Environmental Product Declaration

according to ISO 14025 and EN 15804

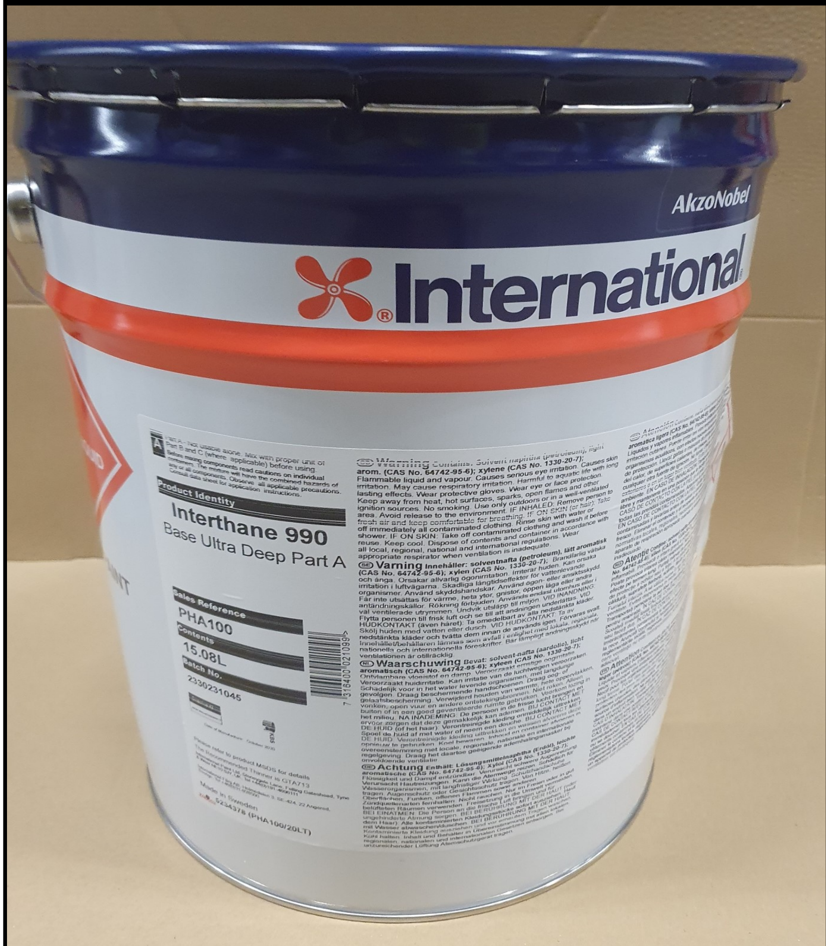
milieu relevante product informatie

This declaration is for:

International Interthane 990 (Part A & Part B)

Provided by:

AkzoNobel



program operator

Stichting MRPI®

publisher

Stichting MRPI®

www.mrpi.nl

MRPI® registration

1.1.00179.2020

date of first issue

15-12-2020

date of this issue

15-12-2020

expiry date

15-12-2025

ECO PLATFORM EPD

EN 15804 VERIFIED

COMPANY INFORMATION

AkzoNobel
Stoneygate Lane
NE10 0JY
Felling, Gateshead Tyne & Wear United Kingdom

https://www.international-pc.com/

MRPI® REGISTRATION

1.1.00179.2020

DATE OF ISSUE

15-12-2020

EXPIRY DATE

15-12-2025

PRODUCT

International Interthane 990 (Part A & Part B)

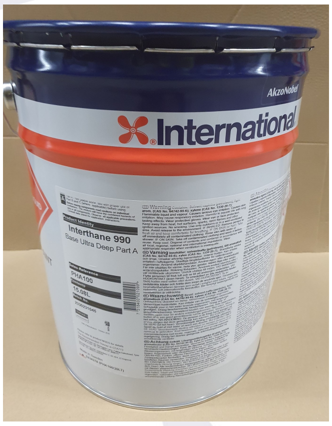
DECLARED UNIT/FUNCTIONAL UNIT

All impacts are calculated using the declared unit “coating of 1 m² of surface”

DESCRIPTION OF PRODUCT

A two component, high gloss, polyurethane finish, Interthane 990 provides excellent durability and flexible application

