Ternium

LATIN AMERICA EPD®

Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012

Hot rolled steel manufactured by Ternium México -

Including grades A36, A50, A55, A60

Programme:	**The International EPD® System www.environdec.com**
EPD registered through the fully aligned regional programme/hub:	**EPD Latin America, www.epd-latinamerica.com**
Programme operator:	**EPD International AB**
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Revision date:	**2019-06-27**
Geographical scope:	**Mexico**

EPD Content

1.Ternium Mexico

Ternium is a leading company in Latin America that manufactures and processes a broad range of steel products using the most advanced technology. The company provides customers that operate in such diverse and essential steel consuming industries, such as construction, automotive and energy, as well as manufacturers of heavy and agricultural machinery, household appliances and packaging, among others.

Ternium and its subsidiaries have 17 productive centers in Argentina, Brazil, Colombia, Guatemala, Mexico, and the United States. It is also part of the controlling group of Usiminas, a leading steelmaker of the Brazilian market.

Ternium supplies with high quality steel all the main regional markets and it also promotes the development of its customers from the metallurgical industry. The company's distinctive position is a result of its highly integrated production procedure. Its facilities feature the whole manufacturing process of steelmaking, from the mining of iron ore to the production of high value-added products. With a yearly achievable production capacity of 12.3 million tons, Ternium's shares are listed and traded on the New York Stock Exchange.

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

2. General information

Product:	Hot rolled steel including grades A36, A50, A55, A60
Declaration owner:	Ternium Mexico S.A. de C.V. Avenida Universidad 992 Colonia Cuauhtemoc, C.P. 66 450 San Nicolas De Los Garza. Nuevo León, México. mx.ternium.com Contact person: Luis Rechy lrechy@ternium.com.mx
Description of the construction product:	The hot rolled steel is a product manufactured in the Ternium´s steel shop and rolling mills through a thermomechanical process that involves the deformation of the steel in the form of slabs at high temperatures, until reaching the dimensions and mechanical properties required. The hot rolled steel is a structural product that has no processes subsequent to hot rolling and its final presentation is in the form of -coils, bands or sheets. Ternium hot rolled steel can be used for bending, forming, cutting or welding, among other applications.
Declared Unit:	1 metric ton of hot rolled steel
Construction product identification:	Central Product Classification: CPC 4121 Flat-rolled products of steel, not further worked than hot-rolled
Main product components:	100% Hot rolled steel including grades A36, A50, A55, A60
Life cycle stages not considered:	Distribution, use, end of life.
Content of the declaration:	This EPD is based on information modules that do not cover the aspects of use and end of life of the product. It contains in detail, for Module A1, A2 and A3: • Product definition and physical data. • Information about raw materials and origin. • Specifications off product manufacturing. • Notes on product processing. • LCA based on a declared unit, cradle-to-gate. • LCA results. • Evidence and verifications.
For more information consult:	mx.ternium.com

Site for which this EPD is representative:	Manufacturing Plants Industrial Center: Ave. Guerrero Nte. 151 Colonia Cuauhtémoc, San Nicolás de los Garza (66450) Nuevo León (+52) 81 8865-2828 Industrial Center: Ave. Churubusco 1000 Colonia Santa Fe Monterrey (64540) Nuevo León (+52) 81 83295000
Public intended:	B2B (Business to Business)

3. Product Description

The hot rolled steel is a product manufactured in the Ternium´s steel shop and rolling mills through a thermomechanical process that involves the deformation of the steel in the form of slabs at high temperatures, until reaching the dimensions and mechanical properties required.

The hot rolled steel is a structural product that has no processes subsequent to hot rolling and its final presentation is in the form of rolls, tapes or sheets.

Uses in the construction sector:
- Bending
- Forming
- Cutting
- Welding

Finishing:
Non pickled steel: Product with no processes subsequent to hot rolling.
Pickled steel: Hot rolled steel processed in a series of acid baths to remove surface oxides (not included in this EPD)

Production ranges:
Thickness: 1.5 to 15.875 mm
Width: 791 up to 1 524 mm

Coil weight: up to 23 metric tons

Available shapes:
Coil
Straps
Sheets
Pickled and non pickled

Application: Mainly construction.

Also, hot rolled steel manufactured by Ternium Mexico can be used in automotive industry, heavy-duty transport, heavy-duty machinery, high-pressure pipes and vessels, among other sectors.

The environmental indicators presented in this EPD include all grades of steel manufactured by Ternium Mexico. However, section 3.1 provides information on grades A36, A50, A55 and A60 since these are the most representative for the construction sector.

