

Environmental Product Declaration

In accordance with ISO 14025



Owner of the declaration:
Mesta AS

Product name:
De-icing salt - Sodium chloride in bulk (NaCl) from sea salt

Declared unit:
1 kg Sodium chloride in bulk (NaCl)

Product category /PCR:
Basic Chemicals 2021:03 v.1.1 (Environdec 2021).

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-4159-3399-EN

Registration Number:
NEPD-4159-3399-EN

Issue date:
02.02.2023

Valid to: 02.02.2028

ver-091024

General information

Product:

Sodium chloride in bulk (NaCl) from sea salt –
De-icing salt

Program holder:

The Norwegian EPD Foundation
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Phone: +47 23 08 80 00
E-mail: post@epd-norge.no

Declaration Number:

NEPD-4159-3399-EN

This declaration is based on Product

Category Rules:

Basic Chemicals 2021:03 v.1.1 (Environdec 2021)

Statements:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer, life cycle assessment data and evidence.

Declared unit:

1 kg sodium chloride (NaCl) in bulk

Declared unit with option:

1 kg sodium chloride (NaCl) in bulk, delivered to storage, stored, and transported to customer

Verification:

Independent verification of the declaration and data, according to ISO14025:2010

Internal

External



Alexander Borg, Asplan Viak AS

Owner of the declaration:

Mesta AS
Contact person: Bjørn E. Heggedal
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Manufacturer:

Mesta AS

Place of production:

Spain

Management system:

ISO 9001:2015
ISO 14001:2015
ISO 45001:2018

Organisation no:

992 804 440

Issue date:

02.02.2023

Valid to:

02.02.2028

Year of study:

2022


Comparability:

EPDs from other programmes than The Norwegian EPD Foundation may not be comparable.

The EPD has been worked out by:

Ghazal Moshiri and Julie Lyslo Skullestad,
Aase Teknikk AS

Approved



Manager of EPD Norway

Product

Product description:

Sodium chloride produced from sea salt and delivered in bulk. Sea salt is a natural mineral extracted from salty water by letting the sun and wind evaporate the water in a series of open ground basins (ponds). The salt is used for de-icing of roads.

Product specification:

Materials	kg	%
Sodium chloride anhydride	1	100

Technical data:

	Sodium chloride anhydride
Formula	NaCl (99-100%)
CAS	7647-14-5
CPC ¹	3424 (Basic inorganic chemicals) (Salts of metals)
HS ²	250100

- 1) Central product Classification, UN
- 2) Harmonized System customs code

Market:

Norway

LCA: Calculation rules

Declared unit:

1 kg sodium chloride delivered in bulk

Allocation:

The allocation is made in accordance with the provisions of PCR for Basic Chemicals 2021:03 v.1.1 and EN 15804. Allocation for co-products is avoided where possible. Where allocation has been necessary, incoming energy and water and waste production in-house has been allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to the user of the recycled material.

Data quality:

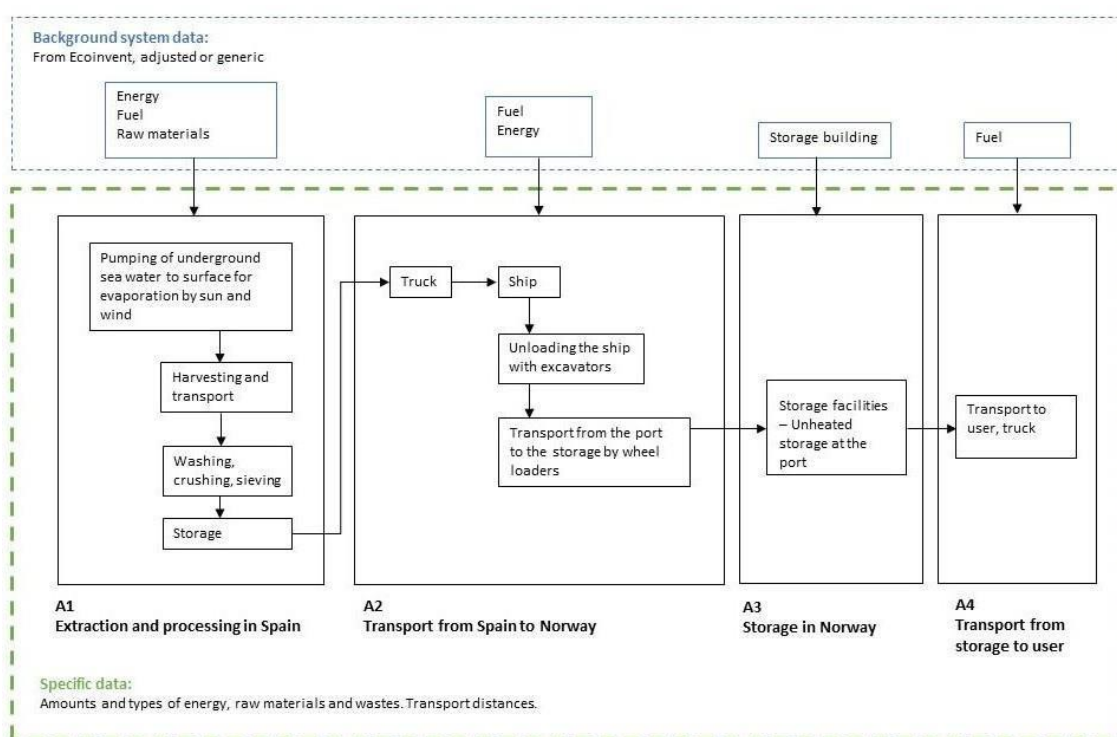
The data quality is in accordance with the guidelines for use of specific and generic data given by PCR for Basic Chemicals 2021:03 v.1.1 and EN 15804. The data used fulfils the requirements for technological, geographical, and temporal representativeness/coverage of data.

