In accordance with ISO 14025

• Sodium Carbonate (Soda Ash)

from

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Environmental Product Declaration

Programme
The International EPD® System

Geographical Scope
Global

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EPD Turkey

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• Programme Information

- **Programme:** The International EPD® System
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- **Product category rules (PCR):**
  Basic chemicals 2021:03, v 1.1.1

- **PCR review was conducted by:**
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- Independent third-party verification of the declaration and data, according to ISO 14025:2006:

  ☐ EPD process verification ☑ EPD verification

- **Third party verifier**
  SIPL Pvt Ltd, New Delhi, India -
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  Approved by
  The International EPD® System Technical Committee, supported by the Secretariat

- Procedure for follow-up of data during EPD validity involves third party verifier:

  ☐ Yes ☑ No

Eti Soda has the sole ownership, liability, and responsibility for the EPD.
EPDs within the same product category but from different programmes may not be comparable.

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SEMTRIO

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• Company Information

Eti Soda was established in 1998 in order to extract, operate, and bring to the economy the trona mineral reserves found during routine coal drillings in the Beypazarı district of Ankara in 1979.

Eti Soda is one of the facilities in Turkey of WE Soda Ltd., which is part of Ciner Group, 74% owned by Ciner Kimya Yatırım A.Ş. and 26% by Eti Maden İşletmeleri A.Ş. Eti Soda is one of the most successful public-private partnerships in Turkey, excavates the trona mine with the solution mining method, which is an environmentally friendly operating technique, and obtains natural soda ash and sodium bicarbonate from this mine. Eti Soda, the first natural soda ash and sodium bicarbonate producer in Europe, is the first facility in the world to produce commercial scale soda ash and sodium bicarbonate using solution mining technology.

Eti Soda, which started its commercial operation in 2009 and increased its production capacity in 2017, has become a facility that produces and sells ~2 million tons of soda ash and sodium bicarbonate. Eti Soda, one of Turkey's largest chemical exporters, meets the needs of many industries, from glass production to baking powder. With its global integrated production and supply chain network, it exports its products all over the world, especially to Europe.

• Product Information

Dense Soda Ash, Sodium Carbonate also known as Disodium Carbonate is a chemical substance, white in colour and its aqueous solution is clear and colorless (chemical formula Na_2CO_3). It is a simple, natural product used in products worldwide. Soda Ash is the 10th most consumed inorganic compound in the world, which has been used for over 5,000 years.

It is a safe, simple compound and a key component in a variety of industrial processes . Over half of all Soda Ash production is used in glass manufacturing, but it is also used in a wide range of other products, such as powdered detergents and soaps and rechargeable batteries, as well as being used extensively in metallurgical processes, and across the food, cosmetic and pharmaceutical industries.

Sodium Carbonate is classified under CPC Group: 342 - Basic inorganic chemicals n.e.c., Class: 3424 - Phosphates of triammonium; salts and peroxysalts of inorganic acids and metals n.e.c., 34240 Sodium carbonate, neutral, crystallized or dehydrated. Eco-labelling, e.g. ISO Type I is not available for the product.

Areas of Usage:

- Glass
- Chemical Industry
- Soap and Detergent Industry
- Paper
- Flue Gas Treatment
- Water and Wastewater Treatment

Almost 70% of the product soda ash is exported in bulk, also both products are exported in 25 kg small bags and 1.25 tonne big bags can be exported.

Container loaded with 1.25 tonne XL Big Bags

Palletised 25 kg small bags for container shipment

Products exported in bulk

Where is Natural Soda Ash (Trona Ore) found?

Natural Soda Ash has been found in lake brines or naturally occurring mineral deposits. Trona (a mix of water, sodium bicarbonate, sodium carbonate and sometimes sodium chloride or salt) is the most common and richest source of naturally occurring Soda Ash.

While Trona occurs naturally in a few locations worldwide, the largest and purest deposits are found near Green River, Wyoming, USA and near Ankara, Turkey. To date, these are the only commercially exploitable deposits that have been discovered globally.

• LCA Information

• Upstream module (from cradle-to-gate):

The scope of the upstream processes is defined as production of the inputs to the core processes and activities which the manufacturing organization is not in control of over the supply chain.

