TATA STEEL

TATA

Enviromental Product Statement (EPS)

Install® Plus 235 & Inline™ 265 Conveyance Tubes

Datasheet information

Owner of statement	Tata Steel UK
Product	Install® Plus 235 & Inline™ 265 UK-Part-2 Hot-finished
Manufacturing sites	Port Talbot (Steel), Corby (Tube), Hartlepool (Tube)
Product application	Building and Industrial Services
Declared unit	1 tonne of steel tube

This EPS datasheet describes the specific carbon impact of the named product over its life cycle and the information in this statement is based on production data from 2013 and 2014. It also contains additional Sustainability and Environmental content in support of our UK manufactured products.

Product information

Our UK-Part-2-Hot-finished tubes are made from normalised fine grain steel for improved mechanical properties, formability, and weldability. As well as delivering fabrication, installation, and service life performance advantages across a wide range of building and industrial services applications.

Benefits of our hot-finished tubes:

- Suitability for elevated temperature and compliance under the PED
- An ordered and consistent microstructure
- No internal weld seam stress
- Consistent and reliable mechanical properties
- Higher pressure integrity
- Improved structural integrity and ductility
- Improved and consistent toughness
- Improved performance against corrosion
- Ability to be bent to tighter radii without splitting, creasing or collapsing.

Example applications:

- Heating Ventilation and Air Conditioning
- Low to high temperature hot water
- Steam and condensate steam systems
- Chilled water
- Fuel oils and gas
- Compressed air
- Pressure pipework
- Process and onshore linepipe
- Fire defence
- Conduit tube

Steel manufacturing

The process begins at Port Talbot, with sinter being produced from iron ore and limestone, and together with coke from coal, reduced in a blast furnace to produce iron. Steel scrap is then added to the liquid iron and oxygen is blown through the mixture to convert it into liquid steel in the Basic Oxygen Furnace (BOS).

This is then continuously cast into discrete slabs, which are reheated and rolled in a hot strip mill to produce steel coil (Figure 1). The hot rolled coils are then securely banded with metal strapping for despatch by train to our Corby and Hartlepool mills. The coil banding used is collected for recycling as part of each sites' process scrap policy.

Tube manufacturing

The process begins with the uncoiling and levelling of the hot-rolled coil, which is then passed through a series of shaped rolls that gradually form the flat strip into a circular. The two strip edges, now adjacent to one another, are welded using a High Frequency Welded (HFW) induction process.

Both external and internal weld beads are trimmed and a further set of rolls effect the final shaping and sizing of the pipe. 100% non-destructive testing (NDT) is performed in-line on the weld-seam to ensure integrity.

Samples are also taken for destructive testing in accordance with National, European and International standards, as well as our own in-house requirements. The relevant standards for our hot-finished tubes are: EN10255:2004, EN10217-2:2019 and ISO3183:2019(API5L).

The subsequent hot-finishing process at Corby comprises a reheating operation, and with the section at a normalising temperature of approximately 950°C, a further shaping and sizing operation imparts the product's final dimensions and properties. Hartlepool can employ either a full furnace normalisation, but typically achieves the required technical delivery conditions through Weld Line Annealing (WLA), as shown in Figure 2.

Conveyance tubes can be supplied with a range of added value end-finishes, such as screwed and socketed, bevelled, grooved as well as plain end, as required by the customer.

They can also be supplied painted, galvanised, varnished or self-coloured/bare metal depending on customer requirements.

Tube coatings are typically carried out at the tube manufacturing sites, or may involve a 3rd party supplier. In some cases coatings may be applied by end-users after pipework fabrication or post installation.

Life Cycle Assessment (LCA)

The life cycle modelling was carried out using the GaBi software system for life cycle engineering and data was gathered from all parts of the process route, including steel production data submitted to the World Steel Association.

The model was used to calculated the Global Warming Potential (GWP) impact for the manufacture and end-of-life processing of Install® Plus 235 and Inline™ 265 Tubes.

