

Scope 3 greenhouse gas emissions calculation methodology (2023)

29th March, 2024

2023 Scope 3 GHG emissions summary and category methodologies

GHG category	Applicability to Elementis	In scope	Emissions (tCO ₂ e)	
				%
Upstream emissions				
Purchased goods and services			386,217	68.1
Raw materials	Yes	Yes	354,589	92
Other goods & services			31,628	8
Capital goods	Yes	Yes	15,338	2.7
Fuel- and energy-related activities	Yes	Yes	20,916	3.7
Upstream transportation and distribution			86,449	15.2
Road	Yes	Yes	44,780	52
Sea			33,991	39
Rail			4,288	5
Air			3,390	4
Waste generated in operations	Yes	Yes	4,371	0.8
Business travel	Yes	Yes	4,779	0.8
Employee commuting & work from home	Yes	Yes	873	0.2
Upstream leased assets	Yes	Yes	191	0.0
Downstream emissions				
Downstream transportation and distribution			16,257	2.9
Road	Yes	Yes	7,780	48
Sea			6,152	38
Rail			2,218	14
Air			107	1
Processing of sold products	No	No	N/A	N/A
Use of sold products	No	No	N/A	N/A
End of life treatment of sold products	Yes	Yes	31,698	5.6
Downstream leased assets	Yes	Yes	319	0.1
Franchises	No	No	N/A	N/A
Investments	Yes	Yes	95	0.0
TOTAL			567,502	100

Category 1: Purchased goods and services

Category description	Extraction, production, and transportation of goods and services purchased or acquired by us and not otherwise included in Categories 2 - 8
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	0%
Data Source	<p>Activity Data (primary data): Quantity and monetary purchasing volume of the goods and services purchased in the reporting year were obtained from our data management system.</p> <p>Emissions factors (secondary data):</p> <ul style="list-style-type: none"> a) Raw materials and packaging: Cradle-to-gate emissions factors were obtained from commercially and publicly available data sources such as Ecoinvent. b) For other goods and services: a spend-based Environmentally Extended Input Output (EEIO) model was used.

Calculation boundary

In scope are cradle to gate emissions generated upstream of our site operations throughout our supply chain during the reporting year. This includes goods not for resale, such as professional services. Any emissions associated with capital goods (e.g. plant, property and equipment) are calculated in category 2.

Exclusions

Any items already accounted for in scope 1 and 2, or in other scope 3 categories, are excluded to avoid double-counting. Purely financial transactions which are not linked to the emission of greenhouse gases (e.g., salaries, tax) are also excluded.

Calculation methodology

We used a hybrid approach, both a process based and EEIO modelling method to calculate the emissions associated with purchased goods and services.

Process-based methodology

To calculate the GHG emission the mass of raw materials was multiplied by suitable cradle-to-gate lifecycle assessment (LCA) emission factors, generally obtained from Ecoinvent. These include FLAG related emissions for the relevant commodities (e.g. palm oil derivatives).

Water: Water withdrawal volumes as provided by our sites. For simplicity, we applied Defra water supply emissions factors for all sites.

Extended environmental input-output (EEIO) modelling process overview

Spend values were mapped to supplier locations and converted to GBP using the average currency conversion rate for 2023. GHG calculation was done by multiplying the spend by the assigned carbon emissions factor based on sector and location (kgCO₂e/GBP). FLAG emissions were added to relevant wood and paper commodities in Advertising and Promotion Costs (Printing Literature), and Office Equipment and Supplies (Books and Journals, Stationery – General, Photocopying).

Assumptions

EEIO processed data assumes all spending is local. Spend without a clear EEIO sector uses an average emissions factor based on the rest of our mapped spend.

Category 2: Capital goods

Category description	Production and transportation of capital goods purchased or acquired by us in the reporting year. This category includes all upstream i.e., cradle-to-gate emissions, from the production of capital goods purchased.
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	0%
Data Source	Activity Data (primary data): Monetary purchasing volumes of capital goods purchased were obtained from our data management system.

Calculation boundary

Any fixed assets or plants, properties and equipment are reported in this category.

Exclusions

None.

Calculation methodology

We calculate capital goods emissions using the EEIO modelling method. Each item is mapped to one of the EEIO sectors (Maintenance & Repair; Electrical and Machinery; Construction). Elementis site location is used in place of supplier location data.

Carbon emission calculations are carried out by assigning carbon emission factors based on sector and location, converting spend values into GBP using the average currency conversion rate from 2023, and multiplying the spend by the assigned carbon emissions factor (kgCO₂e/GBP).

Assumptions

It is assumed that all spending occurs in-market. For instance, a UK entity only spends with UK suppliers.