The following attributional processes are part of the product system and classified as upstream processes:

- The manufacturing of the chemicals and fuels: quicklime, limestone, lignite and anti-foam
- The production processes of energy wares used in the extraction and refinement
- The manufacturing of the primary and secondary packaging

• Core module, manufacturing processes (from gate-to-gate):

The scope of the core module is defined by the organizational boundaries and includes all activities which the manufacturing organization is in control of. In this LCA Study the core process includes, impacts generated by coal burned in the core process, impacts due to the electricity production.

Production of trona solution also operated by Eti Soda and considered under core processes. Energy consumption during the trona solution delivery to the manufacturing plant has been included into core processes.

The core processes <u>include:</u>

- Trona solution mining
- Manufacturing of the final product
- Impacts due to the consumption of electricity, coal and water
- Impacts due to the production of electricity and steam in the core module
- Transportation of chemicals, coal and packaging materials

The core processes <u>do not include:</u>

- Manufacturing of production equipment, buildings, and other capital goods,
- Business travel of personnel,
- Travel to and from work by personnel,
- Research and development activities,
- Scraps coming from demolition of building or other infrastructures.

• Downstream module (from gate-to-grave):

The transportation of the product to the customer has been calculated, taking into account the actual transportation distances and types. It has been calculated by including bulk, bigbag, and smallbag packaging.

End of life treatment of product packaging;
For product packaging, end-of-life stage scenario has been created. The weights of bigbag, smallbag, and pallet products have been determined based on sales volume and the calculation has been made assuming that packaging products went to a 100 km disposal facility.

For bigbag and small bag products, EPA's "Plastic Containers and Packaging" material has been used and recycling, incineration and landfill rates have been calculated for the bigbag and small bag products. It has been accepted that the pallet is 100% recyclable.

Excluded Downstream Process:

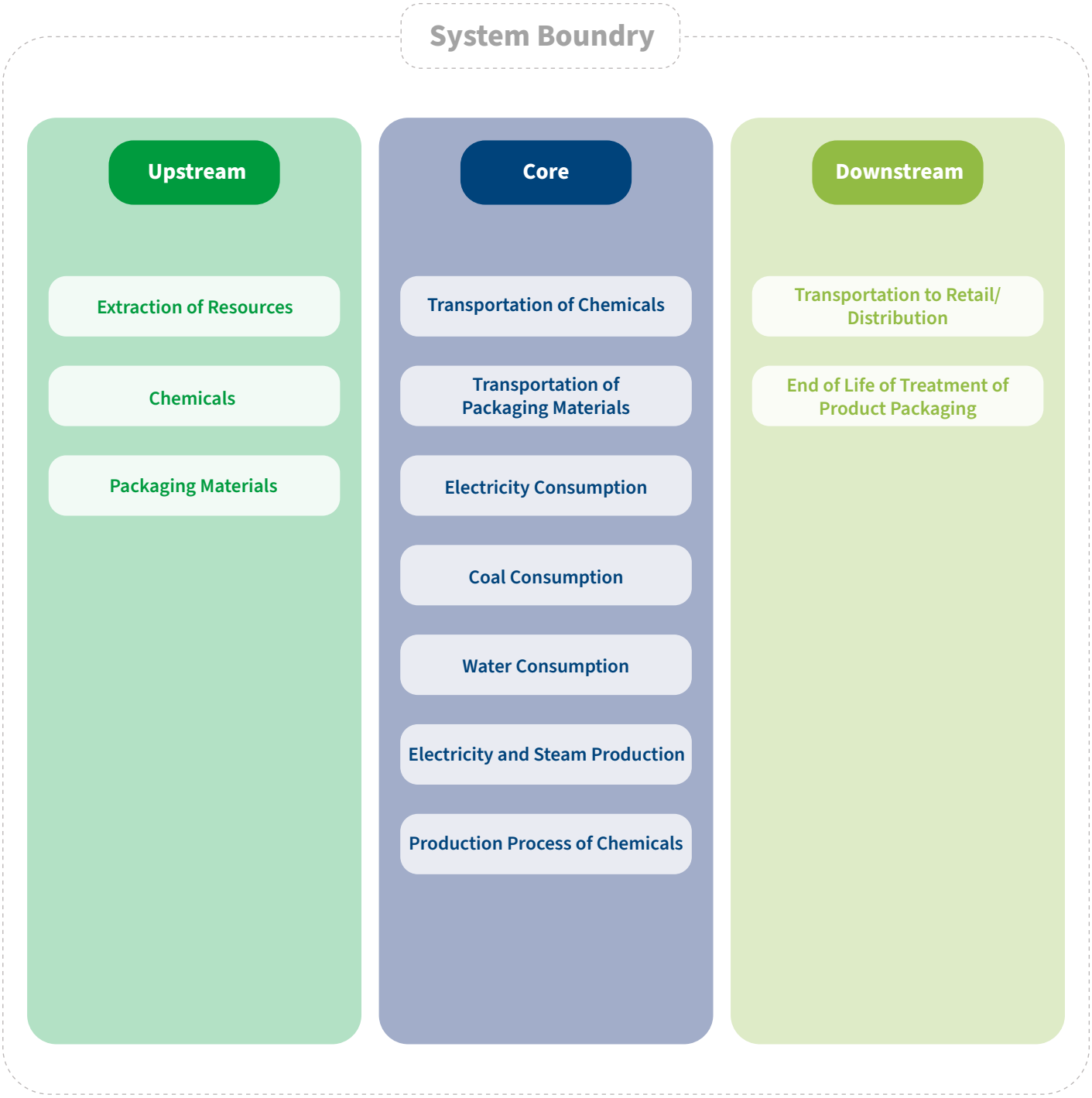
End-of-life of the chemical product and use phase are excluded.