Data for resource use, waste, and transport in A1-A3 is based on specific data. The collected data is representative of the production year in 2022. Generic data is obtained from Ecoinvent v3.7.1 (2021) and SimaPro v9.3. All generic data is < 10 years old. Characterisation factors from EN15804:2012 + A2 2019.

Resources	Source	Data quality	Year
Foreground system data in A1: Use of energy, raw materials and other resources for extraction, processing, and internal transport	Producer in Spain and supplier (Mesta AS)	Very good: Specific data for salt extraction and processing in Spain	2022
Background system data in A1	Producer in Spain and supplier (Mesta AS) + Ecoinvent	Good to very good: Specific data where this exists, supplied with generic data from Ecoinvent, representable for or adjusted to geographic area and correct technology.	2022 for specific, Ecoinvent: v. 7.3.1 (2021)
Foreground system data in A2 and A3: Transport distances, vessel types and storage facilities	Supplier : Mesta AS	Very good: Specific data for transport to storage	2022
Background system data in A2 and A3:	Ecoinvent	Good: Generic data from Ecoinvent, representable for or adjusted to geographic area and correct technology.	Ecoinvent: v. 7.3.1 (2021)

System boundary:

A1, A2, A3, A4



Cut-off criteria:

All major raw materials and all the essential energy use is included. The production process for raw materials and energy flows that are included with very small amounts (<1%) are not included. This cut-off rule does not apply for hazardous materials and substances.

LCA: Scenarios and additional technical information

The following information describe the scenarios for module A4, which represents transport from storage in Norway to customer. Average transport distances from storage to customer are assumed to be 48,6 km.

Transport from the storage in Skien to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/tkm)
Trailer	50 %	30 t, Euro 6	48,6	diesel	0,636

LCA: Results

Results are shown per declared unit, 1 kg of salt.

System boundaries (X=included, MND= module not declared, MNR=module not relevant)

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	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
X	X	X	X	MNR	MND	MNR	MNR	MNR	MNR	MND	MND	MNR	MNR	MNR	MNR	MNR	

Core environmental impact indicators – Bulk salt from storage in Skien

Indicator	Unit	A1	A2	A3	A1-A3	A4
GWP-total	kg CO2 eq.	3,64E-03	3,82E-02	1,43E-03	4,33E-02	6,72E-03
GWP-fossil	kg CO2 eq.	3,63E-03	3,82E-02	1,65E-03	4,35E-02	6,71E-03
GWP-biogenic	kg CO2 eq.	2,87E-06	7,69E-06	-2,25E-04	-2,14E-04	7,81E-06
GWP-LULUC	kg CO2 eq.	2,96E-07	3,10E-05	1,48E-06	3,28E-05	1,10E-06
ODP	kg CFC11 eq.	7,85E-10	7,71E-09	1,22E-10	8,62E-09	9,44E-10
AP	mol H ⁺ eq.	3,78E-05	1,04E-03	1,67E-05	1,09E-03	1,17E-05
EP-freshwater	kg P eq.	1,24E-08	1,67E-07	4,43E-08	2,24E-07	2,41E-08
EP-marine	kg N eq.	1,67E-05	2,36E-04	2,41E-06	2,55E-04	2,58E-06
EP-Terrestrial	mol N eq.	1,83E-04	2,63E-03	6,11E-05	2,87E-03	2,87E-05
POCP	kg NMVOC eq.	5,03E-05	6,93E-04	7,64E-06	7,51E-04	1,02E-05
ADP-M&M	kg Sb eq.	1,84E-09	6,67E-08	3,40E-08	1,03E-07	1,14E-08
ADP-fossil	MJ	5,02E-02	4,95E-01	1,71E-02	5,62E-01	6,17E-02
WDP	m ³	1,19E-04	9,95E-04	4,46E-04	1,56E-03	1,36E-04

