

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

| | |
|--------------------------------|------------------------------|
| Owner of the declaration: | Jotun A/S |
| Program operator: | The Norwegian EPD Foundation |
| Publisher: | The Norwegian EPD Foundation |
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| ECO Platform reference number: | - |
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| Valid to: | 02.09.2027 |

Jotashield Alkali Resistant Primer(TR), Jotun Boya San. ve Tic. A.S.

Jotun A/S



www.epd-norqe.no



General information

Product:

Jotashield Alkali Resistant Primer(TR), Jotun Boya San. ve Tic. A.S.

Program operator:

The Norwegian EPD Foundation
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Declaration number:

NEPD-3701-2647-EN

ECO Platform reference number:**This declaration is based on Product Category Rules:**

CEN Standard EN 15804:2012+A1:2013 serves as core PCR.
IBU PCR Part B for coatings with organic binders

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.

Declared unit:

1 kg Jotashield Alkali Resistant Primer(TR), Jotun Boya San. ve Tic. A.S.

Declared unit with option:

A1,A2,A3

Functional unit:**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



Senior Research Scientist, Anne Rønning

(Independent verifier approved by EPD Norway)

Owner of the declaration:

Jotun A/S
Contact person: Cleo Alves Otterbech
Phone: +47 33 45 70 00
e-mail: cleo.otterbech@jotun.no

Manufacturer:

Jotun Boya San. ve Tic. A.S.

Place of production:

Jotun Boya San. ve Tic. A.S.
Organize Sanayi Bölgesi Gazi Osmanpasa Mahallesi, Ulusoy Caddesi No.6, Cerkezköy
59500 Tekirdag
Turkey

Management system:

ISO 9001:2008 Certificate nr: 0044915-00, ISO 14001:2004 Certificate nr 0044914-00, ISO 45001: 2018 Certificate nr: 0098139

Organisation no:

923 248 579

Issue date: 02.09.2022**Valid to:** 02.09.2027**Year of study:**

2022

Comparability:

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

Author of the Life Cycle Assessment:

The declaration is developed using EPD tool lca.tools ver EPD2020.11, developed by LCA.no AS
Approval:

Collected/registered by: Ragnhild Bjerkvik Alnes

Internal verification by: Cleo Alves Otterbech

Approved:

Sign



(Managing Director EPD-Norway)

Product

Product description:

Jotashield Alkali Resistant Primer(TR) is a superior quality alkali resistant water based primer. It is based on acrylic copolymer emulsion.

The declared product provides an excellent base for subsequent coats. It has excellent penetration into the substrate thereby providing the best adhesion.

Jotashield Alkali Resistant Primer(TR) offers best protection against alkali attack and is ideal for priming exterior surfaces.

Product specification

For information on Green Building Standard credits, see "Additional Information" on page 4.

The material composition of the declared mixed product is given below:

| Materials | % |
|------------------|---------|
| Filler | 25 - 50 |
| Water | 25 - 50 |
| Binder | 5 - 10 |
| Titanium dioxide | 3 - 5 |
| Additive | 1 - 3 |
| Solvent | 1 - 3 |
| Biocide | <0.1 |
| Pigment | <0.1 |

Technical data:

Specific gravity: 1.5 g/cm³
Solids by volume: 37 ± 2 volume%

Film thickness per coat:
Dry film thickness: 25 - 35 µm
Wet film thickness: 70 - 95 µm

Theoretical spreading rate: 14.8 - 10.6 m²/l

The most representative and worst case formulation produced at the manufacturing site is chosen for this EPD. For products with a selection of colours, this will be the formulation with the highest content of titanium dioxide.

The product packaging is based on an average sized metal packaging, including secondary packaging such as pallets and plastic wrapping.

For safety, health and environmental conditions, see the Safety Data Sheet for the declared product on www.jotun.com.

For information on technical data, application and use of the product, see the Technical Data Sheet for the declared product on www.jotun.com.

Market:

Global. Transport to market is not included in this EPD.

Reference service life, product

The reference service life of the product is highly dependent on the conditions of use.

Estimated service life, object

The coated object is not declared.

