

Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:



Carbon Steel Flange

- Loose Flanges (LOOSE FL / LOOSEFL / LOOSE FL HDG)
- Threaded Flanges (THREAD FL / THREAD FLANGE BSP)
- Weld Neck Flanges (WELD NECK FL)
- Blind Flanges (BLINDFLANGE / BLIND FL)
- Plate Flanges (PLATE FL / PL FL W.)
- Weld-On Collars (WELD-ON COLL / WELDN. COLLAR)

from

Saint-Gobain Distribution Sweden AB



Program:	The International EPD System, www.environdec.com
Program operator:	EPD International AB
Type of EPD:	EPD of multiple products, based on the average results of the product group, published by trader
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An EPD may be updated or republished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com



General information

Program information

Programme:	The International EPD System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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PCR and verification

Product Category Rules (PCR):
CEN standard EN 15804:2012+A2:2019/AC:2021 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): Construction Products PCR 2019:14 version 2.0.1, Environmental Footprint (EF) 3.1 method.
PCR review was conducted by: <i>The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com. Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via support@environdec.com.</i>
Life Cycle Assessment (LCA)
LCA accountability: Tabi Farzad, SGDS, tabi.farzad@saint-gobain.se
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
☒ Individual EPD verification by individual verifier
Third-party verifier: <i>Sigita Židonienė, Vesta, sigita@vestaconsulting.lt</i> Verifiers company – Vesta Consulting, UAB
Approved by: The International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier:
☐ Yes ☒ No

Ownership and limitations on use of EPD

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but published in different EPD programs, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Information about EPD owner

Owner of the EPD and trader	Saint-Gobain Distribution Sweden AB Bryggerivägen 9 168 67 Bromma Stockholm
Contact	SGDS - Beriar Maroof (beriar.maroof@saint-gobain.se)
Description of the organisation	Saint-Gobain Distribution Sweden AB - specialists in collaboration for more efficient business in construction and installation. Saint-Gobain Distribution Sweden AB is the head company of some of Sweden's leading trading companies in construction, sheet metal, tiles and installation. All the companies have long and solid industry experience and provide most of Sweden's craftsmen with materials for various projects. Customers in different companies can also buy support items from the sister companies in the group, and in selected cases, we take joint projects to facilitate the logistics of the supply of goods, which is then often critical for a smooth construction project. • Optimera - construction trade for professional carpenters • Dahl – heat, plumbing and sanitary specialist • Bevego - building sheet metal, ventilation and technical insulation • Kakelspecialisten and Konradsson's Tiles - tiles, tiling and bathroom fittings The company's focus is on sales and services with direct contact to about 150,000 customers regularly. Saint-Gobain Distribution Sweden AB is owned by Saint-Gobain with a presence in 64 countries and over 190 000 employees worldwide.
Location of production site	China, (Shandong Jinan and Tianjin)
Location of trader's warehouse	Sweden (Bålsta), Norway (Langhus)



Product information

Product name	Flange
Product identification	Flange articles
UN CPC code	Central Product Classification (CPC), version 2.1, assigns the code 41293 to tube or pipe fittings, flanges, of stainless steel.
Product description	Flanges are specifically made of carbon steel. There are several different dimensions of flanges, but the material composition remains the same. Therefore, the declared unit represents all products regardless of size.
Technical data	The flanges are manufactured from high-quality carbon steels (such as S235JRG2 and P250GH) and produced in accordance with the EN 1092 standard. They are available in multiple pressure classes (PN6, PN10, PN16, PN25, PN40, PN63) and cover a wide range of dimensions. The density of the flanges is typically 7.85 g/cm³. The production of carbon steel flanges begins with the selection of high-quality raw materials. The chemical composition of each batch is tested to ensure conformity with the specified steel grade. After approval, the material is cut into the required dimensions and prepared for forging. During the forging stage, the steel is shaped under high pressure and temperature to achieve the desired flange geometry. This is followed by heat treatment, which enhances the mechanical properties of the material. To verify quality, mechanical property testing is carried out in accordance with relevant standards. Once the material has passed testing, the flanges undergo machining and drilling operations to achieve precise dimensions and bolt patterns. Dimensional inspections are performed to confirm compliance with the design specifications. Each flange is then marked for traceability and product identification. Finally, the products are carefully packed and prepared for delivery.
Use	The products are used to connect pipes and ensure tight and secure joints in piping systems.

The EPD covers the following products variants in the Table 1. Other sizes manufactured by the same supplier and using the same material may be added in future updates.

Table 1: Product variants

Article Number	Product name	PN		Article Number	Product name	PN
Loose Flanges (LOOSE FL / LOOSEFL / LOOSE FL HDG)						
1431360	250/273 LOOSE FL HDG 1092-1 02M PN10 S235JRG2	PN10		1434612	15/ 25 LOOSE FL HDG 1092-1 02A PN40 S235JRG2	PN40
1431361	300/322 LOOSE FL HDG 1092-1 02M PN10 S235JRG2	PN10		1434613	20/ 31 LOOSE FL HDG 1092-1 02A PN40 S235JRG2	PN40
1434653	40/ 48 LOOSE FL HDG 1092-1 02M PN40 S235JRG2	PN40		1434614	25/ 38 LOOSE FL HDG 1092-1 02A PN40 S235JRG2	PN40

1434661	50/ 60 LOOSE FL HDG 1092-1 02M PN16 S235JRG2	PN16		1434615	32/ 47 LOOSE FL HDG 1092-1 02A PN40 S235JRG2	PN40
1434687	80/ 90 LOOSE FL HDG 1092-1 02M PN16 S235JRG2	PN16		1434616	250/281 LOOSE FL HDG 1092-1 02A PN10 S235JRG2	PN10
1434745	200/219 LOOSE FL HDG 1092-1 02M PN10 S235JRG2	PN10		1434617	300/333 LOOSE FL HDG 1092-1 02A PN10 S235JRG2	PN10
1435379	100/113 LOOSE FL HDG 1092-1 02M PN16 S235JRG2	PN16		1434675	40/ 53 LOOSE FL HDG 1092-1 02A PN40 S235JRG2	PN40
1435395	125/140 LOOSE FL HDG 1092-1 02M PN16 S235JRG2	PN16		1434677	50/ 65 LOOSE FL HDG 1092-1 02A PN16 S235JRG2	PN16
1435403	150/165 LOOSE FL HDG 1092-1 02M PN16 S235JRG2	PN16		1434679	65/81 LOOSE FL 4H HDG 1092-1 02A PN16 S235JRG2	PN16
1435453	350/376 LOOSE FL HDG 1092-1 02M PN10 S235JRG2	PN10		1434691	125/145 LOOSE FL HDG 1092-1 02A PN16 S235JRG2	PN16
1435454	400/425 LOOSE FL HDG 1092-1 02M PN10 S235JRG2	PN10		1434692	150/174 LOOSE FL HDG 1092-1 02A PN16 S235JRG2	PN16
9158435	500/525 LOOSE FL HDG 1092-1 02M PN10 S235JRG2	PN10		1435361	80/ 94 LOOSE FL HDG 1092-1 02A PN16 S235JRG2	PN16
1435387	100/120 LOOSE FL HDG 1092-1 02A PN16 S235JRG2	PN16		281501	200/219 LOOSE FL HDG EN1092-1/02M PN10 P280GH	PN10
1435429	200/226 LOOSE FL HDG 1092-1 02A PN10 S235JRG2	PN10		281502	250/273 LOOSE FL HDG EN1092-1/02M PN10 P280GH	PN10
281530	65/81 LOOSE FL 8H HDG 1092-1 02A PN16 S235JRG2	PN16		281503	100/113 LOOSE FL HDG EN1092-1/02M PN16 P280GH	PN16
279001	65/81 LOOSE FL HDG EN1092- 1/02A PN16 8H P280GH	PN16		281504	125/140 LOOSE FL HDG EN1092-1/02M PN16 P280GH	PN16
281505	150/165 LOOSE FL HDG EN1092- 1/02M PN16 P280GH	PN16		9158201	350/374 LOOSE FL HDG EN1092-1/02M PN10 P280GH	PN10
281506	200/219 LOOSE FL HDG EN1092- 1/02M PN16 P280GH	PN16		9158202	400/426 LOOSE FL HDG EN1092-1/02M PN10 P280GH	PN10
281507	250/273 LOOSE FL HDG EN1092- 1/02M PN16 P280GH	PN16		9158203	500/525 LOOSE FL HDG EN1092-1/02M PN10 P280GH	PN10
281508	200/222 LOOSE FL HDG EN1092- 1/02M PN25 P280GH	PN25		9158204	600/628 LOOSE FL HDG EN1092-1/02M PN10 P280GH	PN10
281509	15/22 LOOSE FL HDG EN1092- 1/02M PN40 P280GH	PN40		9158207	300/324 LOOSE FL HDG EN1092-1/02M PN16 P280GH	PN16