Products:

Commercial

Generic grade	CS	1006	1008	1010	1020	1035	1045
	•	•	•	•	•	•	•

Die-cutting

Generic grade	DQ	DDQ
	•	•

Structural

	SS (Designation by yield strength in kpsi)		
Generic grade	SS36	SS50	SS55
	•	•	•

High Resistance Low-alloy

	HLSA (designation by yield strength in Mpa)					
Generic grade	300LA	340LA	380LA	420LA	490LA	550LA
	•	•	•	•	•	•

	HLSA (designation by yield strength in Mpa)			
Generic grade	400	440	540	590
	•	•	•	•

High Resistance Low-alloy

	Ferrite-bainite		Dual phase
Generic grade	540FB	590FB	DP590
	•	•	•

Steel pipelines

	API (PSL1&PSL2)				
Generic grade	J55	X42	X52	X65	X70
	•	•	•	•	•

High pressure vessels

Generic grade	HSLA 50
	•

Anti-slip

Generic grade	CS
	•

Notes:

- Products presented in the tables above have application in the construction sector, as well as in other sectors, depending on the final application required by each client.
- The environmental indicators presented in this EPD include all grades of steel presented in the tables above. However, section 3.1 provides information on grades A36, A50, A55 and A60 since these are the most representative for the construction sector.
- The above tables refer to generic products; these can be subject to various national standards (NOM, NMX, etc.), international (ASTM, EN, JIS, etc.), owners of Ternium and / or customer-specific.
- The aforementioned products are general references and represent only a part of Ternium's capabilities, in the case of more specific products, please consult the sales area.
- The products depending on their final application or at the customer's request can be delivered with a "Skin Pass" process after the hot rolling process.
- Very high strength and / or advanced products require an approval process, please consult the sales area for the specific Procedure.
- Consult the sales area for the dimensional combination available for each steel grade.
- Ternium reserves the right to modify the aforementioned information without prior notice.

3.1 Technical specifications

Table 1. Dimensions

Property	Grade A36		Grade A 50		Grade A 55		Grade A 60	
	Min	Max	Min	Max	Min	Max	Min	Max
Thickness (mm)	1.8	15.875	1.52	15.875	1.75	12.7	2.0	15.4
Width (mm)	791	1 524	791	1 524	791	1 524	791	1 524
Weight (Ton)		23.0		23.0		23.0		23.0

3.2 Mechanical properties

Table 2. Technical specification

Property		Grade A36		Grade A 50		Grade A 55		Grade A 60	
		ksi	MPa	ksi	MPa	ksi	MPa	ksi	MPa
Yield Strength	Min	36	250	50	340	55	380	60	420
	Max	-	-	-	-	-	-	-	-
Tensile Strength	Min	58	400	60	420	65	450	70	480
	Max	80	550	-	-	-	-	-	-
Elongation 50 mm (%).	Min	23		20		18		16	
	Max								

4. Content declaration

Table 3. Typical content in hot rolled steel manufactured by Ternium Mexico					
Homogeneous Material or Chemical Substance	Chemical Substances	Weight (%)	CAS Number	Function of Chemical Substance	Health class[1]
Direct reduced iron iron ore)	Not applicable	75.07%	Not applicable	Iron content in steel	Not listed
Steel scrap	Not applicable	18.40%	Not applicable	Iron content in steel	Not listed
Aluminium	Aluminium	0.27%	7429-90-5	Steel alloy	Not listed
Calcium carbonate	Calcium carbonate	5.35%	471-34-1	Slag formation	Not listed
Coal	Anthracite	0.50%	8029-10-5	Carbon content in steel	Not listed
Ferroalloy	Ferro-manganese	0.36%	12604-53-4	Steel alloy	Not listed

5. LCA Rules

Environmental potential impacts were calculated according to EN 15804:2012 and PCR 2012:01 Construction products and construction services Version 2.3 (2018-11-15). This EPD is in accordance with ISO 14025:2006.

Environmental potential impacts were calculated through Life Cycle Assessment (LCA) methodology according to ISO 14040:2006 and ISO 14044:2006. An external third-party verification process of the EPD was conducted according to General Programme Instructions for the International EPD® System Version 3.0. Verification includes a documental review and a validation of both the underlying LCA study and documents describing additional environmental information that justify data provided in the EPD.