LCA: Calculation rules

Declared unit:

1 kg Jotashield Alkali Resistant Primer(TR), Jotun Boya San. ve Tic. A.S.

Cut-off criteria:

All major raw materials and essential energy is included. The production process for raw materials and energy flows with very small amounts (less than 0.1 % dry matter) are not included. In total, more than 99% of the material input is included. These cut-off criteria do not apply for non-energy related emissions (such as wastes, hazardous materials and substances).

Data quality:

The CEPE database is used as basis for the raw material composition. Specific data for the product composition and raw material amounts has been provided by the manufacturer and represents the production of the declared product. Production site data was collected in 2015. Representative data fromecoinvent v3.2 was used for other processes. The data quality for the material input in A1 is presented in tabular form.

| Materials | Source | Data quality | Year |
|----------------------|-----------------------|--------------|------|
| Additives | CEPE RM Database v3.0 | Database | 2016 |
| Binders and Resins | CEPE RM Database v3.0 | Database | 2016 |
| Others | CEPE RM Database v3.0 | Database | 2016 |
| Pigments and Fillers | CEPE RM Database v3.0 | Database | 2016 |
| Solvents | CEPE RM Database v3.0 | Database | 2016 |
| Packaging | Østfoldforskning | Database | 2017 |

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy, water and waste production in-house is primarily allocated equally among all products through mass allocation. Specific allocation was performed for certain waste flows according to information provided by the site manager. VOC emissions have been allocated entirely to the production of solvent based paints. 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.

System boundary:

The flowchart in the figure below illustrates the system boundaries for the analysis, in accordance with the modular principle on EN 15804. The analysis is a cradle-to-gate (A1-A3) study.



Additional information:

The declared product contributes to Green Building Standard credits by meeting the following specific requirements:

LEED® v4 (2013)

EQ credit: Low emitting materials

- Healthcare and schools: Exterior applied products: VOC content for Primers, Sealers and Undercoaters (100 g/l) (CARB(SCM)2007).

LEED®v4.1 (2020)/LEED®v4 (2013)

MR credit: Building product disclosure and optimization

- Material Ingredients, Option 2: Material Ingredient Optimization, International Alternative Compliance Path - REACH optimization: Fully inventoried chemical ingredients to 100 ppm and not containing substances on the REACH Authorization list – Annex XIV, the Restriction list – Annex XVII and the SVHC candidate list.

- Environmental Product Declarations: Product-specific Type III EPD (ISO 14025;21930, EN 15804) for Jotun Boya San. ve Tic. A.S.

BREEAM® International (2021)/BREEAM® International (2016)

- Mat 01: Product-specific Type III EPD (ISO 14025;21930, EN 15804) for Jotun Boya San. ve Tic. A.S.

Additional certificates and approvals may be available on request.

LCA: Scenarios and additional technical information

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

This is a cradle to gate (A1-A3) EPD with no declared modules after the factory gate. Transport from place of production to user (A4) has to be calculated by the user.

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 | | | | | l/tkm | |
| Railway | | | | | l/tkm | |
| Boat | | | | | l/tkm | |
| Other Transportation | | | | | l/tkm | |

Assembly

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

Use (B1)

| | Unit | Value |
|--|------|-------|
| | | |

Maintenance (B2)/Repair (B3)

| | Unit | Value |
|-------------------------|----------------|-------|
| Maintenance cycle* | - | |
| Auxiliary | kg | |
| Other resources | kg | |
| Water consumption | m ³ | |
| Electricity consumption | kWh | |
| Other energy carriers | MJ | |
| Material loss | kg | |
| VOC emissions | kg | |

Replacement (B4)/Refurbishment (B5)

| | Unit | Value |
|---------------|------|-------|
| Replacement | kg | |
| Refurbishment | kWh | |

Operational energy (B6) and water consumption (B7)

| | Unit | Value |
|---------------------------|----------------|-------|
| Water consumption | m ³ | |
| Electricity consumption | kWh | |
| Other energy carriers | MJ | |
| Power output of equipment | kW | |

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 | |
| To landfill | kg | |

Transport to waste processing (C2)

