EPD®
THE INTERNATIONAL EPD® SYSTEM

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 + A1

Hot Rolled Steel Plate

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HYUNDAI STEEL

CONTENTS

1. Vision of Hyundai Steel

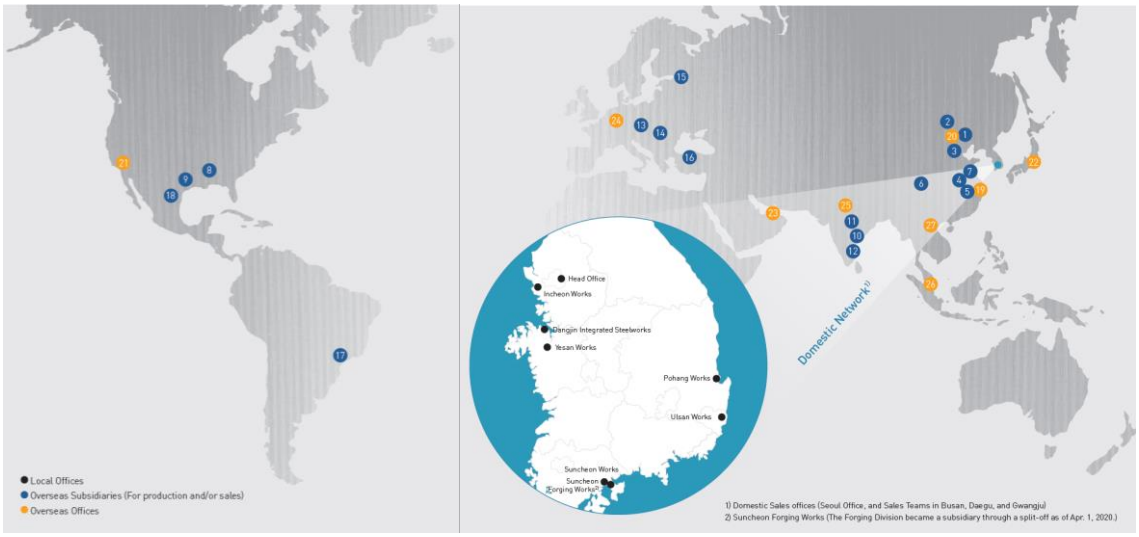
Hyundai Steel Around the World

Established as South Korea's first steelmaker in 1953, Hyundai Steel has developed into a comprehensive global steelmaker with a total crude steel production capacity of 24 million tons. We feature a world-class product portfolio that includes blast furnaces, electric arc furnaces, special steel, automotive parts, and operate 14 steel service centers and nine branches worldwide. Hyundai Steel strives to become an eco-friendly producer by establishing an integrated environmental management system based on the International Organization for Standardization (ISO) 14001 and becoming involved in the Carbon Disclosure Project (CDP), which responds to environmental pollution and climate change.

Overseas Network

Subsidiaries			
China	1	HSCN	Hyundai Steel Investment Co., Ltd.
	2	HSBJ	Hyundai Steel Beijing Process Co., Ltd.
	3	HSTJ	Hyundai Steel Tianjin Process Co., Ltd.
	4	HSJS	Hyundai Steel Jiangsu Process Co., Ltd.
	5	HSSZ	Hyundai Steel Suzhou Process Co., Ltd.
	6	HSCQ	Hyundai Steel Chongqing Co., Ltd.
	7	HSMC	Qingdao Hyundai Machinery Co., Ltd.
US	8	HSAL	Hyundai Steel America, Inc.
	9	HSSA	Hyundai Steel USA, Inc.
India	10	HSCH	Hyundai Steel India Private, Ltd.
	11	HSAN	Hyundai Steel Anantapur Private Limited
	12	HSPI	Automotive Steel Pipe India Private, Ltd.
Europe	13	HSCZ	Hyundai Steel Czech s.r.o.
	14	HSSK	Hyundai Steel Slovakia s.r.o.
	15	HSRU	33 Hyundai Steel Rus LLC
	16	HSTR	Hyundai Steel TR Automotive Steel Parts Co., Ltd.
South America	17	HSBR	Hyundai Steel Industry and Trade Brazil LLC.
	18	HSMX	Hyundai Steel Mexico S de R.L. de C.V.

Offices		
China	19	Shanghai Office
	20	Beijing Office
US	21	LA Office
Japan	22	Tokyo Office
UAE	23	Dubai Office
Germany	24	Frankfurt Office
India	25	New Delhi Office
Singapore	26	Singapore Office
Vietnam	27	Hanoi Office



At Hyundai Steel, we have established mid- to long-term sustainability management strategies to make the leap forward to becoming a sustainable company by contributing to enhanced customer competitiveness through technological development and creating social value as a basis for cooperative business relationships with partners, suppliers, and local communities.

LEADING THE NEW ERA OF STEEL

As an eco-friendly and resource-circulating company, we provide advanced products and services through cooperative relationships. We are achieving the highest level of global competitiveness to lead the world into a new era of steel.

Vision Engineering the Future Beyond Steel

Responsible Business

Create a safe and strong future through people-oriented and innovative technological development. Develop a healthy business ecosystem that pursues sustainability across the value chain.