GWP-total: Global Warming Potential; **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 freshwater end compartment; **EP-terrestrial:** Eutrophication potential, Accumulated Exceedance; **POCP:** Formation potential of tropospheric ozone; **ADP-M&M:** Abiotic depletion potential for non-fossil resources (minerals and metals); **ADP-fossil:** Abiotic depletion potential for fossil resources; **WDP:** Water deprivation potential, deprivation weighted water consumption

Additional environmental impact indicators– Bulk salt from storage in Skien

Indicator	Unit	A1	A2	A3	A1-A3	A4
PM	Disease incidence	9,98E-10	1,39E-09	1,93E-10	2,58E-09	4,00E-10
IRP	kBq U235 eq.	2,14E-04	2,13E-03	4,75E-05	2,39E-03	2,70E-04
ETP-fw	CTUe	2,87E-02	3,13E-01	3,85E-02	3,81E-01	4,79E-02
HTP-c	CTUh	1,40E-12	2,86E-11	3,85E-12	3,39E-11	1,53E-12
HTP-nc	CTUh	2,03E-11	2,06E-10	2,94E-11	2,55E-10	6,67E-11
SQP	Dimensionless	6,51E-03	9,26E-02	7,47E-02	1,74E-01	3,43E-02

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

Classification of disclaimers to the declaration of core and additional environmental impact indicators

ILCD classification	Indicator	Disclaimer
ILCD type / level 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
	Acidification potential, Accumulated Exceedance (AP)	None
ILCD type / level 2	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
ILCD type / level 3	Potential Human exposure efficiency relative to U235 (IRP)	1
	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 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	
<p>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.</p> <p>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 experienced with the indicator</p>		

Resource use - Bulk salt from storage in Skien

Parameter	Unit	A1	A2	A3	A1-A3	A4
RPEE	MJ	2,71E-04	3,87E-03	5,52E-03	9,67E-03	6,67E-04
RPEM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	2,71E-04	3,87E-03	5,52E-03	9,67E-03	6,67E-04
NRPE	MJ	5,02E-02	4,95E-01	1,71E-02	5,62E-01	6,17E-02
NRPM	MJ	1,22E-05	0,00E+00	0,00E+00	1,22E-05	0,00E+00
TRPE	MJ	5,02E-02	4,95E-01	1,71E-02	5,62E-01	6,17E-02
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m ³	4,04E-06	3,48E-05	1,38E-05	5,26E-05	5,23E-06

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non-renewable primary energy resources used as energy carrier; NRPM Non-renewable primary energy resources used as materials; TRPE 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; W Use of net fresh water

End of life – Waste – Bulk salt from storage in Skien

Parameter	Unit	A1	A2	A3	A1-A3	A4
HW	kg	1,35E-07	5,41E-07	2,04E-07	8,80E-07	1,62E-07
NHW	kg	6,30E-05	3,20E-03	2,01E-03	5,27E-03	2,26E-03
RW	kg	3,47E-07	3,43E-06	5,59E-08	3,84E-06	4,27E-07

HW Hazardous waste disposed; NHW Non-hazardous waste disposed; RW Radioactive waste disposed

End of life – Output Flows – Bulk salt from storage in Skien

Parameter	Unit	A1	A2	A3	A1-A3	A4
CR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	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
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example: $9,0 \text{ E-03} = 9,0 \cdot 10^{-3} = 0,009$

Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Enhet	Verdi
Biogenic carbon content in product	kg C	0
Biogenic carbon content in the accompanying packaging	kg C	Not relevant*

*The product is transported in bulk, with no packaging

Additional Norwegian requirements

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

There is no direct electricity use in A1-A3. Diesel is used for pumps, machineries, and internal transport in A1. Wind and sun are used to evaporate the sea water. A3 only includes a non-heated, cold storage with no direct energy usage.

Hazardous substances

- The product contains no substances given by the REACH Candidate list or the Norwegian priority list.
- The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- The product contains dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskriften, Annex III), see table.

Name	CAS no.	Amount

Indoor environment

Not relevant






Additional Information

GWP values for 1 kg of sodium chloride delivered in bulk from additional storage locations are shown in the table below.

Storage location	Unit	GWP values A1-A3			
		GWP-total	GWP-fossil	GWP-biogenic	GWP-LULUC
Arendal, Norway	kg CO2 eq.	4,08E-02	4,10E-02	-2,12E-04	3,07E-05
Oslo, Norway	kg CO2 eq.	4,33E-02	4,35E-02	-2,14E-04	3,28E-05

Bibliography

ISO 14025:2010	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines
EN 15804:2012+A2:2019	Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products.
Environdec 2021.	Basic Chemicals 2021:03 v.1.1.
ISO 9001:2015	Quality management systems – Requirements
ISO 14001:2015	Environmental management systems — Requirements with guidance for use
ISO 45001:2018	Occupational health and safety management systems— Requirements with guidance for use
Moshiri and Skullestad (2022)	LCA-report for sodium chloride from sea salt, Aase Teknikk AS

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