



ENVIRONMENTAL PRODUCT DECLARATION

In compliance with ISO 14025 and EN15804 + A2:2019

HOT-ROLLED STEEL WIRE ROD

Program operator: EPDITALY
Published by: EPDITALY
Declaration n.: EPDvergella_2020

EPDITALY registration code: EPDITALY0091

Published: 11/12/2019
Updated: 23/12/2022
Valid until: 21/12/2025
Production site: Osoppo (UD) - Italy



General Information



EPD DECLARATION OWNER:

FERRIERE NORD S.p.A.
Zona industriale Rivoli di Osoppo
Osoppo (UD), Italy.

PROGRAM OPERATOR:

EPDITALY
Via Gaetano de Castillia 10
Milan (MI), Italy.

INDEPENDENT EVALUATION BY:

ICMQ S.p.A.
Via Gaetano de Castillia 10
Milan (MI), Italy.

PLANT LOCATION:

FERRIERE NORD S.p.A.
Zona industriale Rivoli di Osoppo
Osoppo (UD), Italy.

Company Profile



Pittini Group, with more than 60 years of experience in the steel sector, is an international reference in the production of **long steel products** for **mechanical industry** and **building sector**.

With a production of almost 3 million tons per year, 18 manufacturing and logistics facilities and 1,800 workers, Pittini Group is a strong company, focused on constant growth, guided by hi-tech investments, product innovation and a strict environmental sustainability policy (**Environmental Management System**, ISO 14001-certified since 2009).

Pittini Group **covers the whole production cycle**: from raw material (recycled ferrous materials) to the finished product, producing billets, wire rod, hot-rolled reinforcing steel bars and coils.

Field of application and EPD type

| | | | |
|-----|----|--|--|
| ✓ | A1 | Raw material supply | PRODUCTION STAGE |
| ✓ | A2 | Transport | |
| ✓ | A3 | Manufacturing | |
| MND | A4 | Transport | CONSTRUCTION PROCESS |
| MND | A5 | Construction/installation | |
| MND | B1 | Use | USE |
| MND | B2 | Maintenance | |
| MND | B3 | Repair | |
| MND | B4 | Replacement | |
| MND | B5 | Refurbishment | |
| MND | B6 | Operational energy use | |
| MND | B7 | Operational water use | |
| ✓ | C1 | De-commissioning \ Demolition | END OF LIFE |
| ✓ | C2 | Transport | |
| ✓ | C3 | Waste processing | |
| ✓ | C4 | Disposal | |
| ✓ | D | Reuse \ Recovery \ Recycling potential | BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY |

MND = Module Not Declared (Modulo non incluso)

MODULES: The system modules include the compulsory modules A1, A2, A3, C1, C2, C3, C4 and D as per EN 15804 standard, following a “from cradle to gate with modules C1-C4 and D” approach.

EPD TYPE: Specific for the hot-rolled wire rod produced in Osoppo (UD).

GEOGRAPHICAL LOCATION: Performances were calculated considering the plant of Osoppo with reference to the national market.

DATABASE: Ecoinvent 3.6

SOFTWARE: SimaPro 9.1

The product: wire rod

DECLARED UNIT: 1,000 kg of wire rod

Pittini Group's wire rod meets high-quality standards, regarding both smooth wire rod (diameters ranging from 5.5 to 21.5 mm) and **ribbed wire rod** (diameters ranging from 6 to 16 mm).

The structure of Pittini's wire rod allows **high reductions**, making it possible to reach final diameters measuring **even less than one millimeter**, always ensuring a constant quality and an optimal surface, suitable for a subsequent galvanic treatment or coating.

Wire rod for concrete reinforcement is designed in such a way that the final products – cold-rolled wire, electrowelded meshes and lattice girders – comply with the Italian and international product specifications, according to the current norms.

Fe36 wire rod – for certified use in **mechanical sector and steel structures for building sector** – complies with EN 10025-2 S235JR Standard, according to the European Regulation 305/2011 nr. Fe36-CPR-2013-07.