Circular Economy

Create an eco-friendly ecosystem by responding to climate change, protecting water resources, and conducting by-product resource recovery. Take the lead on resource circulation for the benefit of tomorrow's world.

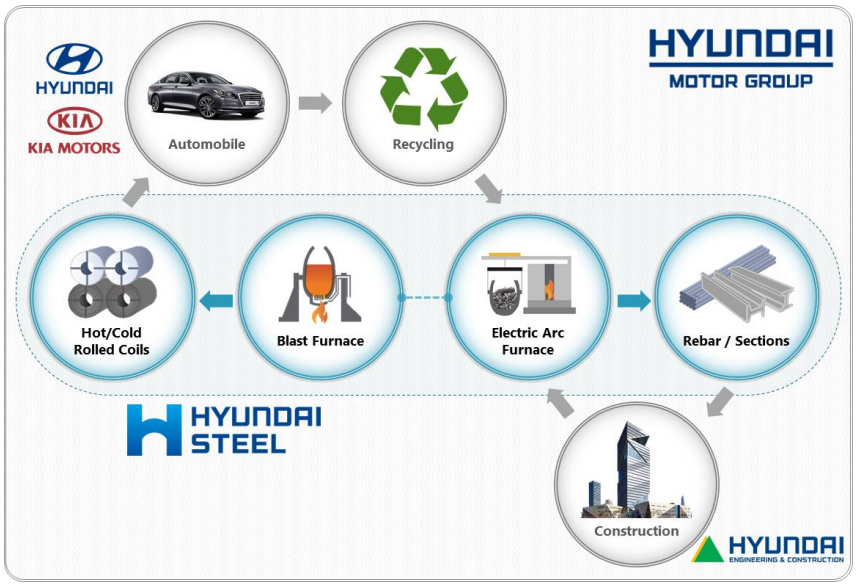
Sustainable Community

Provide a safe working environment for employees in which they can enhance their capabilities and secure a healthy work-life balance. Build a basis for stakeholder engagement to enrich local communities and create social value.

2. Circular Economy on Hyundai Steel

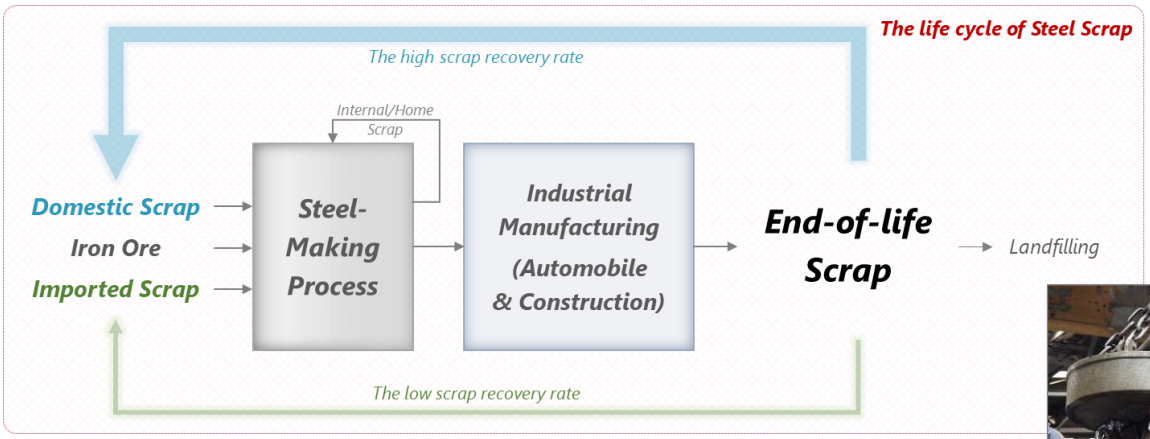
Hyundai Steel, the Center of the Resource Circulation Group

The Hyundai Motor Group contributes to environmental preservation by means of their resource-circulating business structure. Hot- and cold-rolled steel products made with iron ore at Hyundai Steel flow to manufacture automobiles at the Hyundai/Kia Motor Company and, again, produce construction materials by recycling steel scrap comprised of 70% automobiles. Structural steel, such as reinforcement bars and section shape steels made from steel scrap, is used in construction at Hyundai Engineering & Construction Co. and, again, recycled as steel scrap when it's lifecycle has ended.



As a result, Hyundai Steel is the heart at the center of a continuous circulatory system in the enterprise context of the Hyundai Motor Group.

Recycling of Steel Scrap



Representative of resource-circulating materials

Steel can be recycled infinitely by maintaining its original characteristics, properties, and qualities so that its lifecycle can persist and provide continuous service to customers through a process called “closed-loop recycling.” Generally, over 95% of steel waste can be recycled because it has the advantage of being easily separated from other materials.

Steel scrap from end-of-life automobiles is recycled as a raw material to produce construction and building materials, so it is continuously circulated. Hyundai Steel has an excellent closed-loop system that processes and circulates steel and steel scrap. Hyundai Motor Group has a high recovery rate of domestic steel scrap generated in South Korea - the steel products produced by Hyundai Steel and scrapped after use are recycled by Hyundai Steel and used again.

Steel emits many environmental pollutants during the production process; however, end-of-life steel, over 95% of which is recycled, has considerably reduced the level of environmental impact.