281510	20/30 LOOSE FL HDG EN1092-1/02M PN40 P280GH	PN40		9158312	200/226 LOOSE FL HDG EN1092-1/02A PN10 P280GH	PN10
281511	25/36 LOOSE FL HDG EN1092-1/02M PN40 P280GH	PN40		9158313	250/281 LOOSE FL HDG EN1092-1/02A PN10 P280GH	PN10
281512	32/46 LOOSE FL HDG EN1092-1/02M PN40 P280GH	PN40		9158314	300/329 LOOSE FL HDG EN1092-1/02A PN10 P280GH	PN10
281513	40/52 LOOSE FL HDG EN1092-1/02M PN40 P280GH	PN40		9158315	350/362 LOOSE FL HDG EN1092-1/02A PN10 P280GH	PN10
281514	50/64 LOOSE FL HDG EN1092-1/02M PN40 P280GH	PN40		9158316	400/413 LOOSE FL HDG EN1092-1/02A PN10 P280GH	PN10
281515	100/118 LOOSE FL HDG EN1092-1/02M PN40 P280GH	PN40		9158325	65/81 LOOSE FL HDG EN1092-1/02A PN16 4H P280GH	PN16
9158200	300/324 LOOSE FL HDG EN1092-1/02M PN10 P280GH	PN10		9158326	100/120 LOOSE FL HDG EN1092-1/02A PN16 P280GH	PN16
9158330	250/281 LOOSE FL HDG EN1092-1/02A PN16 P280GH	PN16		9158327	125/145 LOOSE FL HDG EN1092-1/02A PN16 P280GH	PN16
9158331	300/329 LOOSE FL HDG EN1092-1/02A PN16 P280GH	PN16		9158328	150/174 LOOSE FL HDG EN1092-1/02A PN16 P280GH	PN16
9158345	15/25 LOOSE FL HDG EN1092-1/02A PN40 P280GH	PN40		9158329	200/226 LOOSE FL HDG EN1092-1/02A PN16 P280GH	PN16
9158346	20/31 LOOSE FL HDG EN1092-1/02A PN40 P280GH	PN40		9158350	50/65 LOOSE FL HDG EN1092-1/02A PN40 P280GH	PN40
9158347	25/38 LOOSE FL HDG EN1092-1/02A PN40 P280GH	PN40		9158351	65/81 LOOSE FL HDG EN1092-1/02A PN40 P280GH	PN40
9158348	32/47 LOOSE FL HDG EN1092-1/02A PN40 P280GH	PN40		9158352	80/94 LOOSE FL HDG EN1092-1/02A PN40 P280GH	PN40
9158349	40/53 LOOSE FL HDG EN1092-1/02A PN40 P280GH	PN40		9158353	100/120 LOOSE FL HDG EN1092-1/02A PN40 P280GH	PN40
244518	450/457 LOOSE FL PN10 ID467 1092/02A S235JRG2	PN10		1432706	50/60,3 LOOSE FL PN16 ID77 4H 1092-1/04A P250	PN16
244520	500/508 LOOSE FL PN10 ID519 1092/02A S235JRG2	PN10		1432707	65/76,1 LOOSE FL PN16 ID96 1092-1/04A P250GH	PN16
244522	600/610 LOOSE FL PN10 ID622 1092/02A S235JRG2	PN10		244504	125/139 LOOSE FL PN16 ID145 1092/02A S235JRG2	PN16
1432708	80/88,9 LOOSE FL PN16 ID108 1092-1/04A P250GH	PN16		244506	150/168 LOOSE FL PN16 ID174 1092/02A S235JRG2	PN16

1432709	100/114 LOOSE FL PN16 ID134 1092-1/04A P250GH	PN16		244508	200/219 LOOSE FL PN10 ID226 1092/02A S235JRG2	PN10
1432710	125/139 LOOSE FL PN16 ID162 1092-1/04A P250GH	PN16		244510	250/273 LOOSE FL PN10 ID281 1092/02A S235JRG2	PN10
1432711	150/168 LOOSE FL PN16 ID188 1092-1/04A P250GH	PN16		244512	300/323 LOOSE FL PN10 ID333 1092/02A S235JRG2	PN10
244500	80/88,9 LOOSE FL PN16 ID94 1092/02A S235JRG2	PN16		244514	350/355 LOOSE FL PN10 ID365 1092/02A S235JRG2	PN10
244502	100/114 LOOSE FL PN16 ID120 1092/02A S235JRG2	PN16		244516	400/406 LOOSE FL PN10 ID416 1092/02A S235JRG2	PN10
Threaded Flanges (THREAD FL / THREAD FLANGE BSP)						
1420066	32 THREAD FLANGE BSP PN6 EN1092-1/13B1 P250GH	PN6		1420447	20 THREAD FL BSP PN10/40 EN1092-1/13B1 P250GH	PN10/40
1420082	50 THREAD FLANGE BSP PN6 EN1092-1/13B1 P250GH	PN6		1420280	50 THREAD FL BSP HDG PN6 1092-1/13B1 P250GH	PN6
1420256	25 THREAD FL BSP HDG PN6 1092-1/13B1 P250GH	PN6		1420298	65 THREAD FL BSP HDG PN6 1092-1/13B1 P250GH	PN6
1420264	32 THREAD FL BSP HDG PN6 1092-1/13B1 P250GH	PN6		1420306	80 THREAD FL BSP HDG PN6 1092-1/13B1 P250GH	PN6
1420272	40 THREAD FL BSP HDG PN6 1092-1/13B1 P250GH	PN6		1420439	15 THREAD FL BSP PN10/40 EN1092-1/13B1 P250GH	PN10/40
1420074	40 THREAD FLANGE BSP PN6 EN1092-1/13B1 P250GH	PN6		1420454	25 THREAD FL BSP PN10/40 EN1092-1/13B1 P250GH	PN10/40
1420462	32 THREAD FL BSP PN10/40 EN1092-1/13B1 P250GH	PN10/40		1420652	25 THR FL BSP HDG PN10/40 1092-1/13B1 P250GH	PN10/40
1420470	40 THREAD FL BSP PN10/40 EN1092-1/13B1 P250GH	PN10/40		1420660	32 THR FL BSP HDG PN10/40 1092-1/13B1 P250GH	PN10/40
1420488	50 THREAD FL BSP PN16 EN1092-1/13B1 P250GH	PN16		1420678	40 THR FL BSP HDG PN10/40 1092-1/13B1 P250GH	PN10/40
1420496	65 THREAD FL BSP PN16 4H EN1092-1/13B1 P250GH	PN16		1420686	50 THREAD FL BSP HDG PN16 1092-1/13B1 P250GH	PN16
1420504	80 THREAD FL BSP PN16 EN1092-1/13B1 P250GH	PN16		1420694	65 THR FL BSP HDG PN16 4H 1092-1/13B1 P250GH	PN16
1420520	100 THREAD FL BSP PN16 EN1092-1/13B1 P250GH	PN16		1420702	80 THREAD FL BSP HDG PN16 1092-1/13B1 P250GH	PN16
1420645	20 THR FL BSP HDG PN10/40 1092-1/13B1 P250GH	PN10/40		1420728	100 THR FL BSP HDG PN16 1092-1/13B1 P250GH	PN16
Weld Neck Flanges (WELD NECK FL)						