This Life Cycle Inventory study has been undertaken in accordance with ISO14040 and ISO14044 and the manufacturing stage includes all steps from the extraction of raw materials to the production of steel tubes that leave the factory gate.

The data from Tata Steel's own production processes are from 2013 and 2014, and the technologies on which these processes were based during that period, are those used at the date of publication of this statement.

The methodology used to develop these data is detailed in the World Steel Association Life Cycle Inventory Study Report. Where specific data were not available, background data provided in the GaBi LCA software were used for the end-of-life parts of the life cycle.

The Life Cycle Assessment of Install® Plus 235 and Inline™ 265 Conveyance Tubes is illustrated in Figure 3, with the life cycle stages not included, shown in grey text. The following assumptions were used to calculate the results:

- The declared unit is 1 tonne of conveyance tube.
- Packaging of the tubes and transport to the customer are not included.
- Galvanising and/or organic coating of the conveyance tubes is not included.
- Tube end finishing is not included.
- No impacts from construction/assembly, or use of the product are included.
- Deconstruction/dismantling of the product is not included.
- No impacts from processing of the tubes for re-use or recycling are included.
- Transport to end-of-life fate is on a 25t capacity truck over a distance of 100km with a utilisation of 40% to allow for empty returns.
- At end-of-life, 7% of the steel product is re-used, 92% is recycled and 1% is lost to landfill.

Results of the LCA

The GWP impact is for 1 tonne of Install® Plus 235 fully normalised conveyance tube and is expressed using the CML 2001-January 2016 method for life cycle impact assessment. The results are shown in Table 1, with the impacts for 1 tonne of Inline™ 265 Weld Line Annealed (WLA) conveyance tube presented in Table 2.

Table 1 Global warming potential for the life cycle of 1 tonne of Install® Plus 235 tube (fully normalised)

GWP (kg CO_2 eq.)

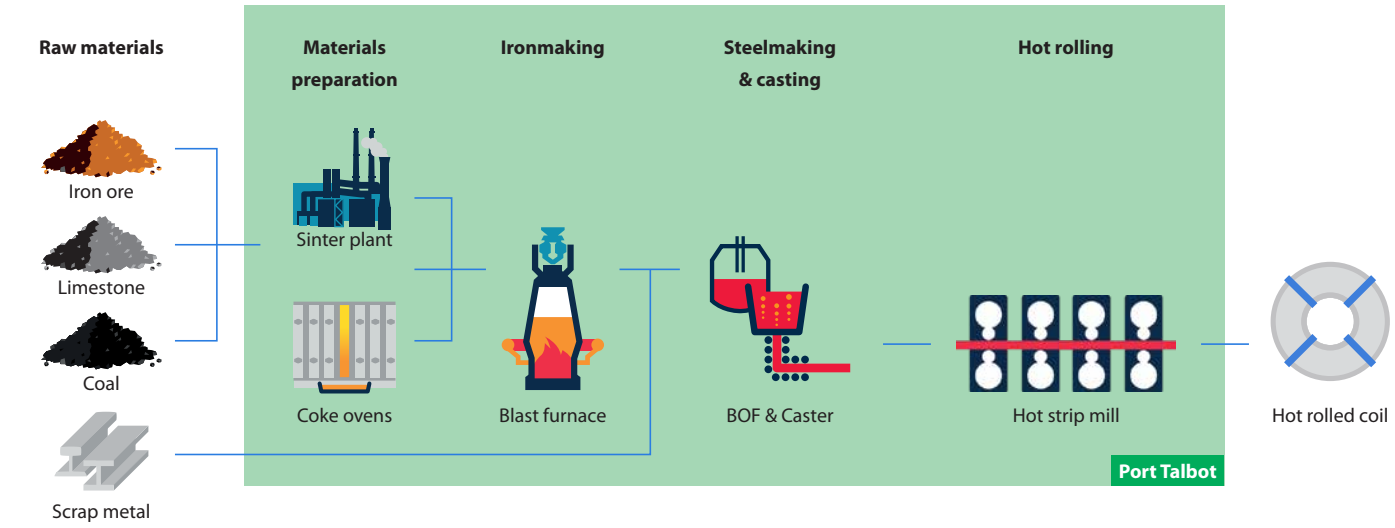
Manufacture	EOL	Recycling/Re-use credit
2770	14	-1534

Table 2 Global warming potential for the life cycle of 1 tonne of Inline™ 265 tube (Weld Line Annealed)

GWP (kg CO_2 eq.)