Category 3: Fuel and energy-related activities

Category description	Emissions related to the extraction, production, and transportation of fuels and energy purchased or acquired by us and not already accounted for in scope 1 or scope 2.
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	0%
Data Source	<p>Activity Data (primary data): The quantities of fuel and energy (electricity and steam) purchased in the reporting year were obtained from our data management system.</p> <p>Emissions factors (secondary data): Emissions factors were taken from Defra and IEA 2023 data for Well-to-Tank (WTT) emissions. The grid related transmission and distribution(T&D) factor was taken IEA.</p>

Calculation boundary

This category includes the upstream "well-to-tank" (WTT) emissions of purchased fuels, electricity, and steam, as well as the transmission and distribution (T&D) losses for electricity and steam. Additionally, the WTT impact of purchased electricity and steam is also included within this category.

Exclusions

None.

Calculation methodology

Suitable Defra Well-to-Tank (WTT) emissions factor is applied to the fuels, natural gas, and heat and steam consumption reported by our sites, regardless of the site geographic location. For electricity, geographically suitable Defra WTT emissions factor, IEA T&D emissions factor, and IEA WTT of T&D emissions factor are applied.

Assumptions

None.

Category 4: Upstream transportation and distribution

Category description	<p>Transportation and distribution of products purchased between tier 1 suppliers and our operations (in vehicles and facilities not owned or controlled by us).</p> <p>Transportation and distribution services purchased, including inbound logistics, outbound logistics (e.g., of sold products), and transportation and distribution between our own facilities (in vehicles and facilities not owned or controlled by us).</p>
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	1%
Data Source	<p>Activity Data (primary data): Masses, origin and destination points and mode of transport were obtained from our data management system.</p> <p>Emissions factors (secondary data): The CO₂e emission factors used were taken from Defra 2023.</p>

Calculation boundary

Emissions associated with the transportation and distribution of goods covering rail, air, road and sea transport. This includes all transport and logistics that we pay for: third-party warehousing and storage, supplier to site transport and inter-site transport. Elementis production site to port (and vice versa) road transportation is included.

Exclusions

Inbound transportation of goods not for resale (e.g., office materials, capex equipment) are not included in the scope 3 inventory due to limited visibility of the transport data for these purchases.

Calculation methodology

For large-volume inbound raw materials (making up more than 50% of the purchasing volume), outbound sold products, and inter-site movement, the mode of transport, distance and tonnage were determined specifically. Distances were calculated using online tools. We identified the main regional (intra-continental) and global (across continents) routes and provided the route details, including tonnage, distances, and transport modes (air, sea, rail, road). Emissions were then calculated using DEFRA and DEFRA WTT factors applicable to the mode of transport used.

For the remaining raw materials transportation where distances and transport mode weren't available, we used assumptions to calculate upstream inbound. Emissions were calculated using DEFRA and DEFRA WTT factors applicable to the mode of transport used.

Products sold transportation was split into that we are responsible for transporting (this category) vs. which products the customer is responsible for transporting (category 9).

Assumptions

For each transport mode, we selected a single DEFRA factor, whether inbound or outbound, as follows:

- Shipping > Container ship (tonne.km), average for sea transport.
- Air > International (tonne.km), for transportation to and from non-UK countries.
- Rail > Freight train (tonne.km) for rail transport.
- HGV (all diesel) > All articles (tonne.km) > Average laden for road transport.

The following assumptions were made for the calculation of emissions for inbound raw materials when the distance and mode of transport were not available:

- 19% of the mass is transported globally.
 - 81% of the mass is transported within the region.
- The global vs regional split is based on shipped product data.

Category 5: Waste generated in operations

Category description	Disposal and treatment of waste generated in our operations and treated in facilities not owned or controlled by us.
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	0%
Data Source	<p>Activity Data (primary data): The quantities of solid waste and wastewater generated during production at all our production sites were obtained from our data management system</p> <p>Emissions factors (secondary data): The CO₂e emission factors used were taken from Defra 2023.</p>

Calculation boundary

Waste management includes waste generated across our manufacturing sites and offices.

Exclusions

None.

Calculation methodology

Waste emissions are calculated with a process-based approach. For solid waste, waste volumes are categorized by location and disposal method. The suitable Defra waste treatment emissions factors are then applied based on the waste category. For wastewater, all freshwater consumption is assumed to become wastewater. Defra water treatment emission factors are then applied to the wastewater.

Assumptions

The following assumptions have been made regarding solid waste disposal: waste that is sent to landfill is strictly industrial or inorganic, while organic waste is incinerated. Recycled wastes generated at Anji only includes average construction waste type, while all other sites with recycled wastes have mixed waste, which includes metal, plastic, card, and wood.