1422062	20/26,9 WELD NECK FL PN6 EN1092-1/11B1 P250GH	PN6		1422252	150/168,3 WELD NECK FL PN6 1092-1/11B1 P250GH	PN6
1422088	25/33,7 WELD NECK FL PN6 EN1092-1/11B1 P250GH	PN6		1422286	200/219,1 WELD NECK FL PN6 1092-1/11B1 P250GH	PN6
1422104	32/42,4 WELD NECK FL PN6 EN1092-1/11B1 P250GH	PN6		1422328	250/273,0 WELD NECK FL PN6 1092-1/11B1 P250GH	PN6
1422120	40/48,3 WELD NECK FL PN6 EN1092-1/11B1 P250GH	PN6		1422781	200/219,1 WELD NECK FL PN10 1092-1/11B1 P250	PN10
1422146	50/60,3 WELD NECK FL PN6 EN1092-1/11B1 P250GH	PN6		1422823	250/273,0 WELD NECK FL PN10 1092-1/11B1 P250	PN10
1422153	65/76,1 WELD NECK FL PN6 EN1092-1/11B1 P250GH	PN6		1422831	300/323,9 WELD NECK FL PN10 1092-1/11B1 P250	PN10
1422161	80/88,9 WELD NECK FL PN6 EN1092-1/11B1 P250GH	PN6		1422856	350/355,6 WELD NECK FL PN10 1092-1/11B1 P250	PN10
1422203	100/114,3 WELD NECK FL PN6 1092-1/11B1 P250GH	PN6		1422872	400/406,4 WELD NECK FL PN10 1092-1/11B1 P250	PN10
1422237	125/139,7 WELD NECK FL PN6 1092-1/11B1 P250GH	PN6		1422906	500/508,0 WELD NECK FL PN10 1092-1/11B1 P250	PN10
1422922	600/610,0 WELD NECK FL PN10 1092-1/11B1 P250	PN10		1423219	100/114,3 WELD NECK FL PN16 1092-1/11B1 P250	PN16
1423144	50/60,3 WELD NECK FL PN16 1092-1/11B1 P250GH	PN16		1423227	125/133,0 WELD NECK FL PN16 1092-1/11B1 P250	PN16
1423151	65/76,1 W NECK FL PN16 4HOLE 1092-1/11B1 P250	PN16		1423235	125/139,7 WELD NECK FL PN16 1092-1/11B1 P250	PN16
1423169	80/88,9 WELD NECK FL PN16 1092-1/11B1 P250GH	PN16		1423243	150/159,0 WELD NECK FL PN16 1092-1/11B1 P250	PN16
1423201	100/108,0 WELD NECK FL PN16 1092-1/11B1 P250	PN16		1423250	150/168,3 WELD NECK FL PN16 1092-1/11B1 P250	PN16
1423284	200/219,1 WELD NECK FL PN16 1092-1/11B1 P250	PN16		1424191	100/114,3 WELD NECK FL PN40 1092-1/11B1 P250	PN40
1423326	250/273,0 WELD NECK FL PN16 1092-1/11B1 P250	PN16		1424233	125/139,7 WELD NECK FL PN40 1092-1/11B1 P250	PN40
1423334	300/323,9 WELD NECK FL PN16 1092-1/11B1 P250	PN16		1424258	150/168,3 WELD NECK FL PN40 1092-1/11B1 P250	PN40
1423359	350/355,6 WELD NECK FL PN16 1092-1/11B1 P250	PN16		1424282	200/219,1 WELD NECK FL PN40 1092-1/11B1 P250	PN40

1423375	400/406,4 WELD NECK FL PN16 1092-1/11B1 P250	PN16		1424324	250/273,0 WELD NECK FL PN40 1092-1/11B1 P250	PN40
1423409	500/508,0 WELD NECK FL PN16 1092-1/11B1 P250	PN16		1424647	50/60,3 WELD NECK FL PN63 1092-1/11B2 P250GH	PN63
1423789	200/219,1 WELD NECK FL PN25 1092-1/11B1 P250	PN25		1424662	65/76,1 WELD NECK FL PN63 1092-1/11B2 P250GH	PN63
1423821	250/273,0 WELD NECK FL PN25 1092-1/11B1 P250	PN25		1424670	80/88,9 WELD NECK FL PN63 1092-1/11B2 P250GH	PN63
1423839	300/323,9 WELD NECK FL PN25 1092-1/11B1 P250	PN25		1424696	100/114,3 WELD NECK FL PN63 1092-1/11B2 P250	PN63
1424043	15/21,3 WELD NECK FL PN40 1092-1/11B1 P250GH	PN40		1424738	125/139,7 WELD NECK FL PN63 1092-1/11B2 P250	PN63
1424068	20/26,9 WELD NECK FL PN40 1092-1/11B1 P250GH	PN40		1424753	150/168,3 WELD NECK FL PN63 1092-1/11B2 P250	PN63
1424084	25/33,7 WELD NECK FL PN40 1092-1/11B1 P250GH	PN40		1424787	200/219,1 WELD NECK FL PN63 1092-1/11B2 P250	PN63
1424100	32/42,4 WELD NECK FL PN40 1092-1/11B1 P250GH	PN40		9522980	65/76,1 W NECK FL PN16 8H EN 1092-1/11B1 P250	PN16
1424126	40/48,3 WELD NECK FL PN40 1092-1/11B1 P250GH	PN40		1424159	65/76,1 WELD NECK FL PN40 1092-1/11B1 P250GH	PN40
1424142	50/60,3 WELD NECK FL PN40 1092-1/11B1 P250GH	PN40		1424167	80/88,9 WELD NECK FL PN40 1092-1/11B1 P250GH	PN40
Plate Flanges (PLATE FL / PL FL W.)						
1426154	76,1 ID77,5 PLATE FL W. PN6 1092/01A S235JRG2	PN6		1426162	88,9 ID90,5 PLATE FL W. PN6 1092/01A S235JRG2	PN6
1426204	114,3 ID116,0 PL FL W. PN6 1092/01A S235JRG2	PN6		1426238	139,7 ID141,5 PL FL W. PN6 1092/01A S235JRG2	PN6
1426253	168,3 ID170,5 PL FL W. PN6 1092/01A S235JRG2	PN6		1427285	219,1 ID221,5 PL FL W PN16 1092/01A S235JRG2	PN16
1426287	219,1 ID221,5 PL FL W. PN6 1092/01A S235JRG2	PN6		1427327	273,0 ID276,5 PL FL W PN16 1092/01A S235JRG2	PN16
1426782	219,1 ID221,5 PL FL W PN10 1092/01A S235JRG2	PN10		244002	76,1 ID77,5 PL FL W PN16 8H 1092/01A S235JRG2	PN16
1426824	273,0 ID276,5 PL FL W PN10 1092/01A S235JRG2	PN10		1427087	33,7 ID34,5 PLATE FL W PN40 1092/01A S235JRG2	PN40
1426832	323,9 ID327,5 PL FL W PN10 1092/01A S235JRG2	PN10		1427103	42,4 ID43,5 PLATE FL W PN40 1092/01A S235JRG2	PN40

1426857	355,6 ID3259,8 PL FL W PN10 1092/01A S235JRG2	PN10		1427129	48,3 ID49,5 PLATE FL W PN40 1092/01A S235JRG2	PN40
1426873	406,4 ID411,0 PL FL W PN10 1092/01A S235JRG2	PN10		1427145	60,3 ID61,5 PLATE FL W PN16 1092/01A S235JRG2	PN16
1427061	26,9 ID27,5 PLATE FL W PN40 1092/01A S235JRG2	PN40		1427152	76,1 ID77,5 PL FL W PN16 4H 1092/01A S235JRG2	PN16
1427160	88,9 ID90,5 PLATE FL W PN16 1092/01A S235JRG2	PN16		1427236	139,7 ID141,5 PL FL W PN16 1092/01A S235JRG2	PN16
1427210	114,3 ID116,0 PL FL W PN16 1092/01A S235JRG2	PN16		1427251	168,3 ID170,5 PL FL W PN16 1092/01A S235JRG2	PN16
Blind Flanges (BLINDFLANGE / BLIND FL)						
1436014	200 BLINDFLANGE PN10 EN1092/05A P250GH	PN10		1436020	65 BLINDFLANGE PN16 4HOLE EN1092/05A P250	PN16
1436015	250 BLINDFLANGE PN10 EN1092/05A P250GH	PN10		1436021	80 BLINDFLANGE PN16 EN1092/05A P250GH	PN16
1436016	300 BLINDFLANGE PN10 EN1092/05A P250GH	PN10		1436022	100 BLINDFLANGE PN16 EN1092/05A P250GH	PN16
1436026	250 BLINDFLANGE PN16 EN1092/05A P250GH	PN16		1436023	125 BLINDFLANGE PN16 EN1092/05A P250GH	PN16
1436138	50 BLINDFLANGE PN6 EN1092/05A S235JRG2	PN6		1436153	65 BLINDFLANGE PN6 EN1092/05A S235JRG2	PN6
1436027	300 BLINDFLANGE PN16 EN1092/05A P250GH	PN16		1436024	150 BLINDFLANGE PN16 EN1092/05A P250GH	PN16
1436112	40 BLINDFLANGE PN6 EN1092/05A S235JRG2	PN6		1436025	200 BLIND FLANGE PN16 EN1092/05A P250GH	PN16
1436161	80 BLINDFLANGE PN6 EN1092/05A S235JRG2	PN6		1438076	25 BLINDFLANGE PN40 EN1092/05A P250GH	PN40
1436187	100 BLINDFLANGE PN6 EN1092/05A S235JRG2	PN6		1438092	32 BLINDFLANGE PN40 EN1092/05A P250GH	PN40
1436229	125 BLINDFLANGE PN6 EN1092/05A S235JRG2	PN6		1438118	40 BLINDFLANGE PN40 EN1092/05A P250GH	PN40
1436245	150 BLINDFLANGE PN6 EN1092/05A S235JRG2	PN6		1438134	50 BLINDFLANGE PN40 EN1092/05A P250GH	PN40
1436781	200 BLINDFLANGE PN10 EN1092/05A S235JRG2	PN10		1438159	65 BLINDFLANGE PN40 EN1092/05A P250GH	PN40
1436815	250 BLINDFLANGE PN10 EN1092/05A S235JRG2	PN10		1438167	80 BLINDFLANGE PN40 EN1092/05A P250GH	PN40