3. Environmental Performance

Environmental Management

Hyundai Steel is committed to producing eco-friendly steel to promote the development of circular economy through active environmental management that goes beyond simple adherence to environmental laws and regulations.

To this end, we have organized dedicated teams for each sector at all worksites to monitor the environmental impact of our business operations and minimize the associated risks. In addition, in response to environmental regulations and as part of our corporate social responsibility (CSR), we take various measures such as operating an environmentally friendly system, developing eco-friendly products and services, and engaging in activities that positively contribute to the environment.

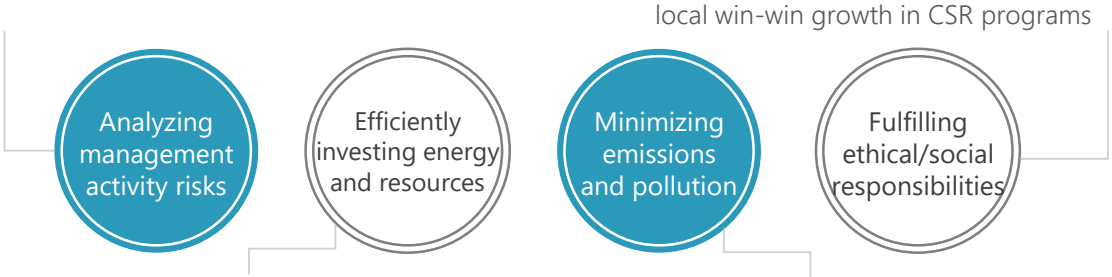
Response to Climate Change

In response to climate change, Hyundai Steel is committed to reducing its greenhouse gas (GHG) emissions and introducing innovative technologies throughout the value chain. We have adopted new facilities and improved processes to reduce our energy consumption and GHG emissions in accordance with the government-led National Greenhouse Gas Reduction Roadmap.

To this end, we are actively responding to climate change through continuous operational management and by accounting for the nature of our industry as one that consumes a large amount of energy.

Environmental and Energy Policy

- Responding to government policies/regulations
- Collecting information on the environment and energy-related issues
- Developing projects that utilize alternative resources/energy
- Improving brand values by raising awareness, local win-win growth in CSR programs



- Procurement: Green procurement on fuel, raw materials, facilities, and energy
- Production: Optimization of utility input process and reduction of GHG emissions
- Preventing pollutant emissions
- Operating and monitoring pollutant measurement/prevention facilities
- Enhancing and adding value to the recycling of by-products/waste

Expanding Global Environmental Activities

MEMBER OF Dow Jones Sustainability Indices In Collaboration with RobecoSAM

CDP DISCLOSURE INSIGHT ACTION

worldsteel ASSOCIATION

We actively participate in programs for global GHG reduction and sustainable development. We regularly participate in expert groups of the World Steel Association such as lifecycle assessment (LCA) expert groups to communicate trends in our operations. In addition, we transparently disclose environmental information and plans for our products through the Environmental Product Declaration (EPD) certification and Carbon Disclosure Project (CDP).

Our efforts have emerged with an excellent evaluation from the Dow Jones Sustainability Indices (DJSI), which are recognized for their credibility in corporate sustainability evaluation.