[1] European Chemical Agency (ECHA):
a) Candidate List: https://echa.europa.eu/es/candidate-list-table?p_p_id=disslists_WAR_disslistsportlet&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_pos=2&p_p_col_count=3&_disslists_WAR_disslistsportlet_javax.portlet.action=searchDissLists
b) Authorisation list https://echa.europa.eu/es/authorisation-list?p_p_id=disslists_WAR_disslistsportlet&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_pos=1&p_p_col_count=2&_disslists_WAR_disslistsportlet_javax.portlet.action=searchDissLists
c) Restriction list https://echa.europa.eu/es/substances-restricted-under-reach?p_p_id=disslists_WAR_disslistsportlet&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_pos=1&p_p_col_count=2&_disslists_WAR_disslistsportlet_javax.portlet.action=searchDissLists

5.1 Declared unit

One metric ton of hot rolled steel.

5.2 System boundary

The declared EPD is a "Cradle-to gate EPD" in line with ISO 14025:2006. Description of the system boundary is in Table 4.

Table 4. Hot rolled steel manufactured by Ternium Mexico product system

Life cycle environmental information of hot rolled steel manufactured by Ternium Mexico															Other environmental information
A1 - A3			A4 - A5		B1 - B7							C1 - C4				D
Product stage			Construction process stage		Use stage							End of life stage				Reuse recovery stage
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw materials acquisition	Transport	Manufacturing	Distribution	Construction and installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational wáter use	De-construction, demolition	Transport	Waste processing	Disposal	Reuse – recovery – recycling potential
X	X	X	MND	MND	MND							MND				MND
Cradle-to-gate Declared unit: one metric ton of hot rolled steel																

(X = included in LCA; MND = Module Not Declared).

Table 5. Description of information modules included in this EPD.

A1) Raw materials supply	A2) Transportation	A3) Manufacturing
Pre-processing of steel scrap	Transportation of steel scrap	Fresh water consumption
Production of raw materials: ferroalloys, lime, carbon, graphite electrodes	Transportation of iron pellet	Production and consumption of ancillary materials: oxygen, nitrogen, textiles for cleaning and maintenance, lubricating oils and grease
Production of packaging materials for raw materials	Transportation of other raw materials	Waste generation and waste management processes
Generation and distribution of the electricity consumed in manufacturing	Transportation of ancillary materials	Emissions to air
Generation and distribution of the natural gas consumed in manufacturing	Internal transportation requirements	Transport of waste to treatment and final disposal sites
Production of steel slab by external provider	Transport of steel slab from external provider facilities	

5.3 Description of the manufacturing process

Ternium Mexico manufactures hot rolled steel in three hot rolling mills, two of which (MC1 and MC2) are in the Guerrero plant, located in the municipality of San Nicolás de los Garza, and one mill (MC3) in the Churubusco plant, located in the municipality of Monterrey, both in the state of Nuevo León. MC1 and MC3 mills use slab purchased to an independent supplier and the MC2 mill has an integrated process that starts from the direct reduction of the iron pellet, through the production of steel in the electric arc furnace, the continuous casting and the hot rolling. The manufacturing process is depicted in Figure 1.

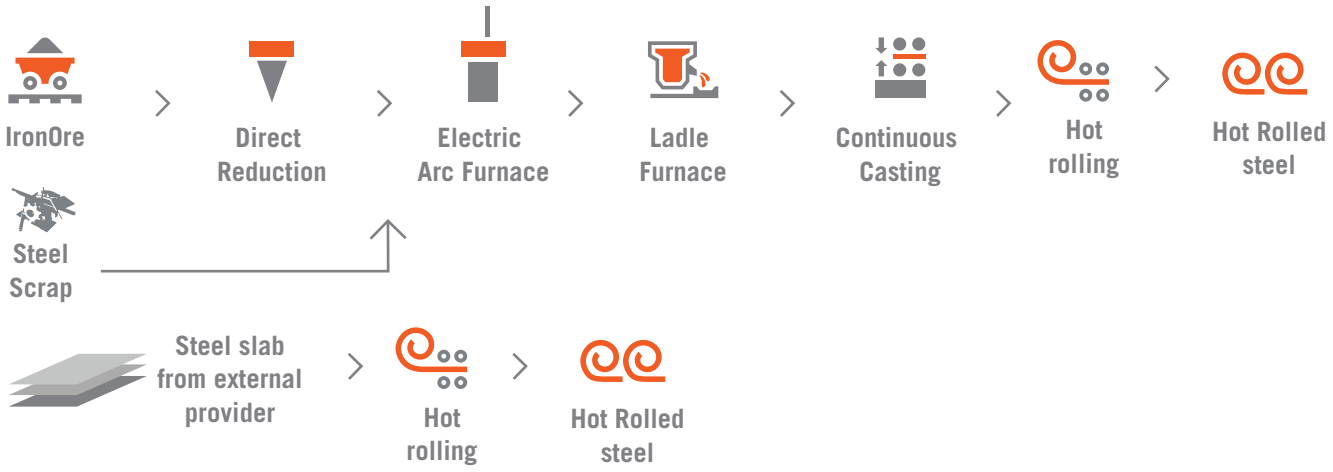


Figure. 1. Flow diagram of hot rolled steel manufacturing process

5.4 Assumptions

• Scrap purchased in the Metropolitan area of Monterrey is transported through a truck with a capacity greater than 30 t and it is acquired within the same municipality (34 km).