1437136	50 BLINDFLANGE PN16 EN1092/05A S235JRG2	PN16		1438183	100 BLINDFLANGE PN40 EN1092/05A P250GH	PN40
1437151	65 BLINDFLANG PN16 4 HOLE EN1092/05A S235JRG2	PN16		1438225	125 BLINDFLANGE PN40 EN1092/05A P250GH	PN40
1437169	80 BLINDFLANGE PN16 EN1092/05A S235JRG2	PN16		1438241	150 BLINDFLANGE PN40 EN1092/05A P250GH	PN40
1437185	100 BLINDFLANGE PN16 EN1092/05A S235JRG2	PN16		244001	65 BLINDFL HDG PN16 8H EN1092/05A S235JRG2	PN16
1437227	125 BLINDFLANGE PN16 EN1092/05A S235JRG2	PN16		244003	65 BLINDFLANG PN16 8 HOLE EN1092/05A S235JRG2	PN16
1437243	150 BLINDFLANGE PN16 EN1092/05A S235JRG2	PN16		244600	50 BLINDFL HDG PN16 EN1092/05A S235JRG2	PN16
1437284	200 BLINDFLANGE PN16 EN1092/05A S235JRG2	PN16		244602	65 BLINDFL HDG PN16 4H EN1092/05A S235JRG2	PN16
1437318	250 BLINDFLANGE PN16 EN1092/05A S235JRG2	PN16		244604	80 BLINDFLANGE HDG PN16 EN1092/05A S235JRG2	PN16
1437334	300 BLINDFLANGE PN16 EN1092/05A S235JRG2	PN16		244606	100 BLINDFLANGE HDG PN16 EN1092/05A S235JRG2	PN16
1438035	15 BLINDFLANGE PN40 EN1092/05A P250GH	PN40		244608	125 BLINDFLANGE HDG PN16 EN1092/05A S235JRG2	PN16
1438050	20 BLINDFLANGE PN40 EN1092/05A P250GH	PN40		244610	150 BLINDFLANGE HDG PN16 EN1092/05A S235JRG2	PN16
244612	200 BLINDFLANGE HDG PN10 EN1092/05A S235JRG2	PN10		244614	200 BLINDFLANGE HDG PN16 EN1092/05A S235JRG2	PN16
Weld-On Collars (WELD-ON COLL / WELDN. COLLAR)						
244572	600/610 WELD-ON COLL PL PN10 1092/32 S235JRG2	PN10		244552	100/114 WELD-ON COLL PL PN16 1092/32 S235JRG2	PN16
1432806	50/60,3 WELDN. COLLAR PN16 EN1092-1/34 P250GH	PN16		244554	125/139 WELD-ON COLL PL PN16 1092/32 S235JRG2	PN16
1432807	65/76,1 WELDN. COLLAR PN16 EN1092-1/34 P250GH	PN16		244556	150/168 WELD-ON COLL PL PN16 1092/32 S235JRG2	PN16
1432810	125/139 WELDN. COLLAR PN16 EN1092-1/34 P250GH	PN16		244558	200/219 WELD-ON COLL PL PN10 1092/32 S235JRG2	PN10
1432811	150/168 WELDN. COLLAR PN16 EN1092-1/34 P250GH	PN16		244560	250/273 WELD-ON COLL PL PN10 1092/32 S235JRG2	PN10
1432808	80/88,9 WELDN. COLLAR PN16 EN1092-1/34 P250GH	PN16		244562	300/323 WELD-ON COLL PL PN10 1092/32 S235JRG2	PN10

1432809	100/114 WELD-N. COLLAR PN16 EN1092-1/34 P250GH	PN16		244564	350/355 WELD-ON COLL PL PN10 1092/32 S235JRG2	PN10
244550	80/88,9 WELD-ON COLL PL PN16 1092/32 S235JRG2	PN16		244566	400/406 WELD-ON COLL PL PN10 1092/32 S235JRG2	PN10
244570	500/508 WELD-ON COLL PL PN10 1092/32 S235JRG2	PN10		244568	450/457 WELD-ON COLL PL PN10 1092/32 S235JRG2	PN10

The UN CPC (Central Product Classification) code

The United Nations Central Product Classification (CPC), version 2.1, assigns the code 41293 to tube or pipe fittings, flanges, of stainless steel.

Table 2: UN CPC code

Material Type	HS Code	CPC Code
Stainless steel	730721	41293

Content declaration

Description of the main components and/or material

The flanges are composed primarily of steel, typically carbon (e.g., S235JRG2 and P250GH), which provide the required mechanical strength and durability. The material composition is largely consistent across the different flange types, with variations only in geometry and mass depending on dimension and pressure class. Surface treatments may be applied according to specification. Packaging for the products consists exclusively of plywood, ensuring safe handling, storage, and transportation.

The current EPD is based on average data, as the products are sold in both Norway and Sweden. This approach ensures representativeness across the markets. A detailed specification of the materials used in the products and their packaging is provided in Table 3.

Table 3: material specification for production of 1 kg flange and its packaging based on average data

Material	Mass, kg (Average)	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material ¹ , kg / declared unit
Carbon steel	1	0	0	0
Material	Mass, kg (Average)	Mass-% (versus the product) (Average)	Biogenic material, kg C / declared unit (Average)	
Plywood	0,031	3,1%	0,013	

¹ 1 kg biogenic carbon in the product/package is equal to 44/12 kg of CO₂ uptake

Hazardous substances

At the date of issue of this declaration (date: 2025-01-02), there is no “Substance of Very High Concern” (SVHC) in concentration above 0.1 % in the products or packaging according to the European REACH regulation.

LCA information

Declared unit	1 kg of Flange
Reference service life	Not applicable
Time representativeness	The data used to model product manufacturing correspond to 2024. The data from generic databases are from 2021 – 2024. No data used is older than 5 years.
Database(s) and LCA software used	Calculation completed in GaBi v 10.9 with an integrated Ecoinvent database v.3.10 integrated CUP2023.2

Data

Generic database data was used for the production of raw materials, energy, transportation, packaging and end-of-life. Specific data was collected from the factory.

Data quality

All datasets used were sourced from reputable databases, specifically LCA for Experts (GaBi) v10.8 with an integrated Ecoinvent database v3.10, and CUP2023.2. These datasets offer strong technological representativeness and reflect either Sweden or the EU28 average, making them reliable.

Type of EPD

The type of EPD is a multiple products EPD, published based on the results of product group. It covers a cradle-to-gate with options, modules C1-C4, module D and optional modules.

Omissions of life cycle stages and processes

- **A1-A3:** The plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the potential environmental impacts through the life cycle of the product
- **B1-B7:** The use phase of the products is not included
- The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities are excluded

Cut-off criteria

- At least 95 % of the total mass and energy inflows and 95 % of the environmental impacts are included for each information module (A1–A3, A4–A5, B1–B7, C1–C4, and D). Minor flows that in total contribute less than 5 % of the overall mass, energy or environmental impact of the module are considered negligible and have been excluded. In this study, no flow or material falls under the cut-off criterion.
- Data gaps were filled using conservative assumptions and representative average or generic data, and all such assumptions are documented in the LCA report.
- All hazardous and toxic materials and substances are included in the inventory; the cut-off rules do not apply to them.

This EPD confirms that no data have been omitted with the intention of hiding environmental impacts and that the applied cut-off criteria comply with PCR v2 requirements.