VISUAL PRODUCT



MORE INFORMATION

https://www.international-pc.com/products/interthane-990

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **ing. Kamiel Jansen, Primum.**
The LCA study has been done by **Joanna Zhuravlova, Ecomatters.**
The certificate is based on an LCA-dossier according to ISO14025 and NEN-EN15804+A1. It is verified according to the 'EPD-MRPI® verification protocol May 2017.v3.1'. EPDs of construction products may not be comparable if they do not comply with NEN-EN15804+A1. Declaration of SVHC that are listed on the 'Candidate List of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

PROGRAM OPERATOR

Stichting MRPI®
Kingsfordweg 151
1043GR
Amsterdam

ir. J-P den Hollander, Managing director MRPI®

DEMONSTRATION OF VERIFICATION
CEN standard EN15804 serves as the core PCR[a]
Independent verification of the declaration and data, according to EN ISO 14025:2010: internal: external: X
Third party verifier: Kamiel Jansen, Primum
[a] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

This EPD is representative for two of the variants of Interthane 990:

1. Interthane 990 RAL 7035 Light Grey;
2. Interthane 990 RAL 1023 Traffic Yellow.

A two component, high gloss, polyurethane finish, Interthane 990 provides excellent durability and flexible application. With an over 20 years' global track record, Interthane 990 is a trusted solution providing extended recoat windows, long term protection and aesthetics retention in new construction and maintenance.

Typical Use

A polyurethane topcoat for use over anti-corrosive systems.

Application Method

Airless spray, brush, roller.

Pack size

Supplied as a 20L kit.

Production process and conditions of delivery

Manufactured by AkzoNobel in house. Product sale is subject to AkzoNobel conditions of sale.

COMPONENT (> 1%)	[kg / %]
Pigment: Lightfast Pigments	Confidential
Binder: Ethylene copolymer	Confidential
Solvent: Water	Confidential

(*) > 1% of total mass

SCOPE AND TYPE

The type of this EPD is Cradle-to-Gate with options. All major steps from the extraction of natural resources to the final disposal of the product are included in the environmental performance of the manufacturing phase, except those that are not relevant to the environmental performance of the product. This declaration does not imply an indicator result of zero. This EPD is representative for products sold globally. The paint is produced in Angered, Sweden and the application market are for global customers. Likewise, for the end-of-life, the fate of the paint product is described within a global context.

The software GaBi 10.0.0.71 Professional was used to perform the LCA. In the model Ecoinvent 3.6 database was used.

The validity of this EPD is in correspondence with the specifications of the LCA project report.

All impacts associated with the upstream production of materials and energy are included in the system boundaries. Mining activities and controlled landfills are included in the product systems. Similarly, wastewater treatment activities are also considered within the technological systems. The emissions and resource extractions derived from these processes are considered elementary exchanges between the product systems and the environment.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MNA