• All scrap acquired outside the Metropolitan area of Monterrey is purchased from Saltillo, at 80 km and transported by a truck with a capacity greater than 30 t.

• When the generation of contaminated industrial waste was reported, tow and rags were added to supplement the material balance, under the assumption that 50% by weight are tow and 50% are rags from reused garments (recycling).

• Tow and rags leave the system in the form of contaminated industrial waste or impregnated textiles and that they have the capacity to absorb 55% of their weight.

• Rags and tow used for cleaning, as well as the grease for maintenance are sourced in the same municipality.

• Natural gas consumed by Ternium Mexico comes from the Burgos gas processing complex of PEMEX and the transport distance is as follows:

Natural gas transport	Distance (km)
Burgos – Guerrero Works	228
Burgos – Churubusco Works	225

5.5. Cut-off criteria

A minimum of 95% of the total flows (matter and energy) in modules A1 and A3 modules were included. Company infrastructure, employee's transportation and administrative were kept out of the scope of this study.

5.6 Allocation

Allocation of inputs and outputs between product and byproducts was based on a mass relation, considering the quantity produced per year of each product and byproduct at the level of unit process.

Table 6 shows the byproducts generated during hot rolled steel manufacturing.

Plant	Process	Byproduct
Guerrero	Direct reduction	CO2, REDI sludge, iron dust
Guerrero	Electric arc furnace	Slag, Mixrock (Steel dust), hematite
Guerrero	MC1 Mill	Steel scale
Guerrero	MC2 Mill	Steel scale
Churubusco	MC3 Mill	Steel scrap, slab cutting slag

Table 6. Coproduct generated in hot rolled steel manufacturing

The polluter pays principle was applied for the allocation procedure during recycling. In this way, in each case when there was an input of secondary material to the hot rolled steel product system, recycling process and transportation to the site were included in life cycle inventory (for example, steel scrap). In those cases, in which output of material to recycling were presented, material transportation to recycling plant was included. This principle was applied to plastic and metal containers recycled by a third party as well as waste used as energy source by third parties.

For generic data Mexicaniuh and Ecoinvent 3.3 (Allocation - Recycled Content version) databases were used.

5.7 Time representativeness

Direct data obtained from Ternium Mexico is representative for 2017.

5.8 Data quality assessment

Data quality assessment per information module is provided in Tables 7, 8 and 9.

Table 7.Raw material supply module data quality assessment

Data	Time related coverage	Geographic coverage	Technological coverage	Data source	Measured or estimated
Raw materials and energy consumption, waste generation and emissions for iron ore extraction	1999 - 2016	Europe adapted to Mexico	Modern	Ecoinvent 3	M&E
Raw materials and energy consumption, waste generation and emissions for iron pellet manufacturing	2017	Mexico	Modern	Ternium Mexico	M
Energy consumption for scrap steel pre-processing	2018	Europe	Modern	Scrap steel processing equipment provider	E
Raw materials consumption for hot rolled steel manufacturing.	2017	Mexico	Modern	Ternium Mexico	M
Energy consumption for hot rolled steel manufacturing.	2017	Mexico	Modern	Ternium Mexico	M
Consumption of fuels and emissions related to electricity production in Mexico at country level	2017	Mexico	Modern Mexican energy mix	Mexicaniuh	M&E
Consumption of fuels and emissions related to electricity production by independent providers	2000 - 2016	Mexico	Modern Natural gas Combined cycle	Ecoinvent 3.3 adapted	M&E
Energy and materials consumption and emissions related to natural gas production in Mexico	2017	Mexico	Modern	Mexicaniuh	M&E
Energy and materials consumption and emissions related to the production of other raw materials for steelmaking	1990-2016	Europe	Modern	Ecoinvent 3.3	M&E
Consumption of electricity, fuels and water for production of steel slab by independent provider	2016	Mexico	Modern	Independent provider	M
Consumption of other inputs, waste treatment, process efficiency and byproducts during production of steel slab by independent provider	2017	Mexico	Modern	Ternium Mexico	E