Allocation

The allocation procedure follows the requirements of Sections 4.5.2 and 4.5.3 of PCR 2019:14 (version 2.0.0), based on the polluter-pays principle and the cut-off method described in EN 15804 +A2.

In the production of carbon steel flanges, approximately 1.5 kg of steel is required to produce 1 kg of finished product. Consequently, more than 42 % of the input material becomes process waste in the form of metal offcuts and machining chips.

These residues are not the main product of the process and are therefore classified as waste; however, since they are sold and possess economic value, a mass-based allocation is applied to account for their contribution within the system boundary.

When steel scrap is collected and sold, it is considered to leave the system boundary without further environmental burden. Subsequent recycling processes are attributed to the following product system.

This approach ensures consistency with EN 15804 +A2, ISO 21930, and the interpretation of the polluter-pays allocation principle under PCR 2019:14 v2.0.0.

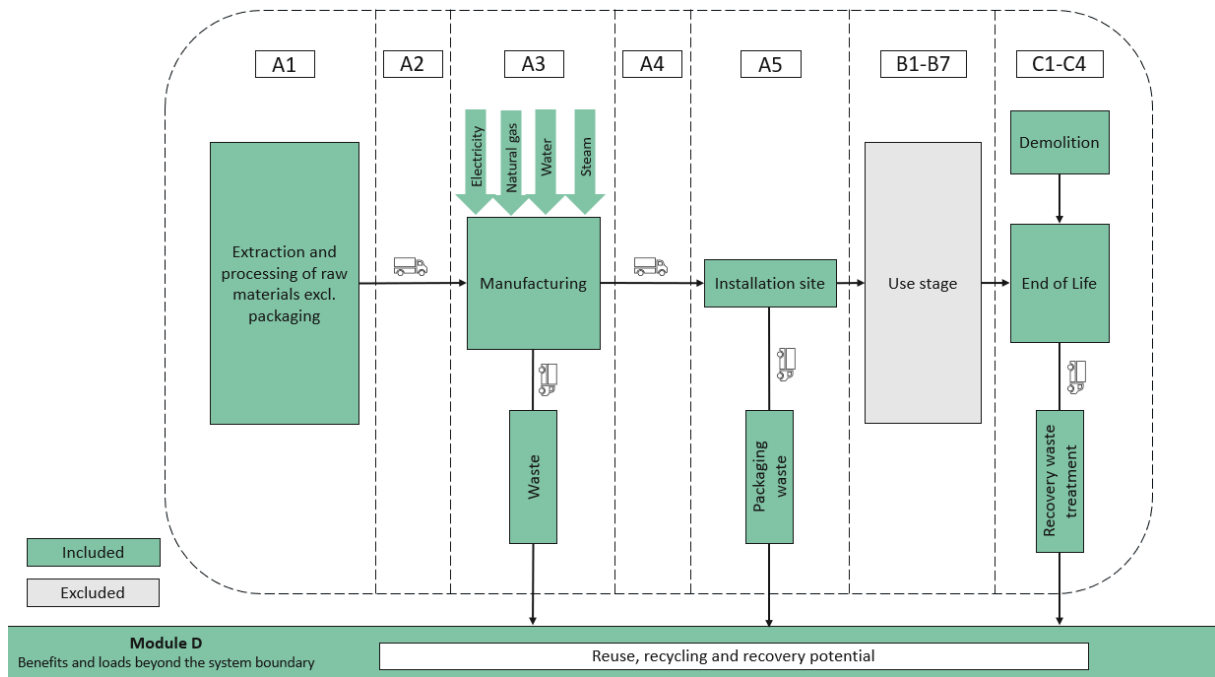
Geographical scope

Global

Description of system boundaries

According to EN 15804:2012+A2:2019/AC:2021, all construction products should declare modules A1-A3 but also C1-C4 and D. LCA modelling approach is attributional LCA. The system boundary of this LCA study is set from a cradle-to-gate with options, modules C1-C4, module D and optional modules.

The life cycle stages included are the product stage (modules A1-A3), transport to the installation site (module A4), construction and installation and also packaging waste management (module A5), and the end-of-life stage (module C). Module D captures the benefits from the end-of-life treatment of materials, whether directed toward material or energy recovery. Module B is excluded as it is not associated with any activities or emissions that cause environmental impacts.



More information

A1-A3 Raw materials and manufacturing stage

A1: This module includes the extraction and initial production of raw materials used to manufacture flanges and their packaging. The product consists mainly of carbon steels. The flanges included in this study are sourced from two plants in China. To this LCA, average data from both plants has been used in order to represent the product system in a consistent way.

A2: This module covers the transportation of raw materials to the manufacturing sites. The manufacturers provided specific information on the transportation distances between the raw material sources and the factories. Detailed data sets for transportation routes are provided in Table 4.

Table 4: Detailed data sets for transportation routes A2 based on average data

Row Material	Transportation type	Distance (km) Average
Steel	Truck	266
Row Packaging Material	Transportation type	Distance (km) Average
Plywood	Truck	42,5

A3: This stage includes resources used during the manufacturing process of the flange articles as well as the manufacturing of the packaging material. It is assumed that the inputs and outputs from this module are distributed equally across the products per declared unit as the processes are similar across all products. After production, the flanges are transported to distribution centers in Sweden and Norway before reaching the final customers. Detailed data sets for energy and resource inputs and transportation routes are provided in following tables.

Table 5: Detailed data sets for transportation type A3

Type	Type of vehicle	Capacity utilisation (incl. return) %	Fuel/Energy consumption
Truck	Average truck trailer with a 27 t payload	61%	EU 28: Diesel mix (9.40 wt.% bio components)
Ship	Container ship, 5,000 to 200,000 dwt payload capacity, deep sea	70%	Heavy fuel oil at refinery (1.0wt.% S)

Table 6: Detailed data sets for transportation routes A3 based on average data

Product	Transportation type	Distance (km)	
		Sweden	Norway
Flange +packaging	Truck	270	270
	Ship	22000	22700

Table 7: Detailed data sets for energy and resource inputs A3 based on average data

Resources	Unit	GWP excl biogenic
Electricity	kWh	0,782 kg CO ₂ eq
Natural gas	MJ	0,0695 kg CO ₂ eq
Water	L	8,09e-5 kg CO ₂ eq

Electricity used in manufacturing:

The electricity used in the modelling is based on the energy mix of China from International Energy Agency (2023). The GWP-GHG values for coefficient of energy mix of China is 0,871 kg CO₂-eq./kWh.

A4 Transport to construction process stage

It assumes an extra 350 km as generic data for transportation by truck to the installation site in Sweden and Norway. Detailed data sets for these transportation routes are provided in Table 8.

Table 8: Transport to the building site - A4

Scenario information	Unit per DU
Fuel type and consumption of vehicle or vehicle type	Truck-trailer, Euro 0 - 6 mix, 34 - 40t gross weight
Distance [km]	350
Fuel/Energy consumption value [l/tkm]	EU 28: Diesel mix (9.40 wt.% bio components)
Capacity Utilisation (including empty returns) [%]	61
Volume capacity	1

A5 Installation

This stage includes the installation of the product as well as the waste management of the packaging material that enters the system. The installation is assumed to be done by hand, thus the impact from the installation is negligible. Packaging is disposed of here, using Swedish average data (SCB, 2020) listed in Table 9. Mass packaging for disposal in **Fel! Hittar inte referensälla..**

Table 9 Packaging disposal waste rates

Material	Recycling rate	Incineration rate	Landfill rate
Plywood	11%	84%	5%

Table 10 Mass packaging to disposal

Material	Recycling (kg) (Average)	Incineration (kg) (Average)	Landfill (kg) (Average)
Plywood	0.0034	0.025	0.001

B1-B7 Use stage

This stage includes no activities or emissions related to the product.

C1 Deconstruction

The deconstruction phase (Module C1) accounts for the energy required to dismantle or remove the product at the end of its life. In the case of flange, this typically involves manual handling and limited use of electrically powered tools such as saws, drills, or forklifts.

In this assessment, the energy demand associated with deconstruction is considered negligible. This is due to the minimal impact of such activities relative to the total life cycle energy of the product and the absence of significant material or energy inputs during this stage.

C2 Transport

The following tables show the transportation type and fuel of the transport to a waste management facility.

Transport distance to waste processing is assumed to be 50 km.

Table 11 Transport type - C2

Transportation type	Capacity utilisation (incl. return) %	Dataset
Truck	61	Truck-trailer, Euro 0 - 6 mix, 34 - 40t gross weight / 27t payload capacity

C3 Waste processing

The waste rate of the product in this scenario is shown in Table 12. The assumption is based on Swedish statistics (SCB, 2020). It is believed that this scenario is currently in use and representative of the assumptions used in this study.