Manufacture	EOL	Recycling/Re-use credit
2620	14	-1543

Figure 1 Process overview raw materials to hot rolled coil



Sustainability statement

Tata Steel recognises the importance of identifying risk in the supply chain and in taking a due diligence approach. In line with this, Tata Steel's products are BES 6001 certified, which demonstrates through 3rd party assurance, that the constituent materials have been responsibly sourced.

Furthermore, Tata Steel in India and Europe has been identified as a global leader for engaging with its suppliers on climate change, and has been awarded a position in the top 3% of organisations assessed by CDP on their Supplier Engagement Leaderboard.

Responsible sourcing

All of our hot-finished conveyance tubes are manufactured under BES 6001 and so are verified for responsible sourcing. This is an internationally recognised framework standard and is a means of securing certification to demonstrate, through independent, third-party certification, that products certified against the scheme have been responsibly sourced.

This standard assesses our products through the relevant supply chains according to comprehensive detailed criteria, applying both to the management of our facilities and to the way sustainability is extended back through the supply chain, starting with the mines where the iron ore is originally sourced.

Our responsible sourcing certification enables us to help our construction supply chains to accrue points, under building certification schemes such as BREEAM, on their building projects. Further details can be found at: **www.tatasteeleurope.com/construction/sustainability/responsible-sourcing**

