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The Norwegian EPD Foundation

# ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

| | |
|---|---|
| Owner of the declaration: | Isola AS |
| Program operator: | The Norwegian EPD Foundation |
| Publisher: | The Norwegian EPD Foundation |
| Declaration number: | NEPD-2506-1245-EN |
| Registration number: | NEPD-2506-1245-EN |
| ECO Platform reference number: | - |
| Issue date: | 10.11.2020 |
| Valid to: | 10.11.2025 |

# Mestertekk Kombi

## Isola AS

www.epd-norge.no

# General information

**Product:**

Mestertekk Kombi

**Owner of the declaration:**

Isola AS
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**Program operator:**

The Norwegian EPD Foundation
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**Manufacturer:**

Isola AS

**Declaration number:**

NEPD-2506-1245-EN

**Place of production:**

Isola AS Fabrikk Eidanger, Prestemoen 9, 3946 Porsgrunn

**ECO Platform reference number:**

**Management system:**

ISO 9001 Certificate No: QSC-6011

**This declaration is based on Product Category Rules:**

CEN Standard EN 15804:2012+A1:2013 serves as core PCR
NPCR 022:2018 Part B for Roof waterproofing

**Organisation no:**

928 764 745

**Statement of liability:**

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

**Issue date:** 10.11.2020

**Valid to:** 10.11.2025

**Declared unit:**

1 m2 Mestertekk Kombi

**Year of study:**

2020

**Declared unit (cradle to gate) with option:**

A1,A2,A3,A4,A5,C1,C2,C3,C4,D

**Comparability:**

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

**Functional unit:**

**Author of the Life Cycle Assessment:**

The declaration is developed using eEPD v4.0 from LCA.no
Approval:
Company specific data are:

| | |
|---|---|
| Collected/registered by: | Morten Schelver |
| Internal verification by: | Trond Risberg |

**Verification:**

Independent verification of data, other environmental information and the declaration according to ISO14025:2010, § 8.1.3 and § 8.1.4

External

Third party verifier:

Sign

Michael M. Jenssen

(Independent verifier approved by EPD Norway)

**Approved:**

Sign

Håkon Hauan
Managing Director of EPD-Norway

# Product

**Product description:**

This is a product specific EPD for Isola Mestertekk kombi. Mestertekk kombi is a one-layer roofing sheet for sloping and flat roofs, new built and rehabilitation.

**Product specification**

The product is made of natural bitumen free of tar, combined with thermoplastic elastomer, natural filler and sprinkle for UV protection and micrometer-thin foil. Raw materials are mixed separately at a specific range of temperature and successively reinforced with polyester fleece or glass mat by impregnation. After calendaring and cooling, the roofing sheet is finished with light weight plastic films or slate granules. Products have tacky edges to ensure a continuous water protecting layer, these edges are protected by siliconized PE, PP or PET films.

| Materials | % |
|---|---|
| Additives | 5,22 |
| Bitumen | 48,93 |
| Fire-, heat- and UV-stabilizers | 1,22 |
| Raw materials, Mineral | 35,69 |
| Textile - Polyester (PE) | 4,80 |
| Packaging - Pallet | 2,28 |
| Packaging - Plastic | 0,10 |
| Polypropylene (PP) | 0,12 |
| Packaging - Paper | 1,61 |
| Other | 0,02 |