Category 6: Business travel

Category description	Transportation of employees for business-related activities in vehicles not owned or operated by us.
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	0%
Data Source	Activity Data (primary data): Spend data on business travel is used. Emissions factors (secondary data): The CO ₂ e emission factors used were taken from Defra 2023.

Calculation boundary

Business travel by air, rail, taxi, hire car and employee cars across our sites. This category also includes emissions from hotel stays for our employees whilst travelling for business.

Exclusions

Any business travel not captured in our travel management system.

Calculation methodology

Spend is converted into consumption per activity, such as kilometers traveled or number of nights in a hotel. Appropriate Defra emission factors (for air, rail, taxi, and hotel) are applied to calculate emissions from business travel.

Assumptions

Distance travelled is unknown, so we make an assumption of distance and use an average emission factor, calculated using DEFRA emission factors. All public transport reported in the procurement ledger is assumed to be taxi. The DEFRA emission factor for hotels is determined by the location of the entity travelling. When reporting emissions from employee cars, it is assumed that all cars are of average size and the fuel type is unknown.

Category 7: Employee commuting

Category description	Transportation of employees between their homes and their worksites (in vehicles not owned or operated by us). Home working emissions are included in this category.
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	0%
Data Source	<p>Activity Data (primary data): Numbers of FTEs (full-time equivalent) employees per site, office and home office was obtained from our data management system.</p> <p>Emissions factors (secondary data): The CO₂e emission factors used for car and public transportation used were taken from DEFRA's GHG Conversion Factors for Company Reporting (2023).</p>

Calculation boundary

Employee commuting distances to our sites and energy consumption from homeworking.

Exclusions

None.

Calculation methodology

Employee Commuting:

Each country's full-time equivalent (FTE) employees and an estimate the proportion of FTEs who work from home versus those who commute. Estimation of the distance and mode travelled is done using the Department for Transport's commuting trends. Finally, we will use the Defra emissions factors (including well-to-tank emissions) based on the travel mode to calculate emissions.

Working from home:

We use employee homeworking assumptions to calculate the total number of hours employees spent working from home. We use average electricity and natural gas consumption and finally multiply by suitable Defra emissions factors to obtain total emissions from home working.

Assumptions

For commuting, we assumed all FTE employees who work at the production sites commute to work. All sites and offices, except for the London office, are assumed located in rural areas for the purposes of commuting distance and mode assumptions.

Category 8: Upstream leased assets

Category description	Operation of assets leased by our and not in our operational control (i.e. emissions not included in scope 1 and scope 2).
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	0%
Data Source	<p>Activity Data (primary data): Leased office and storage space was obtained from our data management system.</p> <p>Emissions factors (secondary data): The CO₂e emission factors used were taken from DEFRA's GHG Conversion Factors for Company Reporting (2023) and IEA 2023.</p> <p>Energy consumption (electricity and heat energy) per square meter of office space and warehouses were taken CIBSE benchmarks for buildings energy</p>

Calculation boundary

Any transport that we pay for and any third-party warehousing and storage and supplier to site transport and inter-site transport are included in category 4. Leased buildings and vehicles we have operational control of are included in scope 1 & 2.

Exclusions

None.

Calculation methodology

To estimate the annual power consumption for each building in kWh/m² annum, CIBSE benchmarks are applied. Suitable Defra and IEA emissions factors are then applied to obtain emissions from building operations.

Assumptions

Typical CIBSE power consumption per building type was applied to leased building where primary data was not available.

Category 9: Downstream transportation and distribution

Category description	Transportation and distribution of products sold by Elementis sites between the reporting company's operations and the end consumer (if not paid for by the reporting company), including retail and storage (in vehicles and facilities not owned or controlled by the reporting company)
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	0%
Data Source	Activity Data (primary data): Masses, origin and destination points and mode of transport were obtained from our data management system Emissions factors (secondary data): The CO ₂ e emission factors used were taken from Defra 2023.

Calculation boundary

Emissions associated with the outbound transportation and distribution of goods covering rail, road, air and sea transport. This includes all transport that we do not pay for. This also includes any production site to port (and vice versa) road transportation.

Exclusions

Any transportation that occurs after our direct customer has received the goods.

Calculation methodology

For the calculation of the GHG emissions associated with the transport of products sold, we used the same methodology as category 4.