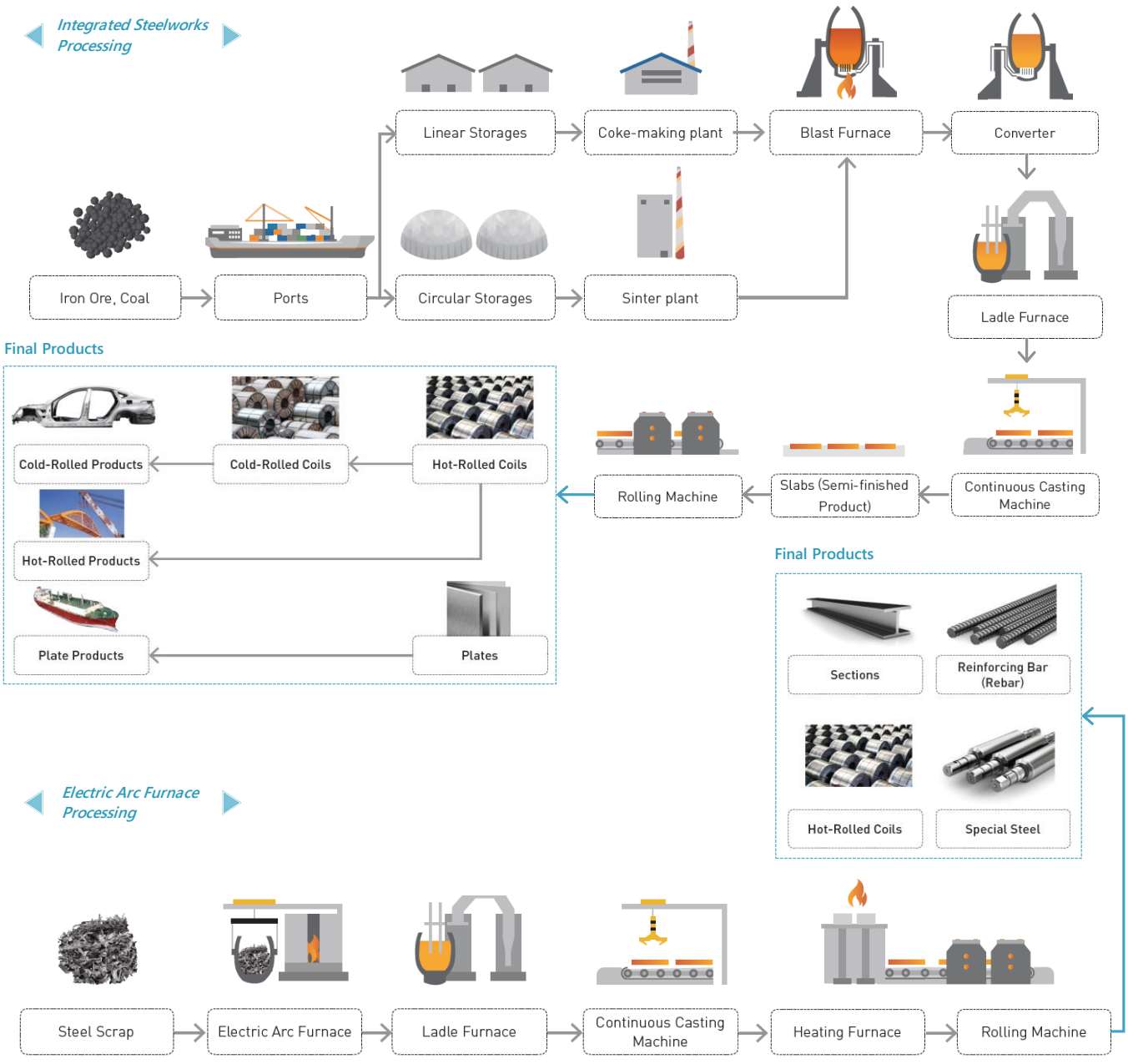
4. Steel Manufacturing Process

By implementing a resource circulation model that links our blast furnaces (BF) to our electric arc furnaces (EAF), we are creating greater value together with our customers and community.

We produce 12 million tons of steel products from three BFs and 12 million tons from eight EAFs each year. This steel is then supplied to automobiles, shipbuilding, home appliances, etc., through BFs using iron ore, and to construction, automotive parts, etc., from EAFs using steel scrap.

Co-products are generated such as process gas (e.g., BFG, COG, and LDG), waste heat, slag, and BTX, etc., during the production process. These co-products are then reused as energy and recycled as products like cement. We are making to effort to develop new recycling methods for the co-products or by-products from the process. Recently, we applied new technologies such as automatic combustion systems and sensors to increasing the recovery rate and efficiency of process gas. In addition, slag is continuously being developed for recycling products such as enhanced road pavement, construction materials, or cement replacement parts.

Value Chain

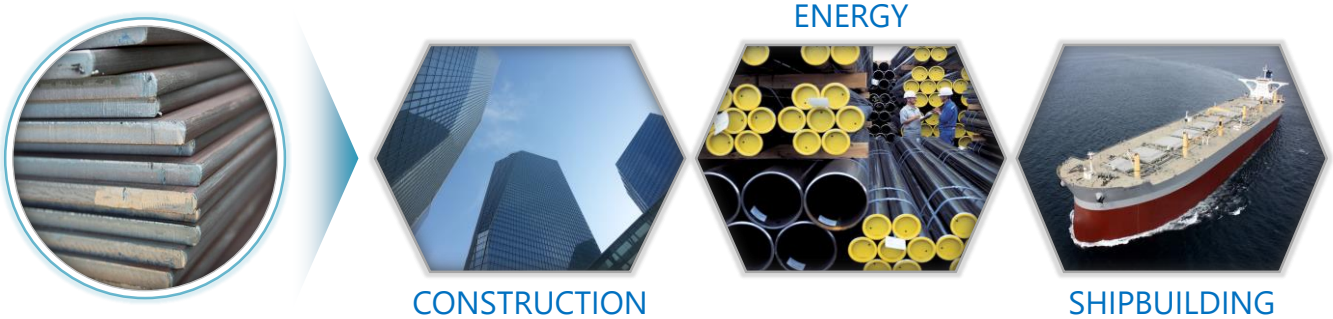


5. Product Information

With a focus on enhancing product performance and quality, Hyundai Steel is proactively responding to rapidly changing market conditions and creating the value that customers demand.

We are strengthening our product competitiveness by constant research and development (R&D) and outstanding technology, and supply optimal materials based on our cutting-edge technology.

Hot Rolled Steel Plate



A Hot Rolled Steel Plate refers a thick steel product with a thickness of more than 6mm, it is used from construction/energy/shipbuilding.

Construction plates are mainly used in large-scale steel structures such as railway, bridges, plants, large buildings, and offshore structures. In addition, when the usage of H-sections presents problems in terms of size or standards, Built-up Beams are employed in their place using plate welding.

Plate for use in plants are used in making pressure vessels for refining and storing drilled oil and gas. We produce the steel plate having outstanding thermal resistance and corrosion resistance as it is frequently used under high pressure environment.