**Technical data:**

Weight: 5,2 kg/m²
Thickness: 4,1 mm

**Market:**

Norway and Europe

**Reference service life, product**

30 years

**Reference service life, building**

60 years

# LCA: Calculation rules

**Declared unit:**

1 m2 Mestertekk Kombi

**Cut-off criteria:**

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

**Allocation:**

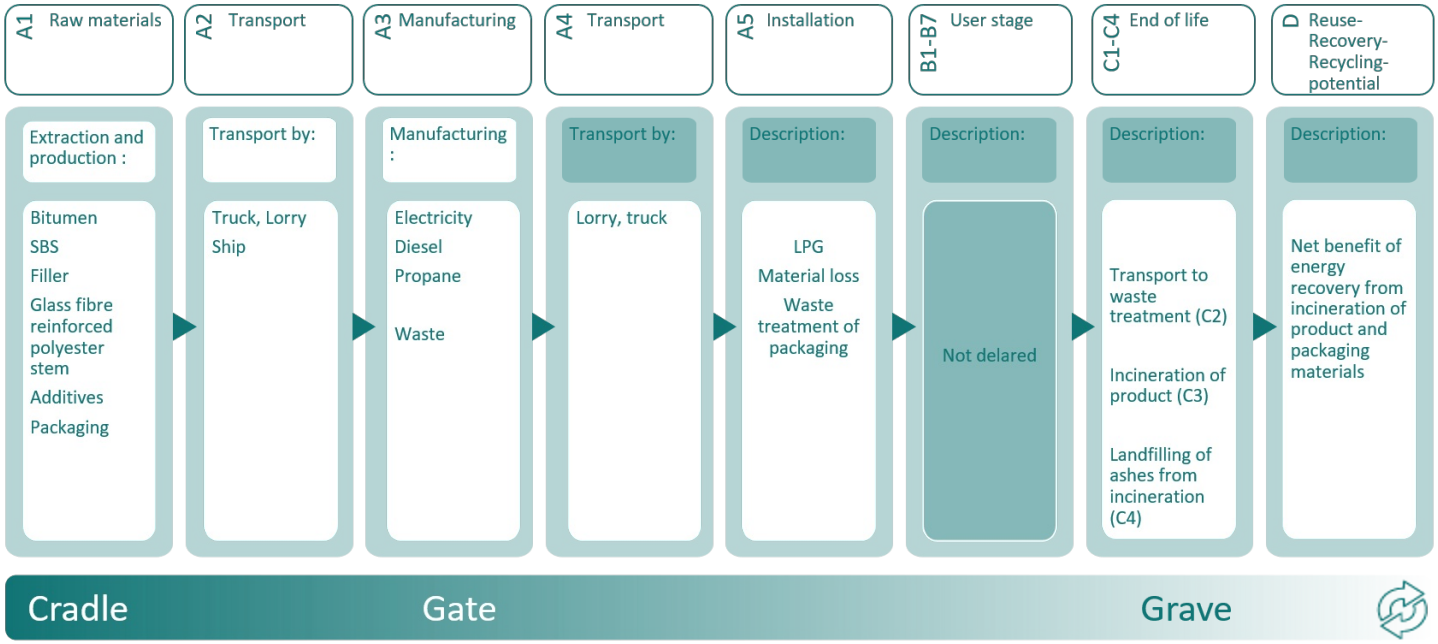
The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

**Data quality:**

Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other LCA databases. The data quality of the raw materials in A1 is presented in the table below.

| Materials | Source | Data quality | Year |
|---|---|---|---|
| Textile - Polyester (PE) | S-P-00172 | EPD | 2016 |
| Raw materials, Mineral | NEPD-1584-609 | EPD | 2017 |
| Additives | ecoinvent 3.6 | Database | 2019 |
| Fire-, heat- and UV-stabilizers | ecoinvent 3.6 | Database | 2019 |
| Other | ecoinvent 3.6 | Database | 2019 |
| Packaging - Pallet | ecoinvent 3.6 | Database | 2019 |
| Packaging - Paper | ecoinvent 3.6 | Database | 2019 |
| Packaging - Plastic | ecoinvent 3.6 | Database | 2019 |
| Polypropylene (PP) | ecoinvent 3.6 | Database | 2019 |
| Raw materials, Mineral | ecoinvent 3.6 | Database | 2019 |
| Bitumen | Eurobitume LCI for bitumen | LCA study | 2019 |

**System boundary:**




**Additional technical information:**

## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

The product is installed in A5 using LPG and assuming 2 % material loss. The packaging is waste treated. Module C1 is included but assumed to be zero, since the product is only a minor part of a total building demolition. The product is assumed to be incinerated with energy recovery in C3. The benefit of substituting energy (heat and electricity) is included in module D.

**Transport from production place to user (A4)**

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy consumption | Unit | Value (l/t) |
|---|---|---|---|---|---|---|
| Truck | 38,8 % | Lastebil, EURO6 | 300 | 0,043626 | l/tkm | 13,09 |
| Railway | | | | | l/tkm | |
| Boat | | | | | l/tkm | |
| Other Transportation | | | | | l/tkm | |

**Assembly (A5)**

| . | Unit | Value |
|---|---|---|
| Auxiliary | kg | |
| Water consumption | $m^3$ | |
| Electricity consumption | kWh | |
| Other energy carriers | MJ | 0,1700 |
| Material loss | kg | |
| Output materials from waste treatment | kg | 0,2245 |
| Dust in the air | kg | |
| VOC emissions | kg | |

**End of Life (C1, C3, C4)**

| . | Unit | Value |
|---|---|---|
| Hazardous waste disposed | kg | |
| Collected as mixed construction waste | kg | |
| Reuse | kg | |
| Recycling | kg | |
| Energy recovery | kg | 5,2000 |
| To landfill | kg | 0,1501 |

**Transport to waste processing (C2)**

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy consumption | Unit | Value (l/t) |
|---|---|---|---|---|---|---|
| Truck | 38,8 % | Lastebil, EURO6 | 300 | 0,043626 | l/tkm | 13,09 |
| Railway | | | | | l/tkm | |
| Boat | | | | | l/tkm | |
| Other Transportation | | | | | l/tkm | |

..