M&E: Measured and Estimated, M: Measured, E: Estimated

Table 8. Transportation module data quality assessment

Data	Time related coverage	Geographic coverage	Technological coverage	Data source	Measured or estimated
Transport distance of scrap and other raw materials	2017	Mexico	N/A	Ternium Mexico	M
Transport distance of ancillary supplies	2017	Mexico	N/A	Ternium Mexico	M
Consumption of materials and energy and emissions related to the transport requirements of raw materials and auxiliary inputs.	1992-2014	Worldwide average based on Europe	Worldwide average based on Europe	Ecoinvent 3.3	M&E

M&E: Measured and Estimated, M: Measured, E: Estimated

Table 9. Manufacture module data quality assessment

Data	Time related coverage	Geographic coverage	Technological coverage	Data source	Measured or estimated
Production yield and generation of by-products.	2017	Mexico	Modern	Ternium Mexico	M
Consumption of auxiliary materials during manufacturing.	2017	Mexico	Modern	Ternium Mexico	M
Consumption of energy and materials for the manufacture of ancillary materials.	1990 - 2017	Worldwide average based on Europe	Worldwide average based on Europe	Ecoinvent 3.3	M&E
Waste generation during manufacture	2017	Mexico	Modern	Ternium Mexico	M
Consumptions of materials and related energy during waste treatment.	1990 - 2017	Worldwide average based on Europe	Worldwide average based on Europe	Ecoinvent 3.3	M&E
Emissions to air during the manufacturing process	2017	Mexico	Modern	Ternium Mexico EPA AP42	M
Waste transport distance	2017	Mexico	Modern	Ternium Mexico and Google Maps	M
Consumption of materials and energy and emissions related to waste transport requirements	1992-2014	Worldwide average based on Europe	Worldwide average based on Europe	Ecoinvent 3.3	M&E

M&E: Measured and Estimated, M: Measured, E: Estimated

6. Environmental performance

SimaPro 8.4.0 was used for Life Cycle Impact Assessment.

6.1 Use of resources

Parameters describing resource use were evaluated with the Cumulated Energy Demand method version 1.09 (Frischknecht et al. 2007) except for the indicator of use of net fresh water that was obtained from life cycle inventory (direct consumption) and with Recipe 2016 Midpoint (H) version 1.00 (indirect consumption) (Huijbregts et al. 2017). The detailed description of the use of resources is provided in Table 10.

Table 10.Resource Indicators per metric ton of hot rolled steel

Impact Category	Unit	A1) Raw materials supply	A2) Transportation	A3) Manufacturing		Total A1-A3
				Direct	Indirect	
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ %	1 039 93%	23 2%	0 0%	53 5%	1 116 100%
Use of renewable primary energy as raw materials	MJ %	0 0%	0 0%	0 0%	0 0%	0 0%
Total use of renewable primary energy resources	MJ %	1 039 93%	23 2%	0 0%	53 5%	1 116 100%
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ %	14 061 87%	1 425 9%	0 0%	724 4%	16 209 100%
Use of non-renewable primary energy used as raw materials	MJ %	4 052 69%	0 0%	1 827 31%	0 0%	5 879 100%
Total use of non-renewable primary energy resources	MJ %	18 112 82%	1 425 6%	1 827 8%	724 3%	22 088 100%
Use of secondary material	kg %	63 34%	0 0%	120 66%	0 0%	182 100%
Use of renewable secondary fuels	MJ %	0 0%	0 0%	0 0%	0 0%	0 0%
Use of non-renewable secondary fuels	MJ %	0 0%	0 0%	0.61 100%	0 0%	0.61 100%
Use of net fresh water	m3 %	4.9 72%	0.3 4%	0.7 10%	1.0 14%	6.8 100%

**The column "A3) Manufacturing (direct) refers to direct data from Ternium operations. The column "A3) Manufacturing (indirect) refers to background data regarding production of ancillary materials and other processes outside Ternium's facilities".*

6.2 Potential environmental impact

All information modules are reported separately. However, the total impact across all stages is also presented.