Sodium Carbonate (Natural Soda Ash) and Sodium Bicarbonate have many different applications and are often used as input materials to other production processes. It is difficult to allocate an environmental burden from the use phase to the chemical input. Also, the end-of-life management depends on the application and location of the use and disposal of the chemical.

No relevant data is available for the use and end of life phases of the products manufactured by Eti Soda.

Declared Unit	The declared unit is 1 kg sodium carbonate and its packaging.
EPD Type (System Boundary)	Cradle to grave
Data Collection	Upstream data, raw materials production, transportation, and electricity data have been obtained from Ecoinvent v3.9.1 as secondary data. All manufacturing data in core processes have been gathered from Eti Soda production plant. The manufacturing data are monitored and recorded in Eti Soda data collection system(SAP). The production data in this LCA study represents the period from 1st January 2022 to 31th December 2022. A third-party verification has been proceeded for all manufacturing data, electricity, water and natural gas consumption according to ISO 14064-1:2018.
Allocation	During manufacturing, calcium carbonate and deka purge are produced as by-product. Therefore, calcium carbonate and deka purge have been excluded from system boundaries, and mass allocation is proceeded. An Alternative Generation Method has been conducted for cogeneration plant and environmental indicator (global warming potentials) has been allocated for 1 kWh electricity and 1 kWh steam.
Calculation Methods	All resource use values are calculated from Cumulative Energy Demand V1.11; net use of fresh water has been calculated from SimaPro Inventory result outputs. Potential environmental impacts are calculated with the CML-IA baseline V 3.06, ReCiPe 2016 Midpoint (H) v 1.04, Formation potential of tropospheric ozone (POCP) from LOTOS-EUROS as applied in ReCiPe Midpoint (H) v 1.13, 2008, IPCC 2013 GWP 100a V1.03 for GWP, USEtox 2 (recommended + interim) v.1.0 methods in SimaPro software.
Cut-off Rules	Life Cycle Inventory data for a minimum of 99% of total inflows to the three life cycle stages have been included and a cut-off rule of 1% regarding energy, mass and environmental relevance was applied.