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy consumption | Unit | Value (l/t) |
|----------------------|---------------------------------------|-----------------|-------------|-------------------------|-------|-------------|
| Truck | | | | | l/tkm | |
| Railway | | | | | l/tkm | |
| Boat | | | | | l/tkm | |
| Other Transportation | | | | | l/tkm | |

Scenarios after A1-A3 are not included

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 boundaries |
|---------------|-----------|---------------|---------------------------------|----------|------------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|------------------------------------|
| 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 | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND |

Environmental impact

| Parameter | Unit | A1 | A2 | A3 |
|-----------|--------------------------------------|----------|----------|----------|
| GWP | kg CO ₂ -eq | 1,25E+00 | 3,72E-02 | 4,63E-02 |
| ODP | kg CFC11 -eq | 8,27E-08 | 7,50E-09 | 2,02E-09 |
| POCP | kg C ₂ H ₄ -eq | 5,57E-04 | 9,34E-06 | 1,29E-05 |
| AP | kg SO ₂ -eq | 7,22E-03 | 2,76E-04 | 2,62E-04 |
| EP | kg PO ₄ ³⁻ -eq | 1,74E-03 | 4,97E-05 | 3,64E-04 |
| ADPM | kg Sb -eq | 1,86E-05 | 6,24E-08 | 3,07E-08 |
| ADPE | MJ | 1,69E+01 | 6,14E-01 | 8,11E-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 | A2 | A3 |
|-----------|----------------|----------|----------|----------|
| RPEE | MJ | 2,06E+00 | 1,00E-02 | 6,60E-02 |
| RPEM | MJ | 4,19E-01 | 2,43E-03 | 1,16E-03 |
| TPE | MJ | 2,48E+00 | 1,24E-02 | 6,71E-02 |
| NRPE | MJ | 1,84E+01 | 6,36E-01 | 8,18E-01 |
| NRPM | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| TRPE | MJ | 1,84E+01 | 6,36E-01 | 8,18E-01 |
| SM | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NRSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| W | m ³ | 1,72E-02 | 1,32E-04 | 1,63E-04 |

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 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

End of life - Waste

| Parameter | Unit | A1 | A2 | A3 |
|-----------|------|----------|----------|----------|
| HW | kg | 2,56E-05 | 2,94E-07 | 4,16E-07 |
| NHW | kg | 1,20E+00 | 4,73E-02 | 8,67E-02 |
| RW | kg | INA* | INA* | INA* |

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

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

*INA Indicator Not Assessed

End of life - Output flow

| Parameter | Unit | A1 | A2 | A3 |
|-----------|------|----------|----------|----------|
| CR | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MR | kg | 0,00E+00 | 0,00E+00 | 3,34E-03 |
| MER | kg | 0,00E+00 | 0,00E+00 | 8,35E-03 |
| EEE | MJ | INA* | INA* | INA* |
| ETE | MJ | INA* | INA* | INA* |

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 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

Additional 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 |
|---------------------------|-------------------------|--------|---------------|
| Electricity, Turkey (kWh) | ecoinvent 3.3 Alloc Rec | 696,97 | g CO2-ekv/kWh |

Dangerous substances

The product contains no substances given by the REACH Candidate list.

Indoor environment

Not applicable for externally applied products.

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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Vold et al (2017). EPD and LCA tool for Jotun - Technical description and background information, OR 01.17, Ostfold Research, Fredrikstad 2017.

CEPE v3.0 Raw materials LCI database for the European coatings and printing ink industries, May 2016.

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BREEAM International (2021): BREEAM International New Construction Technical Manual - SD250. Ver. 6.0 (2021).





BREEAM International (2016): BREEAM International New Construction Technical Manual - SD233. Ver. 2.0 (2017).

CARB SCM (2007): California Air Resources Board (CARB) Suggested Control Measure for Architectural Coatings.

LEED®v4.1 (2020): LEED® v4.1 for Building design and construction, U.S. Green Building Council®.

LEED®v4 (2013): LEED® v4 for Building design and construction, U.S. Green Building Council®.

REACH (2006): Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006. REACH Authorization list – Annex XIV, the Restriction list – Annex XVII and the SVHC candidate list.

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