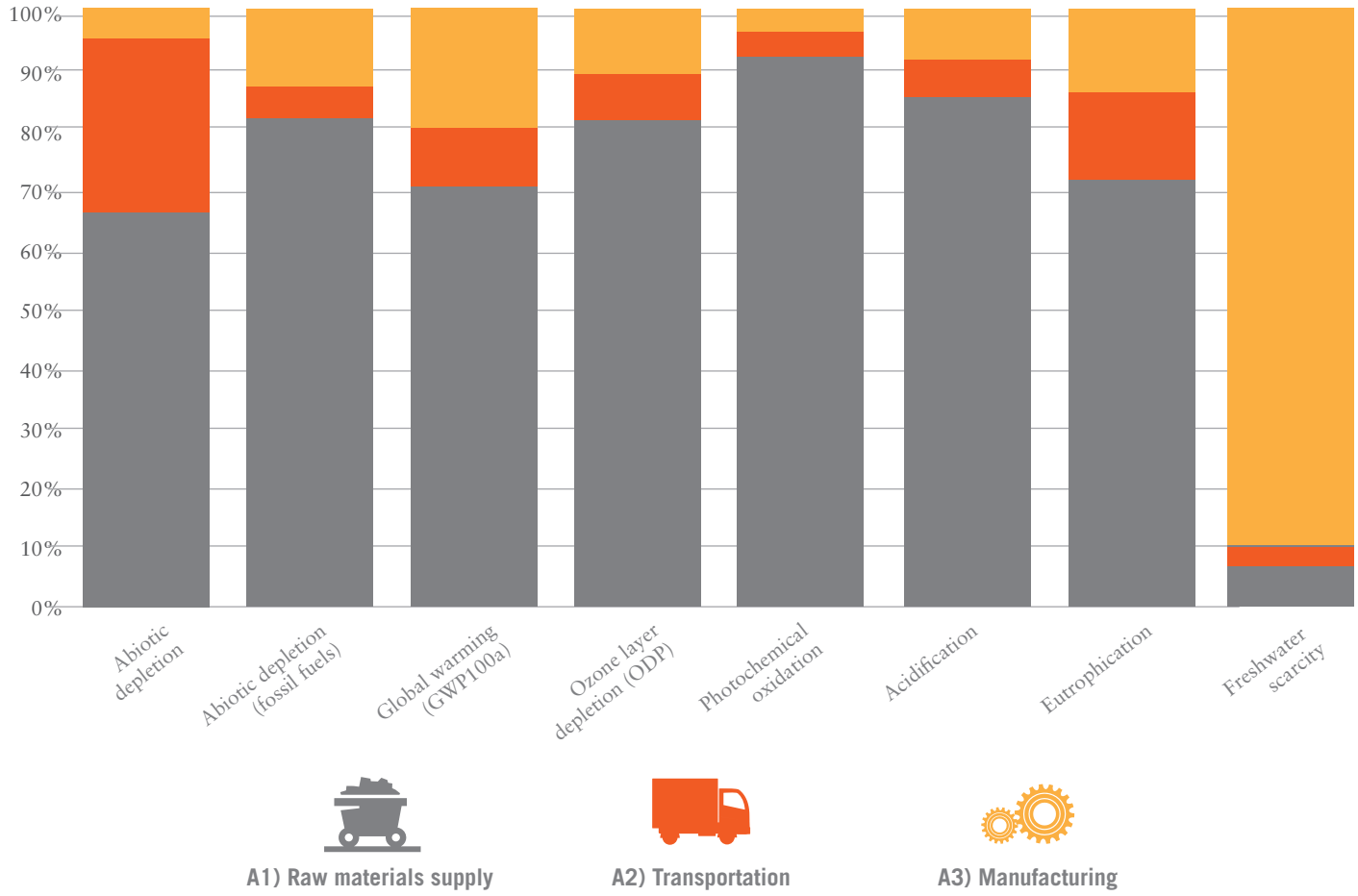
Parameters describing environmental potential impacts were calculated using CML-IA method version 3.04 (Guinee et al. 2001; Huijbregts et al. 2003; Wegener et al. 2008) as implemented in SimaPro 8.4.0 Water scarcity potential was calculated using AWARE method (Boulay et al. 2018).