• System Diagram



• Content Declaration

• Content Declaration of Sodium Carbonate (Soda Ash)

Product	Brine solution, weight-%	Quicklime, weight-%	Antifoam, weight-%
Sodium Carbonate	>96%	1%-5%	<0.1%

• Content Declaration of Packaging Materials

Product	Weight, kg	Weight, %	Biogenic carbon, kg
Bigbag	3.86E-04	-	-
Small bag	3.60E-05	-	-
Wooden Pallet (p)	5.46E-05	-	-

Information about Packaging

Distribution Packaging; for the purposes of transport, handling and/or distribution.

The distribution packaging is:

- Small bags (25kg) packaging
- Bigbags (1250kg) packaging
- Wooden pallets for handling of packaged products.

• Environmental Indicators for Sodium Carbonate (Soda Ash)

• Potential Environmental Impact

Parameter		UNIT	Upstream	Core		Total	Down-stream	TOTAL
			Raw Material Supply	Transportation	Production		Transportation	
Global warming potential (GWP)	Fossil	kg CO_2 eq.	1.93E-02	0.10	0.17	0.29	0.31	0.60
	Biogenic	kg CO_2 eq.	5.39E-05	2.51E-04	1.17E-03	1.47E-03	1.21E-04	1.60E-03
	Land use and land transformation	kg CO_2 eq.	3.70E-06	4.72E-05	9.59E-04	1.01E-03	2.14E-04	1.22E-03
	TOTAL	kg CO_2 eq.	1.94E-02	9.76E-02	0.17	0.29	0.31	0.60
Acidification potential (AP)		kg mol H^+ eq.	1.96E-10	2.06E-09	5.66E-10	2.83E-09	5.15E-09	7.98E-09
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	2.67E-05	2.07E-04	5.78E-04	8.12E-04	6.92E-03	7.73E-03
	Aquatic marine	kg N eq.	1.97E-05	7.70E-07	9.94E-06	3.04E-05	1.53E-06	3.19E-05
	Aquatic terrestrial	mol N eq.	6.59E-06	5.10E-05	7.81E-05	1.36E-04	1.73E-03	1.87E-03
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	6.81E-05	5.31E-04	8.70E-04	1.47E-03	1.91E-02	2.06E-02
Ozone layer depletion (ODP)		kg CFC 11 eq.	2.89E-05	3.22E-04	2.55E-04	6.06E-04	5.33E-03	5.94E-03
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	9.50E-09	3.10E-07	8.91E-08	4.09E-07	3.9	3.9
	Fossil resources	MJ, net calorific value	0.80	1.35	0.84	3.0	3.9	6.9
Water deprivation potential (WDP)		m^3 world eq.	2.57E-03	5.63E-03	6.37E-02	7.19E-02	1.20E-02	8.39E-02

• Use of Resources

Parameter		UNIT	Upstream	Core		Total	Down-stream	TOTAL
			Raw Material Supply	Transportation	Production		Transportation	
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	6.92E-03	2.12E-02	0.28	0.31	3.66E-02	0.34
	Used as raw materials	MJ, net calorific value	0	0	0	0	0	0
	TOTAL	MJ, net calorific value	6.92E-03	2.12E-02	0.28	0.31	3.66E-02	0.34
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	9.04E-01	1.43	0.92	3.3	4.2	7.4
	Used as raw materials	MJ, net calorific value	0	0	0	0	0	0
	TOTAL	MJ, net calorific value	9.04E-01	1.43	0.92	3.3	4.2	7.4
Secondary material		kg	0	0	0	0	0	0
Renewable secondary fuels		MJ, net calorific value	0	0	0	0	0	0
Non-renewable secondary fuels		MJ, net calorific value	0	0	0	0	0	0
Net use of fresh water		m^3	4.88E-04	1.22E-03	5.18E-03	6.88E-03	2.41E-03	9.29E-03

• Waste Production

Parameter	UNIT	Up-stream	Core		Total	Down-stream	TOTAL
		Raw Material Supply	Transpor-tation	Produc-tion		Transpor-tation	
Hazardous waste disposed	kg	0	0	0	0	0	0
Non-hazardous waste disposed	kg	0	0	0	0	0	0
Radioactive waste disposed	kg	0	0	0	0	0	0

• Output Flows

Parameter	UNIT	Up-stream	Core		Total	Down-stream	TOTAL
		Raw Material Supply	Transpor-tation	Produc-tion		Transpor-tation	
Components for reuse	kg	0	0	0	0	0	0
Material for recycling	kg	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0