Shipbuilding plates are mainly used for bulk heads, upper decks and hatch covers for tankers, bulk carriers, container ships and LNG carriers. Our steel plates, including regular steel, high tensile steel and low temperature toughness steel approved by classification societies in different countries as well as TMCP-manufactured steel have been produced for a wide variety of features in terms of strength, dimension, surface, form and impact toughness.

This content is for informational purposes only. The packaging is not included in the LCA study.

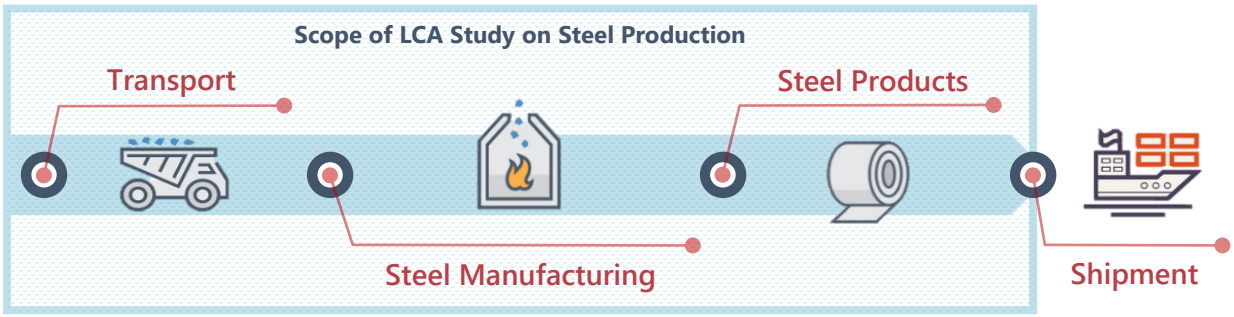
Table 1. Product components of hot-rolled steel plate

Ingredients	*Concentration (%)*	*CAS No.*	*EINECS No.*
Iron : Plate	91.6%–99.8%	7439-89-6	231-096-4
Steel manufacture, chemicals	0.2%–8.1%	65997-19-5	266-048-1
Others	< 0.1%	-	-

Physicochemical characteristics
- Physical state: Solid
- Boiling point: 2,861 ℃
- Melting point: 1,538 ℃
- Specific gravity: 7.0–8.0 at 20 ℃

6. Lifecycle Assessment of Hyundai Steel

LCA Information



This study was used functional/declared unit for 1 ton (1,000 kg) of hot-rolled steel plate.

Reference Service Life

- Not applicable.

Data Quality Assessment

- For the data quality assessment, the following requirements were considered;
  - Time related coverage: Primary on-site data were collected during fiscal year (FY) 2019.
  - Geographic coverage: Primary data were collected from the Dangjin Works.
  - Technological coverage: Primary data flows were collected from current steel making process.
- Source of the data: All input and output data were collected with an enterprise resource planning (ERP) system in which the data are sorted by product and process unit. Primary data, such as measurements, engineering calculations, and purchasing records, were collected.
- Precision: Measure of the variability of the data value for each data expressed.
- Completeness: Percentage of the flow that was measured or estimated.
- Consistency: Quality assessment of the degree to which the dataset reflected the true population of interest.
- Reproducibility: Quality assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study.
- Uncertainty of the information: Minimize any uncertainly about the data, models, etc.

Cut-off Criteria

- To avoid calculating trivial inputs and outputs, certain cut-off criteria were applied, as follows;
  - The sum of the excluded material in the system did not exceed 5% of the total mass of inputs, in accordance with the Product Category Rules (PCR), Section 7.6.
  - Materials that were excluded according to the cut-off criteria included ferroalloy, quicklime, packaging materials, etc.
  - All of energy and fuels were included in the system.
  - All of materials were considered for their environmental relevance.

Allocation

- Economic allocation was applied and the allocation was performed according to the PCR, Section 7.7.
  - Economic allocation was based on the income of each product.
  - The co-products considered were slag, BTX, and zinc dross.
- The process gases generated at the Dangjin Works were produced as electricity at a nearby power plant (Hyundai Green Power) and all of the generated electricity was used in the Dangjin Works. So, the system boundary was extended to avoid allocation and the amount of electricity generated through the process gases was excluded from the input.

Database and LCA software

- To compile lifecycle inventory results, an LCI dataset from a variety of sources, including the GaBi professional database, was applied.
- GaBi LCA software (Version 8.5.0.79) was used to measure the lifecycle inventory profile and lifecycle impact results.