X = Module assessed

MNA = Module not assessed

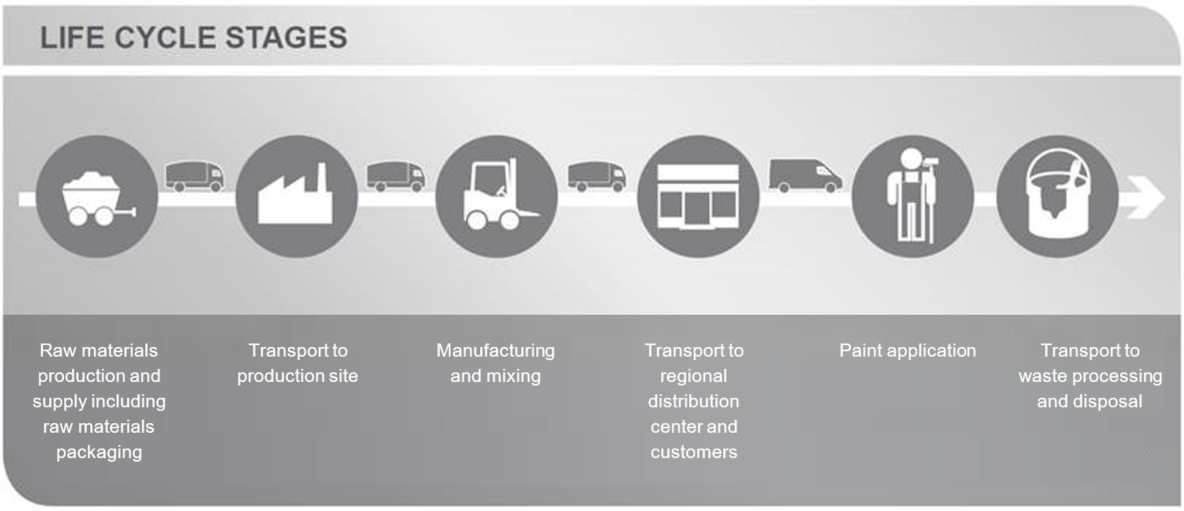


Figure: LCA process diagram according to EN 15804 p.7.2.1

REPRESENTATIVENESS

The representative product consists of a weighted average based on annual production volumes of the formulation and characteristics (i.e. packaging format) of the 2 products within the Interthane 990:

1. Interthane 990 RAL 7035 Light Grey;
2. Interthane 990 RAL 1023 Traffic Yellow.

This EPD is representative for products produced in Sweden and sold globally. This EPD is specific to paint produced at one production site: Angered, Sweden. Interthane 990 is manufactured at several additional sites not assessed in this EPD.

Density (kg/l) = 1.200;
Coverage (kg/m²) = 0.159;
Number of Layers = 1;
Total product used (kg/m²) = 0.159.

A sensitivity analysis is performed to assess the representativeness of the representative product. The environmental impact results for the individual Interthane 990 products have maximum positive difference of 10%, when compared with the representative product, in the Acidification Potential impact category.

ENVIRONMENTAL IMPACT per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
ADPE	kg Sb-eq.	2.98 E-6	9.44 E-7	6.24 E-8	3.98 E-6	1.25 E-6	4.38 E-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.48 E-8	0.00	3.24 E-8
ADPF	MJ	1.41 E+1	5.63 E-1	5.33 E-1	1.52 E+1	1.01 E+0	5.68 E-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22 E-2	0.00	3.37 E-2
GWP	kg CO2-eq.	5.54 E-1	3.75 E-2	5.91 E-2	6.51 E-1	6.53 E-2	3.77 E-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.42 E-3	0.00	3.80 E-1
ODP	kg CFC11-eq.	1.10 E-7	6.56 E-9	6.68 E-10	1.18 E-7	1.19 E-8	4.27 E-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.71 E-10	0.00	3.10 E-10
POCP	kg ethene-eq.	4.05 E-4	1.60 E-5	3.53 E-5	4.57 E-4	2.68 E-5	9.02 E-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.98 E-7	0.00	1.96 E-6
AP	kg SO2-eq.	4.79 E-3	1.87 E-4	1.29 E-4	5.11 E-3	2.61 E-4	1.82 E-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.60 E-6	0.00	2.42 E-5
EP	kg (PO4)3--eq.	1.20 E-3	4.78 E-5	2.46 E-5	1.28 E-3	7.83 E-5	8.00 E-6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67 E-6	0.00	5.96 E-5

ADPE = Abiotic Depletion Potential for non-fossil resources
ADPF = Abiotic Depletion Potential for fossil resources
GWP = Global Warming Potential
ODP = Depletion potential of the stratospheric ozone layer
POCP = Formation potential of tropospheric ozone photochemical oxidants
AP = Acidification Potential of land and water
EP = Eutrophication Potential