**Benefits and loads beyond the system boundaries (D)**

| . | Unit | Value |
|---|---|---|
| Substitution of electricity, in Norway (MJ) | MJ/DU | 12,65 |
| Substitution of thermal energy, district heating, in Norway (MJ) | MJ/DU | 87,78 |

## LCA: Results

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

| Product stage | | | Construction installation stage | | User stage | | | | | | | End of life stage | | | | . | Beyond the system bondaries |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | X | MND | MND | MND | MND | MND | MND | MND | X | X | X | X | . | X |

### Environmental impact

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| GWP | kg $CO_2$ -eq | 2,99E+00 | 2,49E-01 | 7,76E-01 | 0 | 2,49E-01 | 1,22E+01 | 4,37E-02 | -8,45E-01 |
| ODP | kg CFC11 -eq | 1,44E-07 | 4,68E-08 | 1,12E-07 | 0 | 4,68E-08 | 4,69E-08 | 6,24E-09 | -1,83E-07 |
| POCP | kg $C_2H_4$-eq | 1,25E-03 | 3,76E-05 | 2,23E-04 | 0 | 3,76E-05 | 1,00E-04 | 6,32E-06 | -7,78E-04 |
| AP | kg $SO_2$ -eq | 1,56E-02 | 5,84E-04 | 2,03E-03 | 0 | 5,84E-04 | 3,22E-03 | 1,55E-04 | -4,12E-03 |
| EP | kg $PO_4^{3-}$ -eq | 4,17E-03 | 7,67E-05 | 3,21E-04 | 0 | 7,67E-05 | 4,80E-04 | 2,77E-05 | -1,07E-03 |
| ADPM | kg Sb -eq | 2,17E-06 | 7,72E-07 | 3,22E-07 | 0 | 7,72E-07 | 6,44E-07 | 1,04E-09 | -7,01E-06 |
| ADPE | MJ | 1,72E+02 | 3,75E+00 | 1,24E+01 | 0 | 3,75E+00 | 1,61E+00 | 5,76E-01 | -1,04E+01 |

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

## Resource use

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| RPEE | MJ | 4,74E+00 | 5,54E-02 | 3,41E+00 | 0 | 5,54E-02 | 1,18E-01 | 2,10E-02 | -4,37E+01 |
| RPEM | MJ | 1,81E+01 | 0,00E+00 | 3,62E-01 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| TPE | MJ | 2,66E+01 | 5,54E-02 | 3,84E+00 | 0 | 5,54E-02 | 1,18E-01 | 2,10E-02 | -4,37E+01 |
| NRPE | MJ | 4,91E+01 | 3,84E+00 | 1,03E+01 | 0 | 3,84E+00 | 1,83E+00 | 6,06E-01 | -2,36E+01 |
| NRPM | MJ | 1,27E+02 | 0,00E+00 | 2,54E+00 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| TRPE | MJ | 1,76E+02 | 3,84E+00 | 1,28E+01 | 0 | 3,84E+00 | 1,83E+00 | 6,06E-01 | -2,36E+01 |
| SM | kg | 2,15E-01 | 0,00E+00 | 4,30E-03 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | MJ | 4,26E-04 | 0,00E+00 | 8,51E-06 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -2,49E-03 |
| NRSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| W | $m^3$ | 1,70E-02 | 7,27E-04 | 1,56E-03 | 0 | 7,27E-04 | 7,27E-03 | 5,72E-04 | -7,04E-03 |

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

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

## End of life - Waste

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| HW | kg | 6,66E+00 | 2,26E-06 | 1,33E-01 | 0 | 2,26E-06 | 6,17E-06 | 8,17E-07 | -2,19E-05 |
| NHW | kg | 1,40E+02 | 2,06E-01 | 2,88E+00 | 0 | 2,06E-01 | 8,08E-02 | 2,09E+00 | -4,80E-01 |
| RW | kg | 1,51E-03 | 2,64E-05 | 8,96E-05 | 0 | 2,64E-05 | 4,78E-06 | 3,69E-06 | -2,21E-04 |

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

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

## End of life - Output flow

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| CR | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MR | kg | 3,99E-03 | 0,00E+00 | 7,98E-05 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MER | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| EEE | MJ | 3,63E-02 | 0,00E+00 | 1,91E-01 | 0 | 0,00E+00 | 1,25E+01 | 0,00E+00 | 0,00E+00 |
| ETE | MJ | 3,77E-01 | 0,00E+00 | 2,10E+00 | 0 | 0,00E+00 | 8,57E+01 | 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 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

## Additional Norwegian requirements

**Greenhouse gas emissions from the use of electricity in the manufacturing phase**

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

| Electricity mix | Data source | Amount | Unit |
|---|---|---|---|
| El-mix, Norway (kWh) | ecoinvent 3.4 | 31,04 | g CO2-ekv/kWh |

**Dangerous substances**

The product contains substances given by the REACH Candidate list and the Norwegian priority list that are less than 0,1 % by weight.

**Indoor environment**

Not relevant, the product is intended for outdoor use.

## 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+A1:2013 Environmental product declaration - Core rules for the product category of construction products.
ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.
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Ruttenborg et al., (2020) EPD generator for Isola AS - Background information for customer application and LCA data, LCA.no report number 05.20
NPCR Part A: Construction products and services. Ver. 1.0. April 2017, EPD-Norge.
NPCR 022 Part B for Roof waterproofing. Ver. 2.0 June 2018, EPD-Norge.



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