Scope of Declaration

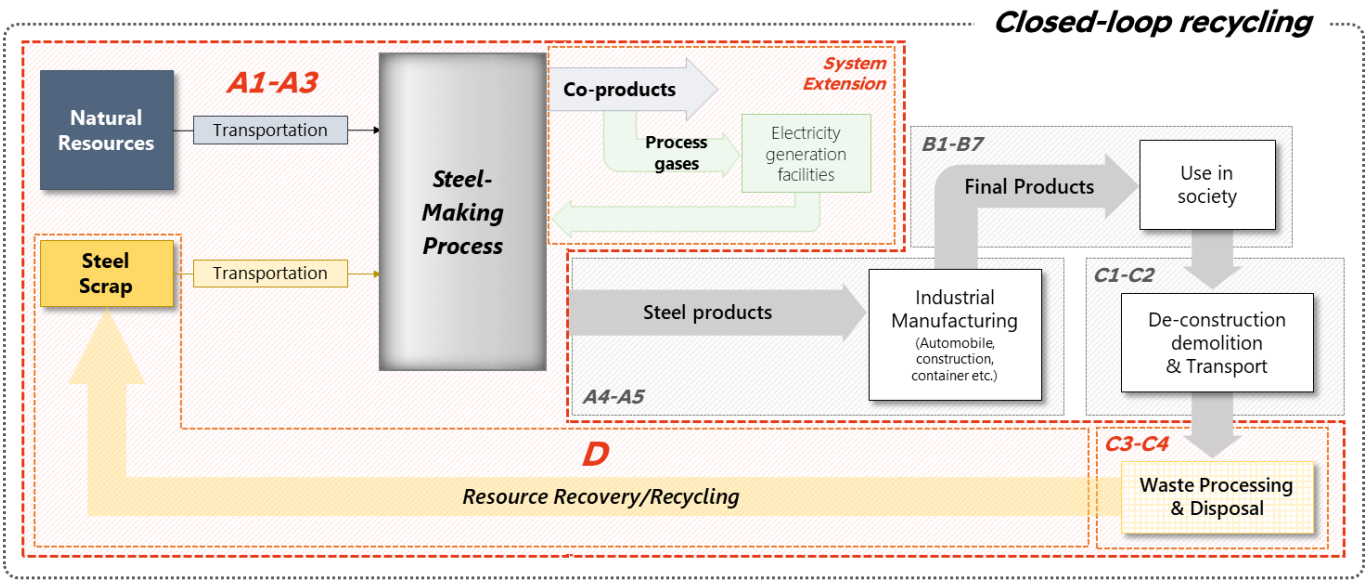
The system boundary on hot-rolled steel plate adapted cradle-to-gate(A1-A3) and optional modules(C3-C4, D). Consideration was not given to Stages A4 and A5 (i.e., transportation to the building site and the construction process, respectively), Stages B1-B7 (i.e., use stages), or Stages C1-C2 (i.e., end-of-life stages).

The following are the lifecycle phases that were considered:

Product stage			*Construction process stage*		*Use stage*							*End-of-life stage*				*Resource recovery stage*
Raw material supply	Transport	Manufacturing	Transport form the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse, recovery, and recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	-	-	-	-	-	-	-	-	-	-	-	X	X	X

X: Module declared
-: Module not declared (such a declaration shall not be regarded as an indicator of a zero result).

System Diagram/Boundary



Raw material supply (Module A1)
- Extraction and processing of raw/auxiliary materials.

Transport (Module A2)
- Overseas transportation of raw/auxiliary materials and steel scrap.
- Land transportation of raw/auxiliary materials and steel scrap.

Manufacturing (Module A3)
- Producing process utilities.
- Supply of process utilities.
- Manufacturing hot-rolled steel plates.
- Treatment of process waste and emissions.

Waste processing (Module C3)
- Steel scrap processing.

Disposal (Module C4)
- Disposal to landfill.

Resource recovery stage (Module D)
- Recovery for recycling of steel scrap.

Assumption and Limitations

Raw material supply (Module A1)

- Steel scrap input: Steel scrap input is divided into two classifications: domestic steel and imported steel. Even though the data on domestic and imported steel scrap are managed according to the detailed classifications, they are stacked in the yard and randomly inserted into the process.

Transport (Module A2)

- When calculating the domestic transport distance of auxiliary materials, since we cannot identify all scrap collectors, we only calculated the distance from Busan, which is the furthest area from the Dangjin Works.
- When calculating the overseas transport distance of auxiliary materials, the land transportation distance was excluded since the products were imported through agencies after being collected or purchased across the country.
- When calculating the importing transport distance of scrap, since many companies use various ports, the farthest port for each company was selected and the sea transportation distance considered.

Manufacturing (Module A3)

- The Dangjin Works produces and uses industrial water, steam, oxygen, and compressed air. Therefore, the data on the utility production facilities were collected and calculated and reflected in the environmental impact results of the products.
- The process gas from the Dangjin Works is used to produce electricity at a nearby power plant (Hyundai Green Power). The system boundary was extended to avoid allocation, and the amount of electricity generated through process gas was excluded from the input.
- Amount of evaporated water: The water used for the process is utilized as coolant and water is added to compensate for the evaporation loss. Therefore, the amount of evaporated water is equal to the amount of water added.

End-of-Life Scenario

- The recycling rate of steel products is assumed to be 95% based on Annex C of the Product Environmental Footprint Guidance of European Commission. Therefore, 5% of recovered steel is considered to become landfill scrap.
- The recycling rate is considered to account for all material losses throughout the lifecycle, from the collection and recycling (or reuse) process to the point of final replacement.

Net-Scrap Calculation

- Hyundai Steel uses external scrap in its steel production. Net scrap was calculated by excluding the amount of scrap recycled at the rate mentioned above and the amount of scrap (internal/home scrap) already used at the Dangjin Works. The potential environmental benefit calculated for the end-of-life stage (Module D) was based on the net amount of scrap left in the system.