RESOURCE USE per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
PERE	MJ	8.54 E-1	6.65 E-3	1.79 E-2	8.78 E-1	1.09 E-2	3.97 E-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.83 E-4	0.00	9.18 E-4
PERM	MJ	2.60 E-4	4.62 E-9	1.33 E-9	2.60 E-4	6.82 E-9	4.79 E-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.42 E-10	0.00	4.39 E-10
PERT	MJ	8.54 E-1	6.65 E-3	1.79 E-2	8.79 E-1	1.09 E-2	3.97 E-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.83 E-4	0.00	9.18 E-4
PENRE	MJ	1.51 E+1	5.71 E-1	5.51 E-1	1.63 E+1	1.02 E+0	6.21 E-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.26 E-2	0.00	3.49 E-2
PENRM	MJ	5.79 E-7	0.00	1.42 E-10	5.79 E-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PENRT	MJ	1.51 E+1	5.71 E-1	5.51 E-1	1.63 E+1	1.02 E+0	6.21 E-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.26 E-2	0.00	3.49 E-2
SM	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m3	1.50 E-1	6.51 E-5	-2.87 E-5	1.50 E-1	1.21 E-4	2.64 E-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.56 E-6	0.00	2.92 E-5

PERE = Use of renewable energy excluding renewable primary energy resources
PERM = Use of renewable energy resources used as raw materials
PERT = Total use of renewable primary energy resources
PENRE = Use of non-renewable primary energy resources excluding non-renewable 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 resources
SM = Use of secondary materials
RSF = Use of renewable secondary fuels
NRSF = Use of non renewable secondary fuels
FW = Use of net fresh water

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
HWD	kg	0.00	0.00	3.16 E-3	3.16 E-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NHWD	kg	0.00	0.00	1.86 E-3	1.86 E-3	0.00	5.43 E-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.59 E-1
RWD	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRU	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	0.00	0.00	0.00	0.00	0.00	9.77 E-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MER	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ETE	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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
ETE = Exported Thermal Energy

CALCULATION RULES

Cut off criteria

The cut-off is considered in the raw material supply stage (A1). Cut-off of inputs comprises of the raw materials, for which no appropriate proxies were found. The highest cut-off from all paint products in this group is 0.87% of the paint formulation.

In the electricity for paint manufacturing process, transmission and transformation losses were not accounted for in case of renewable energy sources (SE: electricity production, hydro). The reason for that exclusion is the fact that transformation and transmission losses account together for less than 1% of the energy input and it is not expected to influence the results significantly.

Data quality and data collection period

Specific data was collected from AkzoNobel though a questionnaire, including inquiries about paint characteristics and packaging, logistics data (e.g. transport), production information and end-of-life. The data collection period for specific data was the year 2019.

Data gaps (i.e. transport data, end of life scenarios) were covered with data generic values for transport as described in the Product Environmental Footprint Category Rules - Decorative Paints document version 1.0 published by CEPE and reviewed in April 2018. Further data gaps (i.e. end-of-life transport data) were covered with data from internal AkzoNobel LCA studies concerning the same type of products (paints and coatings). Generic data (i.e. upstream acquisition and production of raw materials, energy generation, transport, waste treatment processes) was selected from Ecoinvent 3.6 database. In the case of missing data, a relevant proxy was searched and adjusted to the corresponding unit process.

Allocation procedure

To allocate the emissions and inputs to the manufactured products, the decision-hierarchy in ISO 14044 is used (ISO 2006). It is not possible to sub-divide the site data into a more detailed level or find physical causalities between inputs and outputs, thus allocation is done based on mass, considering the annual production of paint product for each site. The paint production is basically a process of mixing ingredients and, therefore, the environmental impact is fairly to be related to the mass of the products.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

A1. Raw materials supply

This module considers the extraction and processing of all raw materials and energy which occur upstream to the Interthane 990 manufacturing process, as well as waste processing up to the end-of waste state.

A2. Transport of raw materials to manufacturer

This includes the transport distance of the raw materials to the manufacturing facility via road and/or boat. On average, the transport characteristics for this life cycle stage are the following:

Transport Type	Truck 1	Truck 2	Container ship coast
Distance (km)	34.00	983.95	929.76
Capacity	34-40 t ,60% payload	40-60 t, 60% payload	70% utilization factor
Bulk density of transported products	1200 kg/m3	1200 kg/m3	1200 kg/m3

A3. Manufacturing

This module covers the manufacturing of the Interthane 990 paint and includes all processes linked to production such as storing, mixing, packing and internal transportation. Use of electricity, fuels and auxiliary materials in paint production is taken into account as well.

