

MEIDENSHA CORPORATION

Ester-filled transformer



Functional unit

Per 1 product

System boundary

☒ final products ☐ intermediate products

Main specifications of the product

Product category : Oil-filled transformers
Type of insulating oil: Palm fatty acid ester, rapeseed oil, soybean oil
Normative reference: JEC-2200-2014 Power transformers
Number of phases: 3
Connection: Y or Δ
Rated power: 1 to 30 MVA
Rated frequency (50 Hz, 60 Hz): 50 or 60 Hz
Assumed operation period: 30 years

The following specifications are based on customer order specifications. The specifications to be verified are as follows.
No-load loss: 11 kW
Energy consumption efficiency: 35.5 kW

Company Information

MEIDENSHA CORPORATION

ThinkPark Tower, 2-1-1 Osaki, Shinagawa-ku Tokyo,
141-6029 Japan URL : <https://www.meidensha.com/>

Registration#	JR-BT-24001E-A
PCR number	PA-302200-BT-04
PCR name	Transformer
Publication date	01 April 2025
Verification date	10 January 2025
Verification method	Product-by-product
Verification#	JV-BT-24001
Expiration date	09 January 2030
PCR review was conducted by:	
Approval date	01 September 2023
PCR review panel chair	Masayuki Kanzaki (Sustainable Management Promotion Organization)

Third party verifier*

Kengo Minamikawa

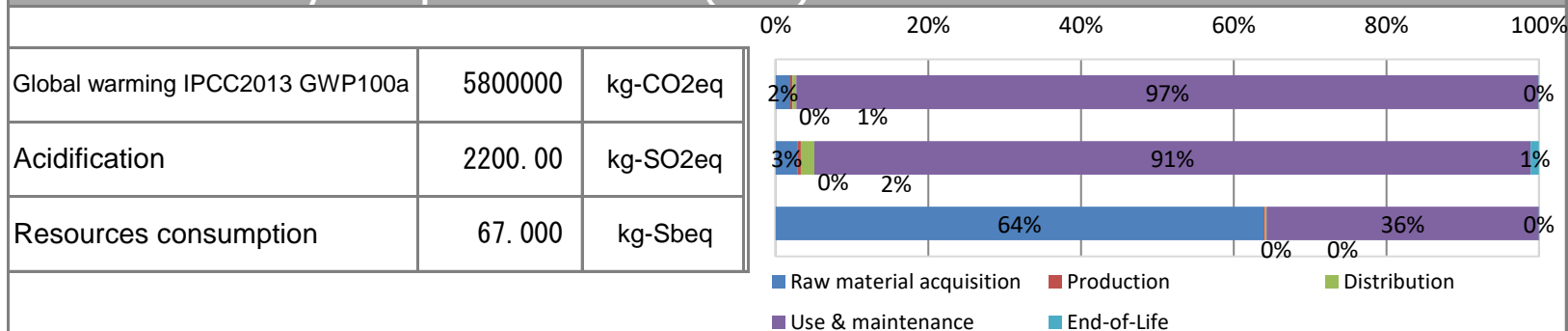
Independent verification of data & declaration in
accordance with ISO14025

☐ internal ☒ external

*Auditor's name is stated if system certification has been performed.

Registration number : JR-BT-24001E-A

1. Results of life cycle impact assessment (LCIA)



Parameter	stage	Unit	Total	Raw material acquisition	Production	Distribution	Use & maintenance	End-of-Life
Global warming IPCC2013 GWP100a		kg-CO ₂ eq	5.8E+06	1.1E+05	1.7E+04	2.9E+04	5.6E+06	4.2E+03
Ozone layer destruction		kg-CFC-11eq	5.5E-03	5.2E-03	1.9E-05	3.5E-07	2.5E-05	2.0E-04
Acidification		kg-SO ₂ eq	2.2E+03	6.2E+01	8.2E+00	3.8E+01	2.0E+03	2.3E+01
Urban area air pollution		kg-SO ₂ eq	9.2E+02	3.8E+01	3.5E+00	1.8E+01	8.5E+02	1.1E+01
Photochemical ozone		kg-C ₂ H ₄ eq	1.3E+02	6.5E-01	3.8E-01	7.6E-01	1.3E+02	4.1E-02
Toxic chemicals(cancer)		kg-C ₆ H ₆ eq	3.1E+02	2.8E+02	6.5E-02	1.4E-05	3.1E+01	6.3E-03
Toxic chemicals(chronic disease)		kg-C ₆ H ₆ eq	5.6E+00	9.1E-01	9.6E-03	2.0E-06	4.6E+00	9.2E-04
Aquatic toxicity		kg-C ₆ H ₆ eq	8.1E+03	1.0E+03	1.5E+01	3.1E-03	7.1E+03	1.4E+00
Biological toxicity		kg-C ₆ H ₆ eq	2.2E+05	4.4E+04	3.6E+02	7.5E-02	1.7E+05	3.4E+01
Eutrophication		kg-PO ₄ ³⁻ eq	6.4E-02	8.3E-03	2.3E-04	2.3E-05	3.7E-08	5.5E-02
Land use(Occupation)		m ² /year	1.8E+04	8.0E+03	3.1E+01	3.3E+02	9.6E+03	2.0E+02
Land use(Transformation)		m ² /year	3.6E+02	1.6E+02	6.2E-01	6.6E+00	1.9E+02	4.0E+00
Resources consumption		kg-Sbeq	6.7E+01	4.3E+01	1.4E-01	1.2E-01	2.4E+01	1.6E-02