High-carbon wire rod is intended for the production of pre-stressed wire and strand, steel cord or mechanical springs. Medium-carbon wire rod is also available, intended for the production of nails, staples and more, in the mechanical sector.

*Wire rod produced in Osoppo **does not contain** substances included in the "**Candidate list of substances of very high concern (SVHC)**"*



Main raw materials

Main raw materials used to produce rebar and rebar in coils are:



FERROUS METAL SCRAP



PIG IRON



REDUCED IRON



FERRO-ALLOYS



LIME



COAL



**REFRACTORY
MATERIALS**

Field of application and EPD type

DESCRIPTION OF THE PROCESSES INCLUDED

Transport of material from production sites to Ferriere Nord S.p.a. in Osoppo has been included.

All transports of scrap and raw material from suppliers to the plant in Osoppo are included in the primary-information model. **INVENTORY QUANTITY**, expressed in kgkm, is defined as the product between the mass of the material and the distance covered.

Transport of waste from the plants in Osoppo to the processing plants is included in the model relying on primary data.

Processing of materials entering Ferriere Nord, **melting and manufacturing processes** to obtain wire rod are included.

A1 ENERGY AND RAW MATERIAL SUPPLY

A2 TRANSPORT

A3 MANUFACTURING (WASTE PROCESSING, ANCILLARY MATERIALS, EMISSIONS)

Field of application and EPD type

Following the review of the EN 15804 standard, groups C1, C2, C3, C4 and D have been included.

The groups C1-C4 include the impacts associated with the removal of the material from the building in which it is installed, the transport of the waste to the treatment center and the related activities (recycling, treatment ecc.), including the disposal in landfill.

The group D, includes the benefits coming from the outputs of recycling (intended as avoided products) and energy recovery operations.

C1 DE-CONSTRUCTION/DEMOLITION

C2 TRANSPORT

C3 WASTE PROCESSING

C4 DISPOSAL

D REUSE-RECOVERY-RECYCLING POTENTIAL

Field of application and EPD type



SCRAP
PREPARATION
PROCESSES FOR
FURNACE MELTING
AND RAW MATERIALS
EXTRACTION

Ferrous scrap, pig iron and HBI processing: mechanical treatment of scrap, weighing, storage, basket preparation, handling with overhead cranes and sending to furnace;

Coal and lime processing: weighing, insufflation and sending to furnace;

Processing of electrodes and refractories: weighing and sending to furnace;

Processing ladle slag with iron: cooling, iron removal, screening, pneumatic transport and injection into furnace.

Field of application and EPD type



**IN-HOUSE
TRANSPORT
AND OPERATING
MACHINES USED AT
FERRIERE NORD**

Inbound transport of materials by train and truck

In-house transport with wheel loader and truck

Handling the finished product with forklift

Waste transport to destination facilities

Field of application and EPD type



MELTING AND CASTING PROCESSES

Melting process:

oxygen production,
cooling water recirculation, electric arc furnace melting;

Secondary metallurgy process:

refining and additives addition,
ferro-alloys processing (weighing and sending to secondary
furnace), ladle preparation and maintenance;

Casting process:

steel casting and billet production,
preparation and maintenance of tundishes.

Field of application and EPD type



**HOT ROLLING
PROCESSES**

- Billet pre-heating in furnace
- Removal of surface layers of scale
- Rolling
- Wire rod production