Table 11. Potential environmental impact indicators per metric ton of hot rolled steel

Impact Category	Unit	A1) Raw materials supply	A2) Transportation	A3) Manufacture	Total A1 - A3	A4 - A5, B1-B7, C1-C4, D
Abiotic depletion	kg Sb eq %	3.37E-04 65.4%	1.55E-04 30.2%	2.26E-05 4.4%	5.14E-04 100.0%	
Abiotic depletion (fossil fuels)	MJ %	17 641 81.9%	1 401 6.5%	2 493 11.6%	21 535 100.0%	
Global warming (GWP100a)	kg CO2 eq %	762 72.4%	89 8.5%	202 19.2%	1 053 100.0%	
Ozone layer depletion (ODP)	kg CFC-11 eq %	1.33E-04 79.6%	1.58E-05 9.4%	1.84E-05 11.0%	1.68E-04 100.0%	Modules not declared
Photochemical oxidation	kg C2H4 eq %	0.47 91.4%	0.02 3.6%	0.03 4.9%	0.51 100.0%	
Acidification	kg SO2 eq %	5.9 85.4%	0.4 6.4%	0.6 8.2%	6.9 100.0%	
Eutrophication	$kgPO4^{3-}eq$ %	0.5 71.8%	0.1 14.6%	0.1 13.6%	0.7 100.0%	
Freshwater scarcity*	m^3eq %	13 7.5%	6 3.6%	154 89.0%	173 100.0%	

** Note: AWARE method sets the maximal characterization factor (i.e. 100) for the geographical location of Ternium Works involved in Ternium hot rolled steel manufacturing. However, AWARE factor is linked to Ecosystem Water Requirement (EWR) which is calculated at global scale and does not account for specific local aspects due to limited data access. EWR is the most uncertain variable of the method (Boulay et al. 2018).*

Figure. 2 Potential environmental impact contribution per metric ton hot rolled steel



6.3 Other indicators describing waste categories

Environmental indicators describing waste generation were obtained from LCI except for background information which has been calculated using EDIP 2003 method (Hauschild and Potting, 2005). Table 12 shows waste and other outputs generated during each information module.

Table 12. Waste and other outputs per metric ton of hot rolled steel						
Parameter	Unit	Total A1-A3	1) Raw materials supply	A2) Transportation	A3) Manufacturing (direct)**	A3) Manufacturing (Indirect)**
Hazardous waste	kg	8.9	5.4	8.52E-04	3.5	0
	%	100%	61%	0%	39%	0%
Non hazardous waste	kg	122	30	91	0	1
	%	100%	24%	75%	0%	1%
Radioactive waste*	kg	2.60E-02	1.57E-02	8.87E-03	0	1.47E-03
	%	100%	60%	34%	0%	6%
Components for reuse	kg	0	0	0	0	0
	%	0%	0%	0%	0%	0%
Materials for recycling	kg	118	61	0	56	0
	%	100%	52%	0%	48%	0%
Materials for energy recovery	kg	0.15	0.04	0	0.11	0
	%	100%	25%	0%	75%	0%
Exported energy	kg	0	0	0	0	0
	%	0%	0%	0%	0%	0%

**No radioactive waste is produced during Ternium Mexico operation.*
***The column "A3) Manufacturing (direct) refers to direct data from Ternium operations. The column "A3) Manufacturing (indirect) refers to background data regarding production of ancillary materials and other processes outside Ternium's facilities".*

6.4 Additional environmental information

All the Industrial centers of Ternium Mexico related to the manufacturing process are certified with ISO 14001:2015 and most of them also have the Clean Industry Governmental Award.
Also, an environmental policy is kept in practice in all industrial centers of the company in Mexico.
All the industrial centers of Ternium Mexico related to the manufacturing process send a portion of hazardous waste to energy recovery.

Facility	Fraction of waste to energy recovery
Churubusco	6%
Guerrero	40%

Ternium's Certifications

Environment

Ternium plants in Mexico participate in the National Voluntary Environmental Audit Program of the PROFEPA (Federal Attorney for Environmental Protection), thereby ensuring that during the manufacturing processes, compliance with the provisions of current environmental regulations is met. Likewise, the Environmental Management System of the Ternium Plants that participate in the manufacture are certified under standard ISO 14001:2015.

Towards sustainability and environmental protection Ternium manufactures 100% recyclable products, with the highest quality and minimizing environmental impact. Recycling is an important part of the company's production process, as well as ensuring a long-term healthy link with the communities neighboring the production centers.

Ternium is deeply committed to sustainable development, so its actions are guided by an Environmental and Energy Policy that involves employees, shareholders, suppliers, customers and communities. The company has a Management System that foresees procedures, reviews and specifies records for the proper operation, maintenance and control of facilities, as well as for the handling of substances

Quality

In order to ensure the quality of the steel products that are produced in Ternium plants, the different manufacturing processes are certified with the ISO 9001:2015 or ISO/TS 16949:2009 quality standards, in its latest version. Additionally, the chemical and physical test labs are certified with ISO 17025:2017 standard, as well in its latest version.

Safety

To ensure the physical integrity and occupational health of all the personnel, Ternium Plants that participate in the manufacture have a Health & Safety Management System certified under the OHSAS 18001 standard.