Table 12 Waste treatment rates – C3-C4

Material	Recycling rate	Incineration rate	Landfill rate
Steel	95%	0%	5%

C4 waste disposal

The impacts of landfilling and final disposal of the product at its end of life are calculated. Due to consideration of collection and recycling efficiencies, the materials that are not processed are assumed to be landfilled as municipal solid waste.

100% scenarios

In addition to the most probable end-of-life stage scenario, 100% scenarios have been modelled to give other perspectives. The 100% scenarios have been modelled in accordance with the default values given in table 4 of PCR2019:14 Version 2.0, to complement other processes in the end-of-life stage.

D Benefits and loads beyond the system boundary

This module includes loads and benefits obtained from energy recovery and/or recycling materials.

More information

This module defines the key concepts, objectives, and activities covered within its framework. Its geographical scope specifies the regions or countries where the module's principles and practices are applicable.

Table 13: Modules declared and geographical scope

	Product stage			Assembly stage		Use stage							End of life stage				Benefits & loads beyond system boundary
	Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Modules	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	CN	CN	GLO	GLO	SE/NO	-	-	-	-	-	-	-	SE/NO	SE/NO	SE/NO	SE/NO	SE/NO
**Specific data used	7,7%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	16%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

* This is an EPD for a trader, the transportation from the plant to Sweden or Norway is included in A3. Therefore, this part has the geography GLO.

** The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Declaration of data sources, reference years, and share of primary data

Table 14: data sources, reference years, and share of primary data

Process	Source type	Reference year	Source	Data category	Share of Total GWP-GHG
Production of raw material	Database	2021-2024	Ecoinvent v3.10 + Sphera	Generic data	67.20%
Transport of components to assembly site	Database + Collected data	2021-2024	Sphere	Generic data	1,52%
Transport of components to warehouse	Database + Collected data	2024	Sphere	Primary data	7,70%
Manufacturing of product	Collected data	2021-2024	Manufacture	Generic data	23.52%
Total share of primary data, of GWP-GHG results for A1-A3					7,70%

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Summary of data quality

Table 15: data quality

Aspect	Description	Assessment / Justification
Data collection period	Primary data collected for January – December 2024.	Represents a full 12-month operational period. No deviations from the recommended one-year data collection period.
Type of data	Primary data from the manufacturer (energy, material inputs, emissions, waste, water). Secondary data from recognized databases for upstream and downstream processes.	Primary data measured or metered on site. Secondary data sourced from Ecoinvent v3.10 and GaBi 2024, representing Chinese or Asian average conditions where available.
Geographical representativeness	China – manufacturing site for carbon steel flanges.	Primary data reflect actual Chinese production. Secondary datasets are regionally or globally representative where no Chinese data exist.
Technological representativeness	Current production technology for forged carbon steel flanges	Reflects actual process configuration, equipment, and energy mix used at the facility.
Temporal representativeness	Reference year 2024; secondary data published within the last five years.	Data reflect present conditions; no outdated datasets used.
Completeness	All significant input and output flows included (> 99 % mass and energy coverage).	Coverage sufficient for reliable results; no major data gaps identified.
Consistency	Uniform system boundaries, cut-off criteria, and allocation rules applied across all datasets.	Modelling follows EN 15804 and EN 15941 requirements.
Precision / uncertainty	Primary data measured directly; secondary data with documented data-quality indicators.	Overall uncertainty is low and acceptable for EPD purposes.
Data-quality assessment result	—	Overall data quality: GOOD, in accordance with EN 15941:2024 § 7.3.3 and Annex C.
Overall data quality		Good

The data quality is assessed as *good*. Primary data were collected directly from the Chinese manufacturing site over a complete one-year period and reflect actual operational conditions. Secondary data were taken from established and quality-checked databases, representing appropriate regional and technological conditions. Together, these datasets ensure high representativeness, completeness, and consistency, meeting the requirements of EN 15941:2024.

Environmental performance

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. As module C is included in the EPD, it is discouraging the use of the results of modules A1-A3 without considering the results of module C.

Mandatory impact category indicators according to EN 15804, EF 3.1

Results per declared unit: 1 kg									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	3,273E+00	1,713E-02	3,413E-02	0,00E+00	4,986E-03	4,050E-02	2,035E-04	-1,040E+00
GWP-fossil	kg CO ₂ eq	3,270E+00	1,681E-02	2,122E-03	0,00E+00	4,888E-03	4,050E-02	2,035E-04	-1,040E+00
GWP-biogenic	kg CO ₂ eq	1,822E-03	4,710E-05	3,201E-02	0,00E+00	1,391E-05	4,199E-06	4,986E-08	1,547E-03
GWP-luluc	kg CO ₂ eq	2,343E-03	2,825E-04	1,408E-06	0,00E+00	8,125E-05	5,668E-06	1,047E-07	-5,077E-04
ODP	kg CFC-11 eq	1,238E-08	2,454E-19	5,780E-12	0,00E+00	7,475E-20	6,052E-10	5,876E-12	3,634E-17
AP	mole H ⁺ eq	2,153E-02	1,993E-05	1,816E-06	0,00E+00	6,565E-06	3,588E-04	1,443E-06	-2,379E-03
EP-freshwater	kg P eq	9,488E-04	7,184E-08	2,363E-08	0,00E+00	2,067E-08	1,911E-06	1,690E-08	-9,945E-08
EP-marine	kg N eq	5,203E-03	6,795E-06	4,779E-06	0,00E+00	2,457E-06	1,645E-04	5,512E-07	-5,785E-04
EP-terrestrial	mole N eq	5,288E-02	8,030E-05	7,447E-06	0,00E+00	2,854E-05	1,794E-03	5,993E-06	-6,260E-03
POCP	kg NMVOC eq	1,593E-02	1,886E-05	2,960E-06	0,00E+00	6,630E-06	5,350E-04	2,145E-06	-1,918E-03
ADP-minerals & metals ²	kg Sb eq	1,446E-05	1,430E-09	4,922E-10	0,00E+00	4,212E-10	2,366E-08	3,179E-10	-1,157E-08
ADP-fossil	MJ	4,234E+01	2,198E-01	6,178E-03	0,00E+00	6,370E-02	5,291E-01	4,979E-03	-7,930E+00
WDP	m ³	1,146E+00	2,506E-04	3,035E-03	0,00E+00	7,475E-05	2,028E-03	2,230E-04	-8,645E-03
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

² The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator

Use of resources

Results per declared unit: 1 kg									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE ³	MJ	4,380E+00	1,853E-02	2,196E-04	0,00E+00	5,486E-03	6,201E-03	4,674E-05	-1,378E+00
PERM	MJ	4,975E-03	0,000E+00	-4,665E-03	0,00E+00	0,000E+00	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	4,38E+00	1,853E-02	-4,446E-03	0,00E+00	5,486E-03	6,201E-03	4,674E-05	-1,378E+00
PENRE	MJ	4,179E+01	2,198E-01	6,178E-03	0,00E+00	6,370E-02	5,291E-01	4,979E-03	-7,930E+00
PENRM	MJ	5,886E-01	0,000E+00	-5,886E-01	0,00E+00	0,000E+00	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	4,234E+01	2,198E-01	-5,824E-01	0,00E+00	6,370E-02	5,298E-01	4,979E-03	-7,930E+00
SM	kg	0,000E+00	0,000E+00	0,000E+00	0,00E+00	0,000E+00	0,000E+00	0,000E+00	9.025E-01
RSF	MJ	0,000E+00	0,000E+00	0,000E+00	0,00E+00	0,000E+00	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00	0,00E+00	0,000E+00	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,685E-02	2,084E-05	-7,070E-05	0,00E+00	6,117E-06	4,719E-05	5,187E-06	-6,955E-04
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

³Option A was chosen for the calculations of the primary energy indicators. according to on Annex 3 of PCR 2019:14