Field of application and EPD type



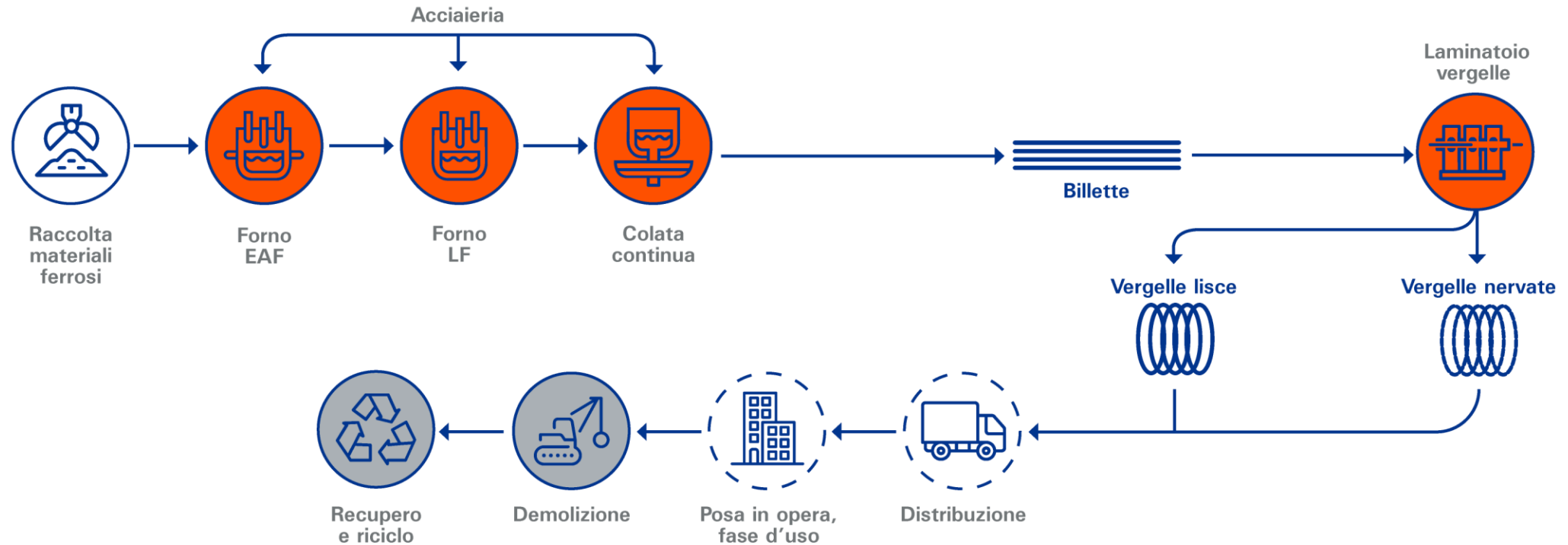
**END OF LIFE
MANAGEMENT**

Demolition of the structure, including
the use of machinery

Transport to separation centers and
separation process.

Recovery, recycle, disposal

Field of application and EPD type



Wire rod production process

Environmental performance: wire rod

Data referring to 1,000 kg of wire rod


|  ENVIRONMENTAL IMPACT PARAMETERS | UNIT | A1 | A2 | A3 | A4, A5, B1 ÷ B7 | C1 | C2 | C3 | C4 | D | TOTAL A1÷C4 |
|---|-------------|---------|----------|-----------|-----------------|----------|----------|-----------|-----------|-----------|-------------|
| Climate Change | kg CO2 eq | 539,5 | 40,4 | 106,7 | MND | 6,4 | 16,7 | 1,7 | 0,9 | -716,5 | 712,4 |
| Climate Change - Fossil | kg CO2 eq | 530,9 | 40,3 | 106,7 | MND | 6,4 | 16,7 | 1,6 | 0,9 | -719,7 | 703,5 |
| Climate Change - Biogenic | kg CO2 eq | 8,4489 | 0,0642 | 0,0605 | MND | 0,0018 | 0,0090 | 0,0485 | 0,0009 | 3,3769 | 8,6337 |
| Climate Change – LU&T | kg CO2 eq | 0,2019 | 0,0249 | 0,0015 | MND | 0,0005 | 0,0058 | 0,0036 | 0,0003 | -0,1286 | 0,2385 |
| Ozone Depletion | kg CFC11 eq | 0,00009 | 0,000008 | 0,0000008 | MND | 0,000001 | 0,000004 | 0,0000001 | 0,0000003 | -0,000003 | 0,0001 |
| Acidification | mol H+ eq | 2,636 | 0,602 | 0,025 | MND | 0,067 | 0,114 | 0,010 | 0,007 | -3,048 | 3,461 |
| Eutrophication Aquatic Freshwater | kg P eq | 0,14500 | 0,00561 | 0,00085 | MND | 0,00023 | 0,00123 | 0,00154 | 0,00008 | -0,26522 | 0,15453 |
| Eutrophication Aquatic Marine | kg N eq | 0,488 | 0,176 | 0,026 | MND | 0,030 | 0,044 | 0,002 | 0,003 | -0,641 | 0,768 |
| Eutrophication Terrestrial | mol N eq | 5,42 | 1,94 | 0,15 | MND | 0,32 | 0,49 | 0,02 | 0,03 | -6,35 | 8,36 |
| Photochemical Ozone Formation | kg NMVOC eq | 1,592 | 0,518 | 0,072 | MND | 0,089 | 0,134 | 0,005 | 0,008 | -3,756 | 2,418 |
| ADP - Mineral And Metals * | kg Sb eq | 0,00254 | 0,00047 | 0,00016 | MND | 0,00001 | 0,00045 | 0,00001 | 0,00002 | -0,00096 | 0,00366 |
| ADP – Fossil * | MJ | 9627 | 586 | 59 | MND | 88 | 254 | 33 | 18 | -7088 | 10664 |
| Water Use * | m3 depriv. | 146,9 | 2,4 | 19,8 | MND | 0,1 | 0,7 | 0,4 | 0,4 | 14,5 | 170,6 |