Figure 2 Process overview of tube production

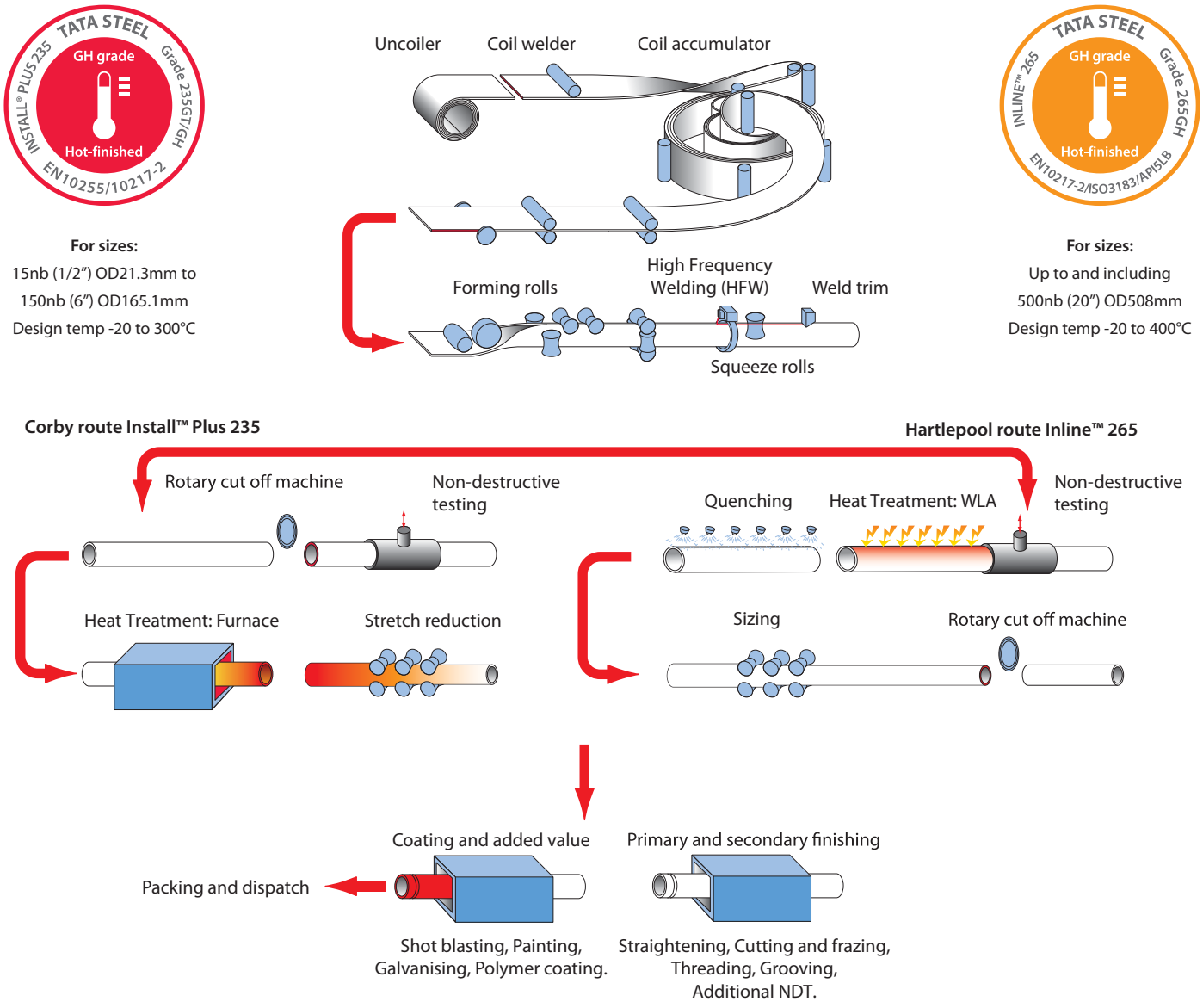
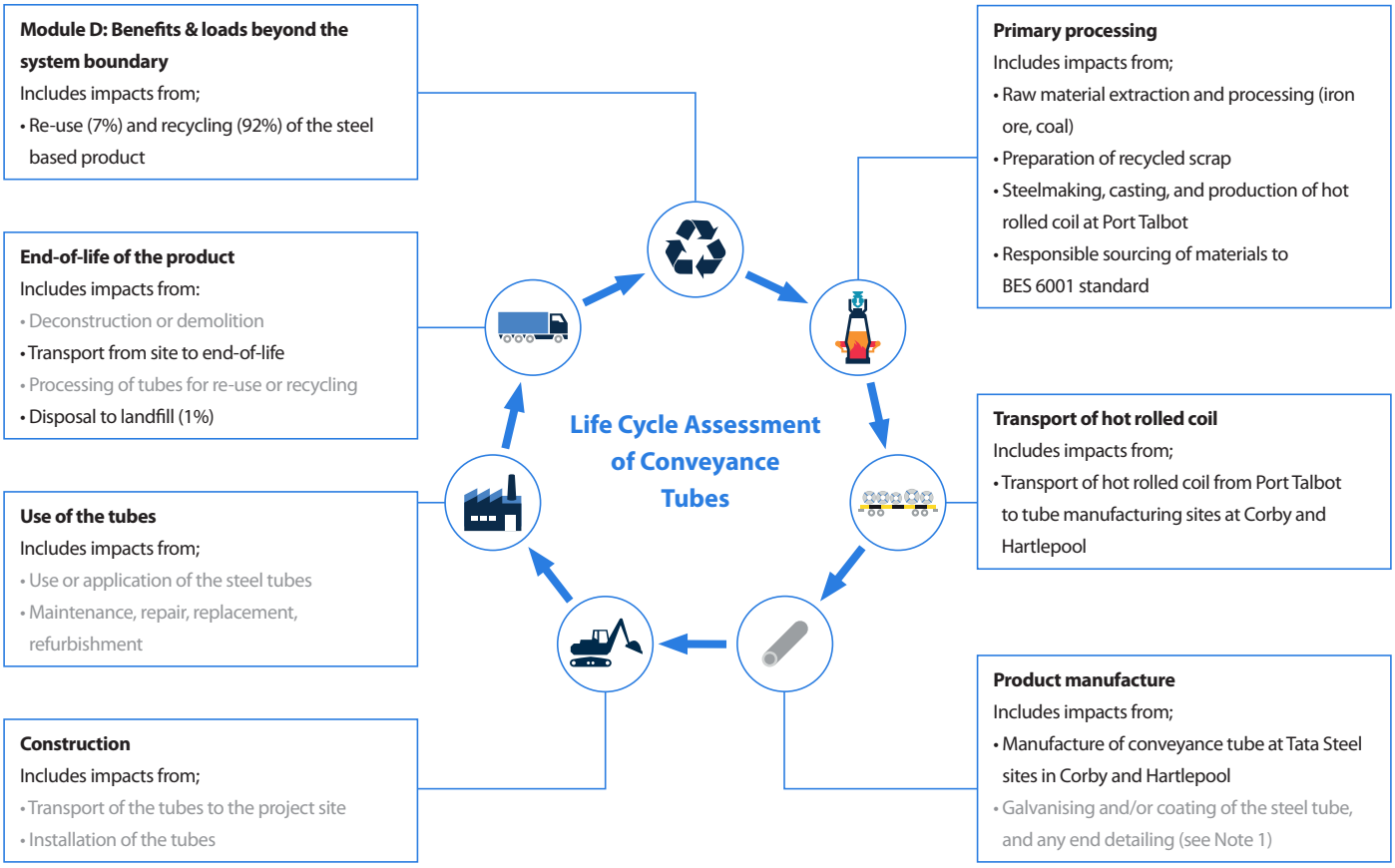