Data regarding paint production was provided for the manufacturing sites where the Interthane 990 paints are produced: Angered, Sweden. Furthermore, the specific transportation distances and transportation modes for raw materials, paint packaging and transportation to customer were collected from the AkzoNobel. Primary data and site-specific data were retrieved. For electricity sources (100% hydropower) Ecoinvent 3.6 dataset was used. For upstream (raw material processes) and downstream processes (application, use, and waste processing) generic data is used when no specific data was obtained.

The construction site data includes lighting, heating, offices, etc. The manufacture of production equipment and infrastructure is not included in the system boundary.

A4. Transport to Regional Distribution Centre and customer

All paint containers are transported from the Felling facility into a distribution centre and then finally to the customer. On average, the transport characteristics for this life cycle stage are the following:

	Transport from factory to RDC	Transport from RDC to customer
Transport Type	Truck 1	Truck 2
Distance (km)	2727.87	377.67
Capacity	40-60 t, 60% payload	34-40 t ,60% payload
Bulk density of transported products	1200 kg/m3	1200 kg/m3

A5. Application and use

This module includes the environmental aspects and impacts associated with the application and of the paint. The use of energy from air spray for coating application purposes is included.

The use of paintbrushes and other appliances used during application are not included. There are some raw materials added in the paint formulations which contain small amounts of solvents. The VOC emissions during application of paint are included in this module.

PARAMETER	(kWh/ kg)
Energy for application	0.06

C2. Transport to incineration or landfill

This module includes one-way transportation distance of the demolition or sorting site to the dump site.

PARAMETER	TRANSPORT TO WASTE PROCESSING
Vehicle type	Truck 34t-40t payload average fleet
Distance	100 km
Capacity utilisation	60%
Bulk density of transported products	1200 kg/m3

C3. Waste processing and C4. Disposal

The end of life stage is encompassed in these modules. It is assumed that part of the coating is lost during application and the rest is applied. The coating lost during application is assumed to be non-hazardous waste and disposed of in landfill. After its lifetime, it is assumed that the coatings end up in incineration as non-hazardous waste. These assumptions are based on best knowledge of the end of life of coating from direct contact with AkzoNobel.

ADDITIONAL INFORMATION ON ENVIRONMENTAL IMPACTS

The CML-IA methods do not have characterization factors for the “unspecified VOC” emission flow in the Global Warming Potential environmental impact category. However, VOCs are known to have influence in this category. In order to include the impacts of the VOCs and align with current practice of AkzoNobel, it was decided to calculate the VOC impact on Global Warming Potential separately. The Global Warming Potential impact category has been modified, adding a generic factor of 4.23 kgCO2-eq/kg VOC, which is in line with AkzoNobel characterisation factors for carbon reporting.

	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	C2	C4
Global Warming potential (GWP 100 years)	kg CO2-eq.	5.54E-1	3.75E-2	5.91E-2	6.51E-1	6.53E-2	3.77E-3	1.42E-3	3.80E-1
Global Warming potential (GWP 100 years) incl. VOC char. factor	kg CO2-eq.	5.54E-1	3.75E-2	5.93E-2	6.51E-1	6.53E-2	1.45E+0	1.42E-3	3.80E-1

DECLARATION OF SVHC

None of the substances contained in the product are listed in the “Candidate List of Substances of Very High Concern for authorisation”, or they do not exceed the threshold with the European Chemicals Agency.

REFERENCES

• EN 15804:2012+A1:2013 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products, of 11/2013.
• ISO 14040/14044 on Life Cycle Assessments
• Product Environmental Footprint Category Rules - Decorative Paints version 1.0, 2018. Developed by the Technical Secretariat Decorative Paints of the European Council of the Paint, Printing Ink and Artists' Colours Industry.
• Milgate R., Personal communication with Richard Milgate, Global Product Manager Corrosion Protection & Heavy Duty Marine and Protective Coatings, 2020
• Thinkstep GaBi Software-System and Database for Life Cycle Engineering. Copyright 1992-2018 ThinkStep AG.
• Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B., 2016. The ecoinvent database version 3 (part I): overview and methodology. The International Journal of Life Cycle Assessment, [online] 21(9), pp.1218–1230. Available at: <http://link.springer.com/10.1007/s11367-016-1087-8> [Accessed 20-10-2020]

REMARKS

None