site-specific production data (reference year 2019);
- update of the energy mix according to the European Residual Mixes 2019 document;
- modification of the mix of used steel suppliers and the consequent national energy mix.

Examples for using EPD

The evaluation of the environmental product impact represents an innovative approach in the sustainable planning.

Steel Color SPA's EPD provides information that helps to summarize the environmental impact of an object, in terms of the used energy and greenhouse gas emissions generated by the construction, and compare them to the ones that refer to different solutions employed in the same object for the same life cycle.

By convention, the data in the EPD refer to a hypothetical object that works as a reference, called Declared Unit, which corresponds, in the case under study, to **1000 kg of manufactured stainless steel**.

In order to use the data provided for a project evaluation, considering that the stainless steel sheets dimensions change depending on the customer/ supplier's needs, it is necessary to readjust the greenhouse gas emission impacts of a **sheet with dimensions 1x1250x2500 mm**, which are the most required dimensions.

	TSteel®SM	Electro-colored polished	Patterned	Supermirror
Declared Unit: 1000 kg machined stainless steel				
Greenhouse emissions [kg CO_2eq/1000kg U.D.]	**6794,50**	**8406,20**	**5641,74**	**7222,65**
Acidification[kg SO_2eq/1000kg U.D.]	**39,41**	**44,41**	**40,39**	**47,67**
Photochemical Oxidation [kg C_2H_4eq/1000kg U.D.]	**1.89**	**2,26**	**1,99**	**2,05**
Eutrophication [kg PO_4^{3-}eq/1000kg U.D.]	**14,49**	**19,39**	**26,98**	**79,60**
Transformation into a single sheet of standard dimensions 1x1250x2500mm (25 kg per sheet)				
Greenhouse emissions [kg CO_2eq/1000kg U.D.]	**169,86**	**210,16**	**141,04**	**180,57**
Acidification[kg SO_2eq/1000kg U.D.]	**0,985**	**1,110**	**1,010**	**1,192**
Photochemical Oxidation [kg C_2H_4eq/1000kg U.D.]	**0,047**	**0,057**	**0,050**	**0,051**
Eutrophication [kg PO_4^{3-}eq/1000kg U.D.]	**0,362**	**0,485**	**0,675**	**1,990**

Environmental and social responsibility

Thanks to the attention for the environment management, the company Steel Color SpA always stood out. Steel Color SpA adopted since 2000 a certified Environmental Management System, according to the Regulation ISO 14001. The Quality Environment Safety integrated management System, according to the Regulations UNI EN ISO 9001, UNI EN ISO 14001 and OHSAS 18001 is certified by the RINA Certification Institute with:

- certificate n° 891/97/S for the compliance to Regulation UNI EN ISO 9001:2015
- certificate n° EMS-178/Sfor the compliance to RegulationUNI EN ISO 14001:2015
- certificate n° OHS-616 for the compliance to RegulationOHSAS 18001:2007

Therefore, Steel Color S.p.A. has accepted precise and defined commitments regarding Quality, Environment and Safety. For this purpose the company works hard to reach the targets defined in its own Environmental and Safety Policy, that are:

- respect of current laws, contractual, environmental and safety norms;
- plan and realize actions for a major environmental sustainability;
- reduce the more important environmental impacts related to the establishment activity with specific attention for the management of dangerous substances;
- minimize the waste volume to be disposed;
- evaluate the risks and arrange the prevention and protection measures in order to avoid accidents, situation of risks and damage to people;
- collaborate with the local authority;
- Aim for a continuous improvement.

In order to reach these goals, the company considers strategic what follows:

- extending this policy to all company levels;
- making the staff feel responsible, educate and train them, informing about the achievement of the set goals;
- monitoring the company processes, the environmental aspects and the risks of any related accident;
- managing the plants according to the high environmental standards and safety;
- planning and implementing action plans to improve continuously the company results, in terms of quality, environment and safety;
- Reviewing periodically the objectives and targets, ensuring the policy effectiveness over the time.

INFORMATION

AND REFERENCES

Specific reference requirements

EPD programme	The International EPD® System Vesagatan 15-17 se-111 20 Stockholm Sweden www.environdec.com
Registration Nº	**Nº S-P-00690**
Date of publication	02/03/2015
EPD validity	12/06/2021
EPD valid within the following geographical area	World
EPD Type	**X** Cradle-to-gate Cradle-to-grave
Independent verification of the declaration and data, according to ISO 14025:2006	**X**EPD External verification EPD Process certification
Third party verifier	Rina Services Spa, Via Corsica, 12 – 16128 - Genova - ITALY, www.rina.org
Third party verifier accredited or approved by	ACCREDIA (reg..n° 001H)
Reference Product category rules (PCR)	PCR 2014:10 – Version 2.0 – Fabricated steel products, except construction products, machinery and equipment
Product category rules (PCR) review conducted by	The Technical Committee of the International EPD® System. Chair: Massimo Marino Contact via info@environdec.com
EPD within the same product category but coming from different programs may not be comparable.	

Contacts

If you need any further information about this environmental declaration, please contact:
Stefania Brunelli – Qualità, Ambiente e Sicurezza - Steel Color S.p.A.
Telefono +39 0372 83.43.11; Fax +39 0372 83.40.15; E-mail stefaniabrunelli@steelcolor.it

Bibliography and data sources

- General Programme Instructions for the International EPD® System, Version 2.5. (www.environdec.com)
- PCR 2014:10 “Fabricated steel products, except construction products, machinery and equipment”, Version 2.0 del 04/10/2017 (www.environdec.com)
- “Life CycleAssessment Report: Lastre di acciaio inox lavorato di Steel Color SpA; TSteel®, Supermirror, Colorata Lucida e Goffrata” - rev. 01 del 04/09/2020
- “LCI data for steel products”, provided by Eurofer Stainless, The European Steel Association (www.eurofer.eu)
- Banca data Ecoinvent v. 3.2
- European Residual Mixes 2019