Results of Lifecycle Assessment

Table 2. Environmental impacts of hot-rolled steel plate (per 1,000 kg)

Impact category	Unit	A1-A3	C3	C4	D
Global Warming Potential (GWP)	kg CO_2 -eq.	1.94E+03	6.43E+01	2.43E+00	-1.31E+03
Acidification Potential (AP)	kg SO_2 -eq.	7.33E+00	3.27E-01	6.75E-03	-2.56E+00
Eutrophication Potential (EP)	kg PO_4^3 -eq.	7.55E-01	5.93E-02	8.55E-04	-1.91E-01
Ozone Layer Depletion Potential (ODP)	kg CFC_{11} -eq.	-6.83E-07	2.42E-09	6.35E-13	7.26E-06
Photochemical Ozone Creation Potential (POCP)	kg ethene -eq.	4.98E-01	3.94E-02	6.00E-04	-6.00E-01
Abiotic Depletion Potential: Fossil (ADPF)	MJ	2.88E+04	8.09E+02	3.47E+01	-1.26E+04
Abiotic Depletion Potential: Elements (ADPE)	kg Sb -eq.	4.00E-04	2.66E-08	5.10E-07	-3.76E-03
Water (User) Deprivation Potential (WDP)	m^3	4.45E+00	0.00E+00	2.83E-02	-7.28E+00

Table 3. Resource use for hot-rolled steel plate (per 1,000 kg)

Parameter		Unit	A1-A3	C3	C4	D
Primary Energy resources-Renewable	Use as energy carrier (PERE)	MJ	3.08E+02	0.00E+00	2.66E+00	8.33E+02
	Used as raw materials (PERM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (PERT)	MJ	3.08E+02	0.00E+00	2.66E+00	8.33E+02
Primary Energy resources-Non-Renewable	Use as energy carrier (PENRE)	MJ	3.11E+04	8.16E+02	3.60E+01	-1.21E+04
	Used as raw materials (PENRM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (PENRT)	MJ	3.11E+04	8.16E+02	3.60E+01	-1.21E+04
Secondary Material (SM)		kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable Secondary Fuels (RSF)		MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable Secondary Fuels (NRSF)		MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net Fresh Water (FW)		m^3	3.81E+00	0.00E+00	0.00E+00	1.75E+00

Table 4. Waste production and output flows of hot-rolled steel plate (per 1,000 kg)

Parameter	Unit	A1-A3	C3	C4	D
Hazardous Waste Disposed	kg	8.83E-05	0.00E+00	1.93E-07	-8.49E-04
Non-hazardous Waste Disposed	kg	2.69E+01	0.00E+00	5.00E+01	1.40E+02
Radioactive Waste Disposed	kg	8.83E-01	0.00E+00	5.00E-04	4.18E-04
Components for Re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for Recycling	kg	0.00E+00	9.50E+02	0.00E+00	0.00E+00
Materials for Energy Recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported Energy Electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported Energy Thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Interpretation of LCA Study Results

- The value of Global Warming Potential(GWP) per ton of hot-rolled steel plate emits 1,940 kg CO_2 on module A1 to 3, manufacturing phase. The global warming effect by the use of process gases is greatest, and followed by the electricity usage. The impact of Acidification Potential(AP) is 7.33 kg SO_2 per ton of product in manufacturing phase, and it caused the greatest from the marine transport of iron ore, followed by anthracite coal mining. The process of manufacturing emits 28,800 MJ of Abiotic Depletion Potential(Fossil), and it caused from bituminous coal mining the greatest, followed anthracite coal mining.
- There is a difference in the applied LCA methodology. The environmental impact of Hyundai Steel is less than the global average provided by the World Steel Association in 2017. There are two different points related to its lesser environmental impact: co-products related to Modules A1-A3, and steel scrap related to Module D.
- Hyundai Steel is actively participating in resource-circulating activities. The main co-products from steel production are slag, BTX, zinc dross, and etc., so we have been studying ways to enhance the recovery/recycling capacity of these co-products generated during the production process. It was considered an economic allocation outside the recycling of co-products generated during production as part of the resource recycling activity.
- Hyundai Steel's Dangjin Works produces electricity by using the co-products as process gases (i.e., BFG, COG, and LDG) generated from the production process. As the generated electricity is utilized in the workplace, the circulation of co-products or resources are formed in internal worksites. The effect of reuse/recovery in worksites could reduce environmental impacts such as GHG emissions. In addition, we are planning to develop additional activities related to process gas recycling.
- Hyundai Steel's products are used in large quantities by Hyundai/Kia Motor Co. and Hyundai Engineering & Construction Co., and the steel products generate steel scrap after use (i.e., end-of-life steel). Steel products are recycled continuously on Hyundai Steel's product production process. Therefore, the effect of recycling steel scrap is greater as a system already exists that recycles a large amount of scrap to produce its products and enables more scrap to be used.