MND = Module Not Declared

* The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Environmental performance: wire rod


Data referring to 1,000 kg of wire rod

|  RENEWABLE RESOURCES | UNIT | A1 | A2 | A3 | A4, A5, B1 ÷ B7 | C1 | C2 | C3 | C4 | D | TOTAL A1÷C4 |
|---|------|--------|-------|-------|-----------------|------|------|------|------|---------|-------------|
| Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE) | MJ | 294,09 | 11,78 | 1,68 | MND | 0,36 | 2,44 | 4,25 | 0,14 | -57,83 | 314,73 |
| Use of renewable primary energy resources used as raw materials (PERM) | MJ | 104,23 | 4,87 | -0,26 | MND | 0,12 | 1,12 | 1,23 | 0,06 | -55,67 | 111,38 |
| Total use of renewable primary energy resources (PERT) | MJ | 398,32 | 16,65 | 1,42 | MND | 0,48 | 3,56 | 5,48 | 0,20 | -113,50 | 426,11 |

MND = Module Not Declared

Environmental performance: wire rod



Data referring to 1,000 kg of wire rod

|  NON-RENEWABLE RESOURCES | UNIT | A1 | A2 | A3 | A4, A5, B1 ÷ B7 | C1 | C2 | C3 | C4 | D | TOTAL A1÷C4 |
|--|------|----------|---------|--------|-----------------|--------|---------|--------|--------|-----------|-------------|
| Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials (PENRE) | MJ | 9376,617 | 585,794 | 53,277 | MND | 88,220 | 253,911 | 33,289 | 17,567 | -7088,411 | 10408,674 |
| Use of non renewable primary energy resources used as raw materials (PENRM) | MJ | 249,742 | 0,000 | 5,456 | MND | 0 | 0 | 0 | 0 | 0 | 255,198 |
| Total use of non renewable primary energy resources (PENRT) | MJ | 9626,314 | 585,773 | 58,732 | MND | 88,220 | 253,906 | 33,289 | 17,567 | -7088,340 | 10663,800 |

MND = Module Not Declared

Environmental performance: wire rod


Data referring to 1,000 kg of wire rod

|  USE OF SECONDARY RAW MATERIALS | UNIT | A1 | A2 | A3 | A4, A5, B1 ÷ B7 | C1 | C2 | C3 | C4 | D | TOTAL A1÷C4 |
|---|------|-------|-------|-------|-----------------|-------|-------|-------|-------|--------|-------------|
| Use of secondary materials (SM) | kg | 786 | 0 | 0 | MND | 0 | 0 | 0 | 0 | 0 | 786 |
| Use of renewable secondary fuels (RSF) | MJ | 0 | 0 | 0 | MND | 0 | 0 | 0 | 0 | 0 | 0 |
| Use of non renewable secondary fuels (NRSF) | MJ | 0 | 0 | 0 | MND | 0 | 0 | 0 | 0 | 0 | 0 |
|  USE OF FRESH WATER | | | | | | | | | | | |
| Net use of fresh water (FW) | m3 | 4,420 | 0,106 | 0,422 | MND | 0,005 | 0,027 | 0,027 | 0,009 | -0,013 | 5,015 |