• Environmental Indicators for Sodium Carbonate (Soda Ash)-Only Packaging Materials-Bigbag

• Potential Environmental Impact

Parameter		UNIT	Upstream	Core	Total	Down-stream End of Life	TOTAL
Global warming potential (GWP)	Fossil	kg CO_2 eq.	1.16E-03	3.45E-05	1.20E-03	3.98E-04	1.59E-03
	Biogenic	kg CO_2 eq.	-1.39E-05	8.91E-08	-1.38E-05	1.28E-07	-1.37E-05
	Land use and land transformation	kg CO_2 eq.	1.03E-06	1.67E-08	1.05E-06	1.75E-08	1.07E-06
	TOTAL	kg CO_2 eq.	1.15E-03	3.46E-05	1.18E-03	1.73E-07	1.18E-03
Acidification potential (AP)		kg mol H^+ eq.	7.49E-12	7.32E-13	8.23E-12	3.42E-10	3.51E-10
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	4.82E-06	7.35E-08	4.89E-06	7.94E-08	4.97E-06
	Aquatic marine	kg N eq.	3.66E-08	2.73E-10	3.69E-08	7.19E-07	7.56E-07
	Aquatic terrestrial	mol N eq.	8.96E-07	1.81E-08	9.14E-07	2.46E-07	1.16E-06
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	9.93E-06	1.88E-07	1.01E-05	9.12E-13	1.01E-05
Ozone layer depletion (ODP)		kg CFC 11 eq.	4.79E-06	1.14E-07	4.90E-06	1.21E-10	4.90E-06
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	4.02E-09	1.10E-10	4.13E-09	4.29E-04	4.29E-04
	Fossil resources	MJ, net calorific value	3.26E-02	4.78E-04	3.31E-02	1.76E-05	3.31E-02
Water deprivation potential (WDP)		m^3 world eq.	4.59E-04	2.00E-06	4.61E-04	4.44E-04	9.05E-04

• Use of Resources

Parameter		UNIT	Upstream	Core	Total	Down-stream	TOTAL
						End of Life	
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	1.41E-03	7.51E-06	1.42E-03	1.03E-05	1.43E-03
	Used as raw materials	MJ, net calorific value	0	0	0	0	0
	TOTAL	MJ, net calorific value	1.41E-03	7.51E-06	1.42E-03	1.03E-05	1.43E-03
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	3.49E-02	5.08E-04	3.54E-02	4.58E-04	3.59E-02
	Used as raw materials	MJ, net calorific value	0	0	0	0	0
	TOTAL	MJ, net calorific value	3.49E-02	5.08E-04	3.54E-02	4.58E-04	3.59E-02
Secondary material		kg	0	0	0	0	0
Renewable secondary fuels		MJ, net calorific value	0	0	0	0	0
Non-renewable secondary fuels		MJ, net calorific value	0	0	0	0	0
Net use of fresh water		m^3	8.51E-05	4.31E-07	8.56E-05	1.20E-06	8.68E-05

• Waste Production

Parameter	UNIT	Up-stream	Core	Downstream
				End of Life
Hazardous waste disposed	kg	0	0	0
Non-hazardous waste disposed	kg	0	0	2.68E-04
Radioactive waste disposed	kg	0	0	0

• Output Flows

Parameter	UNIT	Up-stream	Core	Downstream
				End of Life
Components for reuse	kg	0	0	0
Material for recycling	kg	0	0	5.27E-05
Materials for energy recovery	kg	0	0	6.54E-05
Exported energy, electricity	MJ	0	0	0
Exported energy, thermal	MJ	0	0	0

• Environmental Indicators for Sodium Carbonate (Soda Ash)-Only Packaging Materials-Small bag