Figure 3 Life Cycle Assessment of Install® Plus 235 and Inline™ 265 Conveyance Tubes



Note 1: For Galvanised conveyance products HDG process adds approx. 0.2 kg CO_2 per kg of steel - this based on internal HDG process data.

Product data summary

Parameter Name	Value	Units	Comments
Embodied Carbon	See Table 1 & 2 within this EPS	kg CO_2	Based on 1 tonne of product
Life Cycle Assessment	Based on EPD-TS-2017-001	Number	Based on self-coloured, plain end product
Location of Manufacturer	Part Talbot, Corby, Hartlepool	GridRef	Please contact us for exact GridRef details
Part Talbot, Corby, Hartlepool	Up to 40%	Enumeration	Use of recycled steel is a key part of our steel making
Environmental Product Declaration	Currently WIP	Text	Dedicated EPD currently underway
Responsible Sourcing of Materials	BES 6001	Enumeration	Cert No: BES 651382
Environmental Management Systems	BS EN ISO 14001	Enumeration	Cert No: 10338283
Responsible Extraction of Materials	Yes, please see link	Text	https://www.tatasteeleurope.com/sustainability/responsible-steelmaker
Material Ingredient Reporting	As per primary standards	Text	Install® Plus 235 = BS EN10255, Inline™ 265 = BS EN10217-2
Design for disassembly - re-use **Design for disassembly - recycled**	7% 92% (Landfill 1%)	Enumeration	Based on Eurofer Study - Federation of Demolition Contractors for reuse and recycle rates

www.tatasteeleurope.com/hotvscold

Tata Steel
Weldon Road, Corby, Northants, NN17 5UE
T: +44 (0) 1536 402121
technicalmarketing@tatasteeleurope.com
Tubes Technical Helpline: +44 (0) 1536 404561

Language English TST103:PDF:UK:03/2022

While care has been taken to ensure that the information contained in this publication is accurate, neither Tata Steel, nor its subsidiaries, accept responsibility or liability for errors or for information which is found to be misleading. Before using products or services supplied or manufactured by Tata Steel and its subsidiaries, customers should satisfy themselves as to their suitability.

Copyright 2022
Tata Steel UK Limited

Scan for the latest version of this literature