MND = Module Not Declared

Environmental performance: wire rod

Indicators relating to outflows and waste, referring to 1,000 kg of wire rod

|  WASTE DISPOSAL | UNIT | A1 | A2 | A3 | A4, A5, B1 ÷ B7 | C1 | C2 | C3 | C4 | D | TOTAL A1÷C4 |
|--|------|---------|---------|---------|-----------------|---------|---------|---------|---------|----------|-------------|
| Hazardous waste disposed (HWD) | kg | 0,05015 | 0,00112 | 0,00013 | MND | 0,00024 | 0,00067 | 0,00002 | 0,00004 | -0,07475 | 0,05237 |
| Non-hazardous waste disposed (NHWD) | kg | 67,15 | 26,21 | 9,93 | MND | 0,11 | 12,05 | 0,12 | 52,54 | -50,46 | 168,11 |
| Radioactive waste disposed (RWD) | kg | 0,0284 | 0,0039 | 0,0004 | MND | 0,0006 | 0,0017 | 0,0002 | 0,0001 | -0,0064 | 0,0353 |
| Components for re-use (CRU) | kg | 0 | 0 | 0 | MND | 0 | 0 | 0 | 0 | 0 | 0 |
| Materials for Recycling (MFR) | kg | 0,18 | 0 | 19,86 | MND | 0 | 0 | 950,00 | 0 | 0 | 970,04 |
| Materials for Energy Recovery (MER) | kg | 0 | 0 | 0 | MND | 0 | 0 | 0 | 0 | 0 | 0 |
| Exported Energy (EE) | MJ | 0 | 0 | 0 | MND | 0 | 0 | 0 | 0 | 0 | 0 |