Active Participation

Ternium reports, since 2005, CO2 emissions to the World Steel Association. This garnered the recognition of the "Climate Action Member" program. Additionally, Ternium subscribed to the report on sustainability indicators and reports on energy consumption and personnel training. Also, the company is part of different groups that are concerned about environmental issues, mainly the World Business Council for Sustainable Development (National Chapters), the Latin American Steel Association (Alacero), World Steel Association and various work committees in several industrial associations. In Mexico, it participates through the commissions related to environmental issues and energy saving of the National Chamber of Iron and Steel (CANACERO), the Mining Chamber of Mexico (CAMIMEX) and the Environmental Protection Institute of Nuevo León (IPA-NL).

In 2018 Ternium won the Sustainability Champions Award. This recognition was granted for its work in favor of sustainability.

7. Verification and registration

Programme:	International EPD® System www.environdec.com EPD registered through the fully aligned regional programme/hub: EPD Latin America www.epd-americalatina.com
Programme operator:	EPD International AB / Box 210 60 / SE-100 31 Stockholm, Sweden EPD Latin America / Chile: Alonso de Ercilla 2996, Ñuñoa, Santiago Chile. Mexico: Av. Convento de Actopan 24 Int. 7A, Colonia Jardines de Santa Mónica, Tlalnepantla de Baz, Estado de México, México, C.P. 54050
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PCR:	PCR 2012:01 construction products and construction services, Version 2.3 (2018-11-15)
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9. References

Boulay AM, Bare J, BeniniL, Berger M, Lathuillière MJ, Manzardo A, Margni M, Motoshita M, Núñez M, Valerie-Pastor A, Ridoutt B, Oki T, Worbe S, P¬ster S (2018) The WULCA consensus characterization model for water scarcity footprints: assessing impacts of water consumption based on available water remaining (AWARE). The International Journal of Life Cycle Assessment. Volume 23, Issue 2, pp 368–378. https://doi.org/10.1007/s11367-017-1333-8.

EN 15804:2012+A1:2013 (Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products).

EPD International (2017) General Programme Instructions for the International EPD® System. Version 3.0, dated 2017-12-11. www.environdec.com.

EPD International (2018) Construction products and construction services. 2012:01 Version 2.3 2018-11-15. www.environdec.com.

Frischknecht R, Jungbluth N, Althaus HJ, Bauer C, Doka G, Dones R, Hischier R, Hellweg S, Humbert S, Köllner T, Loerincik Y, Margni M, Nemecek T (2007) Implementation of Life Cycle Impact Assessment Methods Data v2.0. ecoinvent report No. 3. Swiss Centre for Life Cycle Inventories, Dübendorf.

Guinee JB, Marieke G, Heijungs R, Huppes G, Kleijn R, van Oers L, Wegener S, Suh S,Udo de Haes HA, de Bruijn H, van Duin R, Huijbregts MAJ (2001). Handbook on Life Cycle Assessment, Operational guide to the ISO standards Volume 1, 2a, 2b and 3. Springer Netherlands. DOI 10.1007/0-306-48055-7. Series ISSN 1389-6970

Hauschild M, Potting J (2005) Spatial differentiation in Life Cycle impact assessment - The EDIP2003 methodology. Institute for Product Development Technical University of Denmark.

Huijbregts MAJ, Steinmann ZJN, Elshout PMF, Stam G, Verones F, Vieira M, Zijp M, Hollander A, van Zelm R. ReCiPe2016: a harmonised life cycle impact assessment method at midpoint and endpoint level. International Journal on Life Cycle Assessment Volume 22 Issue 2. pp 138-147. https://doi.org/10.1007/s11367-016-1246-y

Martínez A, Chargoy JP, González M, Luque C, Vulling M, Hernández M, Guerrero MR, Rechy L (2019) Análisis de ciclo de vida de lámina rolada en caliente fabricada por Ternium México - incluyendo los grados A36, A50, A55, A60. Centro de Análisis de Ciclo de Vida y Diseño Sustentable (CADIS). México.

UN (2015) Central Product Classification (CPC) Version 2.1. Department of Economic and Social Affairs. Statistics Division. United Nations, New York.

Wegener AS, van Oers L, Guinée JB, Struijs J, Huijbregts MAJ (2008) Normalisation in product life cycle assessment: An LCA of the global and European economic systems in the year 2000. Science of The Total Environment. Volume 390, Issue 1. Pages 227-240. ISSN 0048-9697. https://doi.org/10.1016/j.scitotenv.2007.09.040.

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