Additional voluntary indicators

Results per declared unit: 1 kg									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG ⁴	kg CO ₂ eq	3,244E+00	1,703E-02	2,116E-03	0,00E+00	4,947E-03	4,017E-02	2,002E-04	-1,034E+00
PM	Disease incidences	3,941E-07	1,899E-10	3,589E-11	0,00E+00	6,455E-11	9,880E-09	3,185E-11	-3,491E-08
IRP	kBq U235 eq.	3,879E-02	3,963E-05	3,989E-06	0,00E+00	1,684E-05	1,768E-04	1,235E-06	-1,398E-02
ETP-fw	CTUe	7,799E+01	1,616E-01	1,174E+00	0,00E+00	4,732E-02	7,670E-02	6,890E-04	-1,196E+00
HTP-c	CTUh	3,166E-09	3,241E-12	1,457E-11	0,00E+00	9,555E-13	4,615E-12	4,173E-14	-1,625E-09
HTP-nc	CTUh	7,020E-08	1,443E-10	3,710E-10	0,00E+00	4,284E-11	1,001E-10	1,014E-12	-1,417E-09
SQP	Pt	1,474E+01	1,629E-04	1,147E-02	0,00E+00	6,955E-05	4,849E-02	9,815E-03	-1,365E-01
Acronyms	GWP-GHG = global warming potential - greenhouse gases PM = Particulate matter emissions ; IRP = Ionising radiation, human health; ETP-fw =Ecotoxicity (freshwater); ETP-c = Human toxicity, cancer effects; HTP-nc =Human toxicity, non-cancer effects; SQP = Land use related impacts / soil quality								

Waste and output flows

Waste based on average data

Results per declared unit: 1 kg									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	7,408E-01	7,119E-12	1,975E-02	0,00E+00	2,438E-12	5,148E-04	3,718E-06	-3,517E-09
NHWD	kg	3,620E+00	3,417E-05	2,236E-02	0,00E+00	1,040E-05	5,181E-03	3,250E-02	-1,560E-02
RWD	kg	1,563E-04	2,838E-07	1,460E-08	0,00E+00	1,164E-07	1,125E-07	7,735E-10	-1,248E-04
Acronyms	HW = Hazardous waste disposed; NHW = Non-hazardous waste disposed; RW = Radioactive waste disposed								

⁴ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero

Output flows

Results per declared unit: 1 kg									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
CRU	kg	0,000E+00	0,00E+00	0,000E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	3,410E-01	0,00E+00	7,064E-05	0,00E+00	0,00E+00	6,175E-01	0,00E+00	0,00E+00
MER	kg	0,000E+00	0,00E+00	0,000E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,000E+00	0,00E+00	1,223E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,000E+00	0,00E+00	2,200E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Acronyms	CRU = Components for reuse; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electric energy; EET = Exported thermal energy								

Information on biogenic carbon content

Biogenic carbon content	Unit per declared unit	Amount
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in packaging	kg C	1,300E-02

1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

Additional Environmental Performance

In addition to the most probable scenario, results from the corresponding 100% scenarios are added in this section.

Mandatory impact category indicators according to EN 15804, EF 3.1

Results per declared unit: 1 kg														
Indicator	Unit	C1 100%	C2 100% RC	C2 100% INC	C2 100% LF	C3 100% RC	C3 100% INC	C3 100% LD	C4 100% RC	C4 100% INC	C4 100% LF	D 100% RC	D 100% INC	D 100% LF
GWP-total	kg CO2 eq	0,00E+00	4,99E-03	4,99E-03	4,99E-03	4,26E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,07E-03	-1,09E+00	0,00E+00	0,00E+00
GWP-fossil	kg CO2 eq	0,00E+00	4,89E-03	4,89E-03	4,89E-03	4,26E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,06E-03	-	0,00E+00	0,00E+00
GWP-biogenic	kg CO2 eq	0,00E+00	1,39E-05	1,39E-05	1,39E-05	4,41E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,95E-07	-1,63E-03	0,00E+00	0,00E+00
GWP-luluc	kg CO2 eq	0,00E+00	8,13E-05	8,13E-05	8,13E-05	5,97E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,09E-06	-5,34E-04	0,00E+00	0,00E+00
ODP	kg CFC-11 eq	0,00E+00	7,48E-20	7,48E-20	7,48E-20	6,37E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,18E-10	-3,83E-17	0,00E+00	0,00E+00
AP	mole H+ eq	0,00E+00	6,57E-06	6,57E-06	6,57E-06	3,78E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,88E-05	-2,51E-03	0,00E+00	0,00E+00
EP-freshwater	kg P eq	0,00E+00	2,07E-08	2,07E-08	2,07E-08	2,01E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,37E-07	-1,05E-07	0,00E+00	0,00E+00
EP-marine	kg N eq	0,00E+00	2,46E-06	2,46E-06	2,46E-06	1,73E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,11E-05	-6,09E-04	0,00E+00	0,00E+00
EP-terrestrial	mole N eq	0,00E+00	2,85E-05	2,85E-05	2,85E-05	1,89E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,20E-04	-6,57E-03	0,00E+00	0,00E+00
POCP	kg NMVOC eq	0,00E+00	6,63E-06	6,63E-06	6,63E-06	5,64E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,30E-05	-2,02E-03	0,00E+00	0,00E+00
ADP-minerals & metals ⁵	kg Sb eq	0,00E+00	4,21E-10	4,21E-10	4,21E-10	2,49E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,36E-09	-1,22E-08	0,00E+00	0,00E+00
ADP-fossil	MJ	0,00E+00	6,37E-02	6,37E-02	6,37E-02	5,57E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,95E-02	-	0,00E+00	0,00E+00
WDP	m3	0,00E+00	7,48E-05	7,48E-05	7,48E-05	2,13E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,45E-03	-9,10E-03	0,00E+00	0,00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption													

⁵ The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator

Use of resources

Results per declared unit: 1 kg														
Indicator	Unit	C1 100%	C2 100% RC	C2 100% INC	C2 100% LF	C3 100% RC	C3 100% INC	C3 100% LD	C4 100% RC	C4 100% INC	C4 100% LF	D 100% RC	D 100% INC	D 100% LF
PERE	MJ	0,00E+00	5,49E-03	5,49E-03	5,49E-03	6,50E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,36E-04	-1,45E+00	0,00E+00	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	0,00E+00	5,49E-03	5,49E-03	5,49E-03	6,50E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,36E-04	-1,45E+00	0,00E+00	0,00E+00
PENRE	MJ	0,00E+00	6,37E-02	6,37E-02	6,37E-02	5,57E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,95E-02	-8,32E+00	0,00E+00	0,00E+00
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	0,00E+00	6,37E-02	6,37E-02	6,37E-02	5,57E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,95E-02	-8,32E+00	0,00E+00	0,00E+00
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	0,00E+00	6,12E-06	6,12E-06	6,12E-06	4,97E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E-04	-7,35E-04	0,00E+00	0,00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water													

Additional voluntary indicators

Results per declared unit: 1 kg														
Indicator	Unit	C1 100%	C2 100% RC	C2 100% INC	C2 100% LF	C3 100% RC	C3 100% INC	C3 100% LD	C4 100% RC	C4 100% INC	C4 100% LF	D 100% RC	D 100% INC	D 100% LF
GWP-GHG ⁶	kg CO2 eq	0,00E+00	4,95E-03	4,95E-03	4,95E-03	4,23E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,01E-03	-1,09E+00	0,00E+00	0,00E+00
PM	Disease incidences	0,00E+00	6,45E-11	6,45E-11	6,45E-11	1,04E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,37E-10	-3,67E-08	0,00E+00	0,00E+00
IRP	kBq U235 eq.	0,00E+00	1,68E-05	1,68E-05	1,68E-05	1,86E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,47E-05	-1,47E-02	0,00E+00	0,00E+00
ETP-fw	CTUe	0,00E+00	4,73E-02	4,73E-02	4,73E-02	8,06E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,38E-02	-1,26E+00	0,00E+00	0,00E+00
HTP-c	CTUh	0,00E+00	9,56E-13	9,56E-13	9,56E-13	4,86E-12	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,32E-13	-1,71E-09	0,00E+00	0,00E+00
HTP-nc	CTUh	0,00E+00	4,28E-11	4,28E-11	4,28E-11	1,05E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,03E-11	-1,49E-09	0,00E+00	0,00E+00
SQP	Pt	0,00E+00	6,96E-05	6,96E-05	6,96E-05	5,10E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,96E-01	-1,44E-01	0,00E+00	0,00E+00
Acronyms	GWP-GHG = global warming potential - greenhouse gases PM= Particulate matter emissions ; IRP= Ionising radiation, human health; ETP-fw=Ecotoxicity (freshwater); ETP-c= Human toxicity, cancer effects; HTP-nc=Human toxicity, non-cancer effects; SQP= Land use related impacts / soil quality													