Glossary of Terms

Parameter	*Units*	*Description*	*Characterization Method*
Global Warming Potential (GWP)	kg CO_2 -eq.	GWP a measurement of how much heat a GHG traps in the atmosphere, up to a specific time horizon, relative to carbon dioxide. It compares the amount of heat trapped by a certain mass of the gas in question to the amount of heat trapped by a similar mass of carbon dioxide and is expressed as a factor of carbon dioxide (whose GWP is standardized to 1.0).	CML2001 (January 2016)
Acidification Potential (AP)	kg SO_2 -eq.	AP is a phenomenon for which precipitation is unusually acidic, meaning that it has substandard pH levels. It can have harmful effects on plants, aquatic animals, and infrastructure. Acid rain is caused by emissions of SO_2, NOx, and NH_3. The acidification potential is measured in mass of sulfur dioxide equivalent (SO_2-eq).	CML2001 (January 2016)
Eutrophication Potential (EP)	kg PO_4^3 -eq.	EP is the abnormal proliferation of vegetation in an aquatic ecosystem caused by the addition of nutrients into rivers, lakes, or ocean that determinates a lack of oxygen. The eutrophication potential is mainly influenced by emission into water of phosphates and nitrates and is expressed in mass of PO_4-equivalent.	CML2001 (January 2016)
Ozone layer Depletion Potential (ODP)	kg CFC_{11} -eq.	The concept of ozone depletion potential (ODP) is widely used as a measure of the effectiveness of a given compound in removing ozone relative to a standard compound, which is taken to be CFC_{11}.	CML2001 (January 2016)
Photochemical Ozone Creation Potential (POCP)	kg ethene -eq.	POCP is a chemical reaction brought about by the light energy of the sun. The reaction of nitrogen oxides with hydrocarbons in the presence of sunlight forms ozone in the troposphere. The indicator is mainly influenced by Volatile Organic Compounds (VOCs) and NOx emissions and is usually expressed in mass of ethene equivalent (C_2H_4-eq).	CML2001 (January 2016)
Abiotic Depletion Potential: Fossil (ADPF)	MJ	ADPF and ADPE measure the health of humans and the ecosystem and how they are affected by the extraction of minerals and fossil fuels that are inputs into the system. For each extraction of minerals and fossil fuels, the abiotic depletion factor (ADPF) is determined. This indicator is on a global scale and is based on the concentration reserves and rate of de-accumulation.	CML2001 (January 2016)
Abiotic Depletion Potential: Elements (ADPE)	kg Sb -eq.		CML2001 (January 2016)
Water (user) Deprivation Potential (WDP)	m^3	WDP is the lack of freshwater resources to meet water demand. It affects every continent and was listed in 2019 by the World Economic Forum as one of the largest global risks in terms of potential impact over the next decade.	ILCD PEF (v1.09)

7. Mandatory Statements

- This EPD covers lifecycle stages A1-A3 plus C3, C4, and D. All other stages are dependent on the specific application of the product and should be included in a whole-life model.
- The EPD for construction products might not be comparable if they do not comply with EN 15804.
- EPDs within the same product category but from different programs or utilizing different PCRs might not be comparable. For further information about comparability, see EN 15804 and ISO 14025.

8. Program-Related Information and Verification

Program	The International EPD® System. EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden. www.environdec.com, info@environdec.com
EPD Registration Number	S-P-02216 (ECO EPD Ref. no. 00001333)
Published	2020-10-13
Revised	2021-01-06 *· Changed from PCR 2019:14 Construction Products to PCR 2012:01 Construction Products and Construction Services.*
Valid Until	2025-09-04 *· An EPD should provide current information and may be updated if conditions change. The stated validity is, therefore, subject to the continued registration and publication at www.environdec.com.*
Product Group Classification	UN CPC 412
Reference Year for Date	2019
Geographical Scope	International

CEN standard EN 15804 serves as the core Product Category Rules (PCR)

Product Category Rules (PCR)	PCR 2012:01 Construction Products and Construction Services, Version 2.33, 2020-09-18
PCR review was conducted by	The Technical Committee of the International EPD® System. Chair: Claudia A. Peña Contact via info@environdec.com
Independent third-party verification of the declaration and data, according to ISO 14025:2006	☐ EPD Process Certification (internal) ▣ EPD Verification (external)
Third party verifier, Approved by The International EPD® System	 Ik Kim, SMaRT-Eco Co. kohung@smart-eco.co.kr
Accredited or approved by	The International EPD® System.

9. References

- ISO 14025:2006 – Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 14040:2006 – Environmental management – Life cycle assessment – Principles and framework
- ISO 14044:2006 – Environmental management – Life cycle assessment – Requirements and guidelines
- ISO/TR 14047:2012 – Environmental management – Life cycle assessment – Illustrative examples on how to apply ISO 14044 to impact assessment situations
- ISO/TR 14049:2012 – Environmental management – Life cycle assessment – Illustrative examples on how to apply ISO 14044 to goal and scope definition and inventory analysis
- ISO 20915:2018 – Life cycle inventory calculation methodology for steel products
- EN 15804:2012+A1:2013 (Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products)
- General Programme Instructions of the International EPD® System. Version 3.01.
- PCR 2012:01. Construction Products and Construction Services, Version 2.33, 2020-09-18.
- Product Environmental Footprint Guidance: Annex C – List of Default Values for A, R1, R2, R3 and Qs/Qp
- World Steel Association Life Cycle Inventory study report, 2018 data release. This study report corresponds to the steel LCI data released in December 2018 for 17 products. This is the 5th worldsteel LCI study and has been carried out in accordance with the worldsteel LCI methodology report.
- The GaBi LCA Software (GaBi version 8.5.0.79).

10. Contact Information

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