Assumptions

Same as category 4

Category 10: Processing of sold products

Category description	Processing of our products by downstream companies
Calculation status	Not applicable, not calculated
Calculation status rationale	<p>Not relevant, not calculated.</p> <p>Under the WBCSD Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain guidance, we do report on this category due to lack of visibility.</p>

Category 11: Use of sold products

Category description	End use of goods and services sold us.
Calculation status	Not applicable, not calculated
Calculation status rationale	<p>Having assessed our' business units, products and applications, this category is confirmed to be not relevant and has not been calculated.</p> <p>All products fall into at least one of the characteristics below, which makes their in-use emissions non-material:</p> <ul style="list-style-type: none"> • Do not consume energy during use • Do not emit GHGs during use • If they do stimulate CO₂ emissions, these are indirect emissions which are out of scope

Category 12: End-of-life treatment of sold products

Category description	End-of-life disposal and treatment of products sold by us
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	0%
Data Source	<p>Activity Data (primary data): Quantity of products sold in the reporting year per region were obtained from our data management system.</p> <p>The likely waste disposal methods (incineration, landfill, recycling) for each product type were derived from product assessment workshops with business units.</p> <p>Emissions factors (secondary data): The CO₂e emission factors used were taken from Defra 2023.</p>

Calculation boundary

Emissions from end of life of sold finished products and packaging that we sell to customers. Only the emissions associated with our product volumes have been calculated (i.e., the full final product is out of scope).

Exclusions

Biogenic emissions for the end of life of sold products are not accounted for due to several reasons. Firstly, there is no guidance available for accounting for biogenic emissions in relation to the end-of-life of sold products. Secondly, accounting for biogenic emissions in any way would deviate from the standards due to the absence of specific guidance. Finally, it is unlikely that accounting for biogenic emissions would result in significant changes to this year's Scope 3 footprint.

Calculation methodology

Data includes the volume sold, product and packaging type and the regions where sold. Where disposal is expected to occur, we have used waste disposal ratios (incineration, landfill, recycling) as follows:
 North America: 5% incineration with energy recovery, 66% landfill, and 29% recycling
 Asia: 42% incineration with energy recovery, 49% landfill, and 9% recycling.
 Europe: 34% incineration with energy recovery, 29% landfill, and 37% recycling.
 We then apply relevant Defra factors to obtain emissions.

Assumptions

Personal care products are consumable and are ultimately washed away, where their end-of-life disposal is not visible. Hence, they do not have a specific end-of-life disposal.
 Items that do not degrade within 100 years, such as plastics, are assumed to not emit GHG as per the WBCSD chemical sector guidance.

Category 13: Downstream leased assets

Category description	Operation of assets owned by the reporting company (lessor) and leased to other entities in the reporting year, not included in scope 1 and scope 2 – reported by lessor
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	0%
Data Source	<p>Activity Data (primary data): Leasing data was obtained from our data management system.</p> <p>Emissions factors (secondary data): The CO₂e emission factors used were taken from DEFRA's GHG Conversion Factors for Company Reporting (2023) and IEA 2023.</p> <p>The energy consumption (electricity and heat energy) per square meter of office space and warehouses were taken CIBSE benchmarks for buildings energy.</p>

Calculation boundary

Any buildings and consuming energy assets we leased to other entities in 2023.

Exclusions

None.

Calculation methodology

The floor area, energy source type and building type information on the leased building was used for calculation. For the calculation of the GHG emissions associated with this category, we used the same methodology as category 8.

Assumptions

We have applied the typical CIBSE power consumption per building type for the building. The asset is classified as an office and a land lease. However, any activities that occur outside the office are not considered within our boundary as they fall outside the terms of the lease.

Category 14: Franchises

Category description	Operation of franchises
Calculation status	Not applicable, not calculated
Calculation status rationale	We do not operate a franchise model. All operating sites are included within our scope 1 & 2 emissions reporting.

Category 15: Investments

Category description	Operation of our investments (including equity and debt investments and project finance) that is not included in scope 1 or scope 2
Calculation Status	Material, calculated.
Data quality indicator	Good
Portion calculated from suppliers or other value chain partners data	0%
Data Source	<p>Activity Data (primary data): Joint ventured data obtained from the respective companies upon inquiry.</p> <p>Emissions factors (secondary data): The CO2e emission factors used were taken from DEFRA's GHG Conversion Factors for Company Reporting (2023) and IEA 2023.</p> <p>The energy consumption (electricity and heat energy) per square meter of office space and warehouses were taken CIBSE benchmarks for buildings energy</p>

Calculation boundary

Energy usage from the joint venture, where we own a % of shares.

Exclusions

None

Calculation methodology

The floor area, energy source type and building type information on the leased building was used for calculation. For the calculation of the GHG emissions associated with this category, we used the same methodology as category 8.

Assumptions

We have applied the typical CIBSE power consumption for an office. Any activities that occur outside the building are not considered.