MND = Module Not Declared

Calculation rules

DECLARED UNIT: 1,000 kg of wire rod

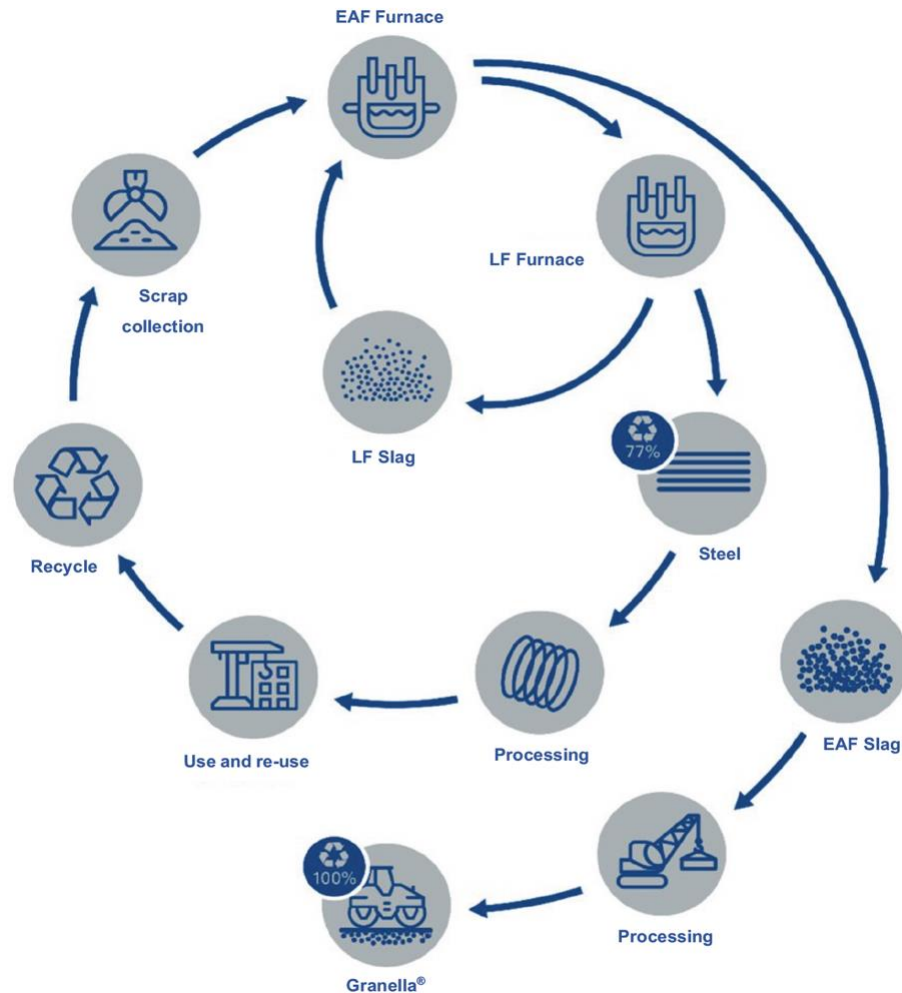
ASSUMPTIONS: System boundaries include the compulsory modules A1, A2, A3, C1, C2, C3, C4 and D as required by EN 15804 Standard, according to a “from cradle to gate with modules C1-C4 and D” approach. It should be noted that **building, maintenance and decommissioning of the infrastructures - intended as buildings - and use of industrial ground, were not taken into consideration**, because their contribution to environmental impact relating to the declared unit is deemed negligible. **Consumption of oils, detergents and other technical materials for machine maintenance, energy consumption for plant lighting, energy consumption for office activities related to the management of the steel mill are included.** Moreover, it should be noted that product distribution, use and disposal phases are not included in this study.

CUT-OFF RULES: The criterion chosen for the initial inclusion of the inbound and outbound elements, takes into account a 1% cut-off level, both in terms of mass, energy and environmental relevance. This means that a process was neglected if responsible of less than 1% of the total amount of mass, primary energy and total impact. However, all processes for which data are available were taken into account, even though with a contribution less than 1%. As a consequence, this threshold value was used in order to avoid collecting unknown data, not with the purpose of neglecting available data.

DATA QUALITY: in the LCA study, particular relevance was given to primary data collected at Ferriere Nord S.p.A. and Demolizioni Industriali S.r.l. through extensive measurements carried out at the plants.

ALLOCATIONS: allocation was avoided, whenever possible, by dividing the system into sub-systems. Otherwise, economic allocation was applied. As for waste modeling, the "Polluter pays principle" was applied.

Additional information



Since 1995, the Pittini Group has chosen a “**Zero Waste**”, production approach - a virtuous example of **circular economy**.

Zero Waste means that, at Pittini Group, **steel production must not create waste**. Instead, waste material is transformed in order to cut on unnecessary consumption and create opportunities of new uses.