2. Life cycle inventory analysis (LCI)

Parameter	Value	Unit
Non-renewable material resources	4.1E+04	kg
Non-renewable energy resources	2.3E+06	kg
Non-renewable energy resources	9.7E+07	MJ
Renewable material resources	2.7E+04	kg
Renewable primary energy	3.3E+06	MJ
Consumption of freshwater	6.7E+02	m ³
Emissions, carbon dioxide (fossil), air, unspecified	5.7E+06	kg
Resources, crude oil, 44.7 MJ/kg, ground, non-renewable energy resources	3.5E+05	kg
Emissions, Volatile Organic Compounds, air, unspecified	1.7E-03	kg

3. Material composition

Material	Value	Unit
Metallic Materials	67	%
Insulating Materials	31	%
Others	2	%

4. Waste to disposal

Parameter	Value	Unit
Hazardous waste		kg
Non-hazardous waste.	9.9E+03	kg
Treated MSW for landfill	0.0E+00	kg
Treated industrial waste for landfill	9.9E+03	kg

*Data derived from LCA and not assigned to the impact categories of LCIA

5. Additional explanation

6-1. Supplementary environmental information

6-2. Regulated hazardous substances

Substance	CAS No.	Reference to standards or regulations
Ethylbenzene	100-41-4	Pollutant Release and Transfer Register, Industrial Safety and Health Act, Fire Protection Law
4,4'-Diphenylmethane diisocyanate	101-68-8	Pollutant Release and Transfer Register, Industrial Safety and Health Act
Vinyl acetate	108-05-4	Industrial Safety and Health Act, Law Concerning the Examination and Regulation of Manufacture, etc of Chemical Substances
Methyl isobutyl ketone	108-10-1	Pollutant Release and Transfer Register, Industrial Safety and Health Act, Fire Protection Law
1,3,5-trimethylbenzene	108-67-8	Pollutant Release and Transfer Register, Industrial Safety and Health Act, Fire Protection Law
Toluene	108-88-3	Industrial Safety and Health Act, Law Concerning the Examination and Regulation of Manufacture, etc of Chemical Substances
Phenol	108-95-2	Industrial Safety and Health Act, Law Concerning the Examination and Regulation of Manufacture, etc of Chemical Substances
Ethylene glycol monoethyl ether	110-80-5	Pollutant Release and Transfer Register
n-Nonane	111-84-2	Industrial Safety and Health Act
Phthalic acid bis(2-ethylhexan-1-yl) phthalate	117-81-7	Pollutant Release and Transfer Register, Industrial Safety and Health Act, Fire Protection Law
Xylene	1330-20-7	Pollutant Release and Transfer Register, Industrial Safety and Health Act, Fire Protection Law
White spirit (Mineral spit)	—	Industrial Safety and Health Act
Titanium(IV) oxide	13463-67-7	Pollutant Release and Transfer Register, Industrial Safety and Health Act
Barium diboron tetraoxide	13701-59-2	Pollutant Release and Transfer Register, Industrial Safety and Health Act, Fire Protection Law
Epoxy resin	25068-38-6	Industrial Safety and Health Act
Titanium (IV) Oxide	3463-67-7	Industrial Safety and Health Act
Formaldehyde	50-00-0	Pollutant Release and Transfer Register, Industrial Safety and Health Act, Law Concerning the Examination and Regulation of Manufacture, etc of Chemical
1,2,3-trimethylbenzene	526-73-8	Pollutant Release and Transfer Register, Industrial Safety and Health Act
Cobalt naphthenate	61789-51-3	Industrial Safety and Health Act
Mineral spirit	64742-81-0, 64742-95-6	Industrial Safety and Health Act
Hydrodesulfurized heavy petroleum naphtha	64742-82-1	Pollutant Release and Transfer Register, Industrial Safety and Health Act
Solvent naphtha (petroleum), heavy aromatic	64742-94-5	Industrial Safety and Health Act
Light aromatic petroleum solvent naphtha	64742-95-6	Pollutant Release and Transfer Register, Industrial Safety and Health Act
Methanol	67-56-1	Industrial Safety and Health Act, Law Concerning the Examination and Regulation of Manufacture, etc of Chemical Substances
1-Butanol	71-36-3	Industrial Safety and Health Act
isobutyl alcohol	78-83-1	Industrial Safety and Health Act
2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester	868-77-9	Industrial Safety and Health Act, Law Concerning the Examination and Regulation of Manufacture, etc of Chemical Substances
Phenol resin	9003-35-4	Industrial Safety and Health Act, Law Concerning the Examination and Regulation of Manufacture, etc of Chemical Substances
Naphthalene	91-20-3	Pollutant Release and Transfer Register, Industrial Safety and Health Act, Fire Protection Law
1,2,4-trimethylbenzene	95-63-6	Pollutant Release and Transfer Register, Industrial Safety and Health Act, Fire Protection Law
1,2,4-trimethylbenzene	95-63-6	Pollutant Release and Transfer Register, Industrial Safety and Health Act, Fire Protection Law
Butanone oxime	96-29-7	Industrial Safety and Health Act



SuMPO EPD

Type III Environmental Declaration (EPD)

Registration number : JR-BT-24001E-A

Japan EPD Program by SuMPO

Sustainable Management Promotion Organization
14-8, Uchikanda 1-chome, Chiyoda-ku, Tokyo Japan
<https://ecoleaf-label.jp/>

Cumene	98-82-8	Industrial Safety and Health Act
Gasoline	-	Industrial Safety and Health Act

7. Assumptions of secondary data used

IDEA v2.1.3 and SuMPO Environmental Labeling Program registered intensity v1.13 were used.

8. Remarks

- For data quantification, please refer to PCR and Rules on quantification and declaration.
- Comparative assertion is permitted only when Rules on quantification and declaration are satisfied.
(Reference URL : <https://ecoleaf-label.jp/regulation/>)

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