• Potential Environmental Impact

Parameter		UNIT	Upstream	Core	Total	Down-stream	TOTAL
						End of Life	
Global warming potential (GWP)	Fossil	kg CO_2 eq.	1.08E-04	5.31E-06	1.14E-04	3.71E-05	1.51E-04
	Biogenic	kg CO_2 eq.	-1.30E-06	1.37E-08	-1.28E-06	1.19E-08	-1.27E-06
	Land use and land transformation	kg CO_2 eq.	9.63E-08	2.57E-09	9.89E-08	1.63E-09	1.01E-07
	TOTAL	kg CO_2 eq.	1.07E-04	5.32E-06	1.12E-04	1.61E-08	1.12E-04
Acidification potential (AP)		kg mol H^+ eq.	6.99E-13	1.13E-13	8.11E-13	3.19E-11	3.27E-11
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	4.49E-07	1.13E-08	4.60E-07	7.39E-09	4.68E-07
	Aquatic marine	kg N eq.	3.42E-09	4.20E-11	3.46E-09	6.69E-08	7.04E-08
	Aquatic terrestrial	mol N eq.	8.36E-08	2.78E-09	8.64E-08	2.29E-08	1.09E-07
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	9.26E-07	2.90E-08	9.55E-07	8.48E-14	9.55E-07
Ozone layer depletion (ODP)		kg CFC 11 eq.	4.46E-07	1.76E-08	4.64E-07	1.13E-11	4.64E-07
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	3.75E-10	1.69E-11	3.92E-10	3.99E-05	3.99E-05
	Fossil resources	MJ, net calorific value	3.04E-03	7.35E-05	3.12E-03	1.64E-06	3.12E-03
Water deprivation potential (WDP)		m^3 world eq.	4.28E-05	3.07E-07	4.31E-05	4.13E-05	8.44E-05

• Use of Resources

Parameter		UNIT	Upstream	Core	Total	Down-stream End of Life	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	1.32E-04	1.15E-06	1.33E-04	9.56E-07	1.34E-04
	Used as raw materials	MJ, net calorific value	0	0	0	0	0
	TOTAL	MJ, net calorific value	1.32E-04	1.15E-06	1.33E-04	9.56E-07	1.34E-04
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	3.26E-03	7.81E-05	3.34E-03	4.26E-05	3.38E-03
	Used as raw materials	MJ, net calorific value	0	0	0	0	0
	TOTAL	MJ, net calorific value	3.26E-03	7.81E-05	3.34E-03	4.26E-05	3.38E-03
Secondary material		kg	0	0	0	0	0
Renewable secondary fuels		MJ, net calorific value	0	0	0	0	0
Non-renewable secondary fuels		MJ, net calorific value	0	0	0	0	0
Net use of fresh water		m^3	7.94E-06	6.63E-08	8.01E-06	1.11E-07	8.12E-06

• Waste Production

Parameter	UNIT	Up-stream	Core	Downstream End of Life
Hazardous waste disposed	kg	0	0	0
Non-hazardous waste disposed	kg	0	0	2.50E-05
Radioactive waste disposed	kg	0	0	0

• Output Flows

Parameter	UNIT	Up-stream	Core	Downstream End of Life
Components for reuse	kg	0	0	0
Material for recycling	kg	0	0	4.90E-06
Materials for energy recovery	kg	0	0	6.09E-06
Exported energy, electricity	MJ	0	0	0
Exported energy, thermal	MJ	0	0	0

• Environmental Indicators for Sodium Carbonate (Soda Ash)-Only Packaging Materials-Pallet