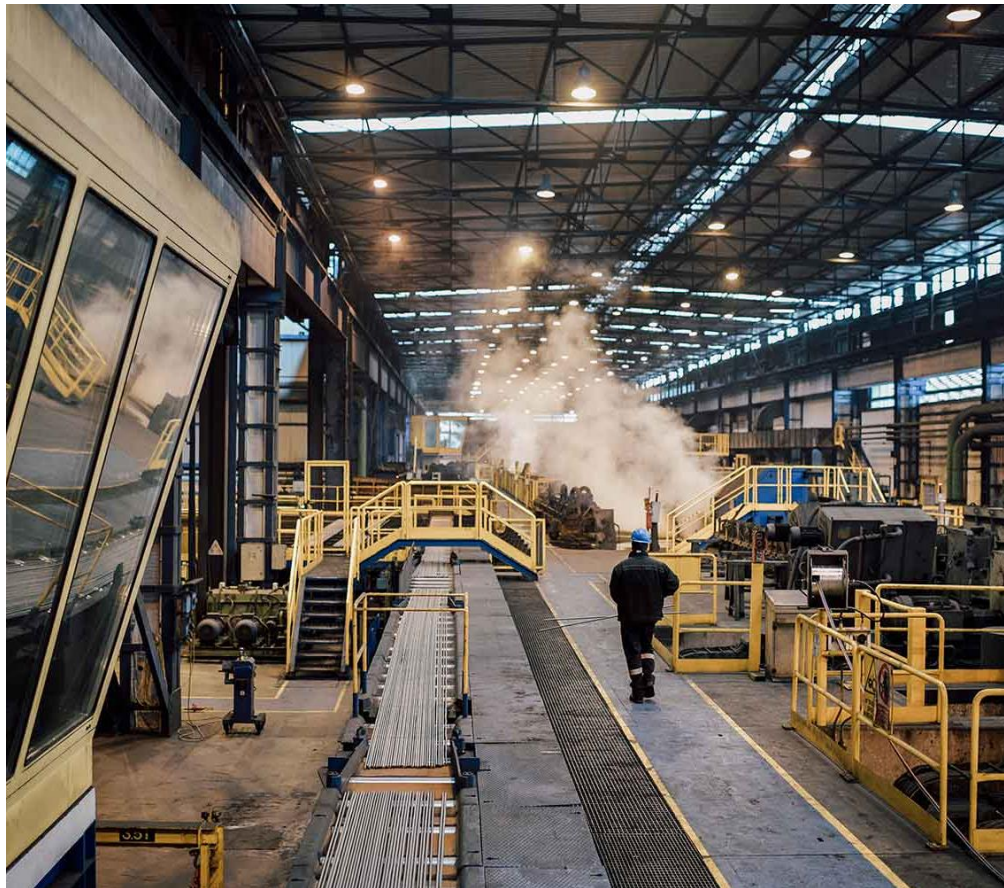
Some great examples of circular economy are: **Granello®**, product obtained from EAF slag, residue with highest amount, that is used for the production of asphalt pavements and concrete conglomerates as an alternative to natural aggregates; Ladle furnace slag, which is later re-introduced in the production process as a substitute for lime; Dust coming from fume filtering, from which zinc and other metals are extracted; and Rolling mill scale, which is used in the production of concrete and counterweights in the household appliance industry.

References



- **ISO 14040:2006/Amd 1:2020** Environmental management - Life cycle assessment - Principles and framework
- **ISO 14044:2006/Amd 2:2020** Environmental management — Life cycle assessment — Requirements and guidelines — Amendment 1
- **ISO 14020:2000** Environmental labels and declarations -- General principles
- **EN 15804:2012 + A2:2019** Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction works
- **PD CEN/TR 16970:2016** Sustainability of construction works – Guidance for the implementation of EN 15804
- **PD CEN/TR 15941:2010** Sustainability of construction works – Environmental Product Declarations – Methodology for selection and use of generic data.
- **ICMQ-001/15 PCR for construction products rev.3**
- **EPDI Italy Regulation v.5**

General information



Environmental declarations published within the same product category, but belonging to different programs, might not be comparable.

Specifically, EPDs regarding products for the building sector may not be comparable if not compliant with the EN 15804 standard.

REFERENCE DOCUMENTS: This declaration was drafted following EDPItaly's General Programme Instruction, available on www.epditaly.it.

ICMQ-001/15 PCR for construction products rev.3

CPC CODE : 4124

CONTACTS: dr. Carlo Ceschia
Ferriere Nord S.p.A., Tel. +39 0432 062850, carlo.ceschia@pittini.it

TECHNICAL SUPPORT: Spin Life s.r.l., via E. degli Scrovegni 29, 35131 Padua (Italy)

INDEPENDENT VERIFICATION OF DECLARATION AND DATA CARRIED OUT ACCORDING TO ISO 14025

EPD Process certification (Internal)

EPD Verification (External)