Waste and output flows

Waste

Results per declared unit: 1 kg														
Indicator	Unit	C1 100%	C2 100% RC	C2 100% INC	C2 100% LF	C3 100% RC	C3 100% INC	C3 100% LD	C4 100% RC	C4 100% INC	C4 100% LF	D 100% RC	D 100% INC	D 100% LF
HWD	kg	0,00E+00	2,44E-12	2,44E-12	2,44E-12	5,42E-04	0,00E+00	0,00E+00	0,00E+00	5,72E-06	7,41E-05	-3,71E-09	0,00E+00	0,00E+00
NHWD	kg	0,00E+00	1,04E-05	1,04E-05	1,04E-05	5,45E-03	0,00E+00	0,00E+00	0,00E+00	5,00E-02	6,50E-01	-1,64E-02	0,00E+00	0,00E+00
RWD	kg	0,00E+00	1,16E-07	1,16E-07	1,16E-07	1,18E-07	0,00E+00	0,00E+00	0,00E+00	1,19E-09	1,55E-08	-1,31E-04	0,00E+00	0,00E+00
Acronyms	HW = Hazardous waste disposed; NHW = Non-hazardous waste disposed; RW = Radioactive waste disposed													

⁶ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero

Output flows

Results per declared unit: 1 kg														
Indicator	Unit	C1 100%	C2 100% RC	C2 100% INC	C2 100% LF	C3 100% RC	C3 100% INC	C3 100% LD	C4 100% RC	C4 100% INC	C4 100% LF	D 100% RC	D 100% INC	D 100% LF
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,50E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Acronyms	CRU = Components for reuse; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electric energy; ETE = Exported thermal energy													

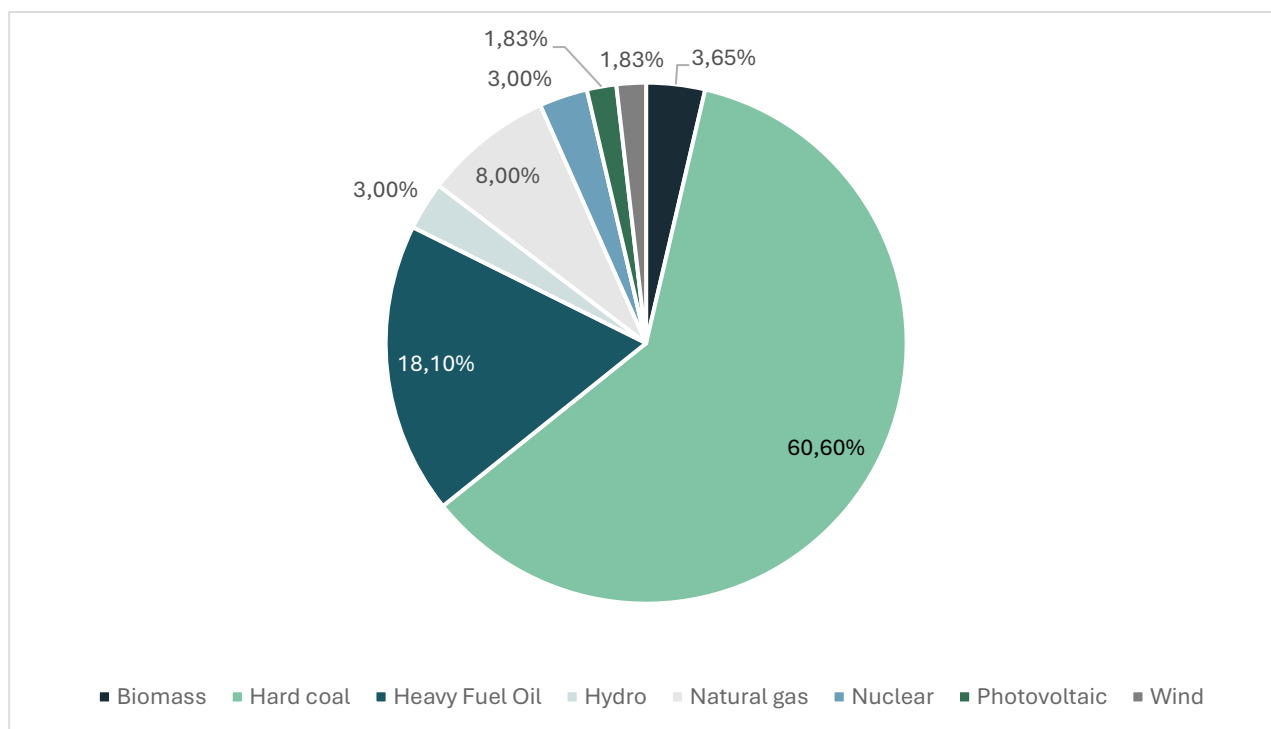
Disclaimers

ILCD classification	Indicator	Disclaimer
ILCD Type 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD Type 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD Type 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted	2
	Water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2
Disclaimer 1 – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.		
Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.		

Additional information

Greenhouse gas emission from the use of electricity in the manufacturing phase.

Residual mix	Unit	Value
Location		China
Electricity mix		Biomass: 3,65% Hard coal: 60,60% Heavy Fuel Oil: 18,10% Hydro: 3,00% Natural gas: 8,00% Nuclear: 3,00% Photovoltaic: 1,83% Wind: 1,83%
Reference year		2023
Source		International Energy Agency
GWP excl. Biogenic	kg CO ₂ -eq. /kWh	0,871



Abbreviations

General

- **EPD** – Environmental Product Declaration
- **LCA** – Life Cycle Assessment
- **PCR** – Product Category Rules
- **ISO** – International Organization for Standardization
- **EN** – European Norm
- **UN CPC** – United Nations Central Product Classification

Environmental Impact and LCA Metrics

- **GWP** – Global Warming Potential
- **GWP-GHG** – Global Warming Potential (Greenhouse Gas-specific)
- **PM** – Particulate Matter
- **ODP** – Ozone Depletion Potential
- **AP** – Acidification Potential
- **EP** – Eutrophication Potential
- **POCP** – Photochemical Ozone Creation Potential
- **IRP** – Ionizing Radiation Potential
- **ETP-fw** – Ecotoxicity Potential (Freshwater)
- **HTP-c** – Human Toxicity Potential (Cancer)
- **HTP-nc** – Human Toxicity Potential (Non-Cancer)
- **SQP** – Soil Quality Potential

Energy and Waste Metrics

- **PERE** – Primary Energy, Renewable
- **PERM** – Primary Energy, Renewable (Material Use)
- **PERT** – Total Use of Renewable Primary Energy
- **PENRE** – Primary Energy, Non-Renewable
- **PENRM** – Primary Energy, Non-Renewable (Material Use)
- **PENRT** – Total Use of Non-Renewable Primary Energy
- **SM** – Secondary Material
- **RSF** – Renewable Secondary Fuels
- **NRSF** – Non-Renewable Secondary Fuels
- **FW** – Fresh Water Use
- **HWD** – Hazardous Waste Disposed
- **NHWD** – Non-Hazardous Waste Disposed
- **RWD** – Radioactive Waste Disposed
- **CRU** – Components for Reuse
- **MFR** – Materials for Recycling

- **MER** – Materials for Energy Recovery
- **EEE** – Exported Electrical Energy
- **EET** – Exported Thermal Energy

Software and Databases

- **GaBi** – LCA Software (GaBi by Sphera)
- **Ecoinvent** – Life Cycle Inventory Database
- **CUP2023.2** – Version of the Ecoinvent Database

References

Ecoinvent (2024)	Ecoinvent dataset version 3.10 (2024)
EN15804:2012+A2:AC/2021	Sustainability of construction works – Environmental product declaration – Core rules for the product category of constructions products
EPD International (2024)	General Programme Instructions of the International EPD® System, version 5.0
ISO 14020:2022	International Standard ISO 14020 – Environmental statements and programmes for products – Principles and general requirements
ISO 14025:2006	International Standard ISO 14025 – Environmental labels and declarations — Type III environmental declarations — Principles and procedures
ISO 14040:2006	International Standard ISO 14040: Environmental Management – Life cycle assessment – Principles and framework. Second edition 2006-07-01.
ISO 14044:2006	International Standard ISO 14044: Environmental Management – Life cycle assessment – Requirements and Guidelines
International Energy Agency	IEA (2023) China energy mix
PCR 2019:14	Construction products v 2.0.1
SCB (2020)	Treated waste by treatment category and waste category. Every second year 2010-2020. https://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START MI MI0305/MI0305T003/
Sphera (2024)	Sphera (2024) LCA for Experts. MLC database CUP 2023.2

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