• Potential Environmental Impact

Parameter		UNIT	Upstream	Core	Total	Down-stream	TOTAL
						End of Life	
Global warming potential (GWP)	Fossil	kg CO_2 eq.	3.03E-04	1.36E-04	4.39E-04	5.29E-05	4.92E-04
	Biogenic	kg CO_2 eq.	-2.39E-03	3.50E-07	-2.39E-03	1.74E-07	-2.39E-03
	Land use and land transformation	kg CO_2 eq.	1.85E-06	6.57E-08	1.91E-06	3.05E-08	1.94E-06
	TOTAL	kg CO_2 eq.	-2.09E-03	1.36E-04	-1.95E-03	1.10E-07	-1.95E-03
Acidification potential (AP)		kg mol H^+ eq.	7.76E-12	2.87E-12	1.06E-11	4.96E-10	5.07E-10
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	1.70E-06	2.89E-07	1.99E-06	2.47E-08	2.01E-06
	Aquatic marine	kg N eq.	3.14E-08	1.07E-09	3.25E-08	2.58E-07	2.91E-07
	Aquatic terrestrial	mol N eq.	5.08E-07	7.11E-08	5.79E-07	1.62E-07	7.42E-07
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	5.75E-06	7.40E-07	6.49E-06	1.12E-12	6.49E-06
Ozone layer depletion (ODP)		kg CFC 11 eq.	2.50E-06	4.48E-07	2.95E-06	2.25E-10	2.95E-06
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	1.64E-09	4.32E-10	2.08E-09	7.26E-04	7.26E-04
	Fossil resources	MJ, net calorific value	5.05E-03	1.88E-03	6.93E-03	3.04E-06	6.93E-03
Water deprivation potential (WDP)		m^3 world eq.	1.51E-04	7.84E-06	1.59E-04	7.47E-04	9.07E-04

• Use of Resources

Parameter		UNIT	Upstream	Core	Total	Down-stream	TOTAL
						End of Life	
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	2.91E-02	2.95E-05	2.91E-02	1.58E-05	2.91E-02
	Used as raw materials	MJ, net calorific value	0	0	0	0	0
	TOTAL	MJ, net calorific value	2.91E-02	2.95E-05	2.91E-02	1.58E-05	2.91E-02
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	5.42E-03	1.99E-03	7.41E-03	7.72E-04	8.19E-03
	Used as raw materials	MJ, net calorific value	0	0	0	0	0
	TOTAL	MJ, net calorific value	5.42E-03	1.99E-03	7.41E-03	7.72E-04	8.19E-03
Secondary material		kg	0	0	0	0	0
Renewable secondary fuels		MJ, net calorific value	0	0	0	0	0
Non-renewable secondary fuels		MJ, net calorific value	0	0	0	0	0
Net use of fresh water		m^3	2.14E-05	1.69E-06	2.31E-05	7.66E-07	2.38E-05

• Waste Production

Parameter	UNIT	Up-stream	Core	Downstream
				End of Life
Hazardous waste disposed	kg	0	0	0
Non-hazardous waste disposed	kg	0	0	0
Radioactive waste disposed	kg	0	0	0

• Output Flows

Parameter	UNIT	Up-stream	Core	Downstream
				End of Life
Components for reuse	kg	0	0	0
Material for recycling	kg	0	0	9.28E-04
Materials for energy recovery	kg	0	0	0
Exported energy, electricity	MJ	0	0	0
Exported energy, thermal	MJ	0	0	0

• Additional Information

By-product has been generated by the production process.

During manufacturing, calcium carbonate and deka purge are produced as by product. Therefore, calcium carbonate and deka purge have been excluded from system boundaries, and mass allocation is proceeded.

Manufacturing data, raw materials and energy consumption are allocated for two main products (Natural Soda Ash and sodium bicarbonate) and three by-product (calcium carbonate, deka purge and salt), by using mass allocation.

It is not possible to exact divide the unit process into two or more sub-processes and collecting the environmental data related to Natural Soda Ash and sodium bicarbonate separately. That means mass allocation obtained for Natural Soda Ash and sodium bicarbonate. Eti Soda cannot monitor and record raw material and energy consumptions for products and by products separately.

• References

- ISO 14040: 2006 Environmental management -- Life cycle assessment -- Principles and framework
- ISO 14044: 2006 Environmental management -- Life cycle assessment -- Requirements and guidelines
- ISO 14025: 2006 Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures
- The International EPD® System / www.environdec.com
- The International EPD® System / The General Programme Instructions / http://www.environdec.com/tr/The-International-EPD-System/General-Programme-Instructions/
- he International EPD® System / PCR Basic chemicals v1.1.1 https://api.environdec.com/api/v1/EPDLibrary/Files/e07abf16-6efc-4abd-a2d8-08db196e9a1c/Data
- Ecoinvent 3.9.1 / http://www.ecoinvent.org/
- SimaPro LCA Software / https://simapro.com/
- Eti Soda / http://www.etisoda.com

• Contact Information

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