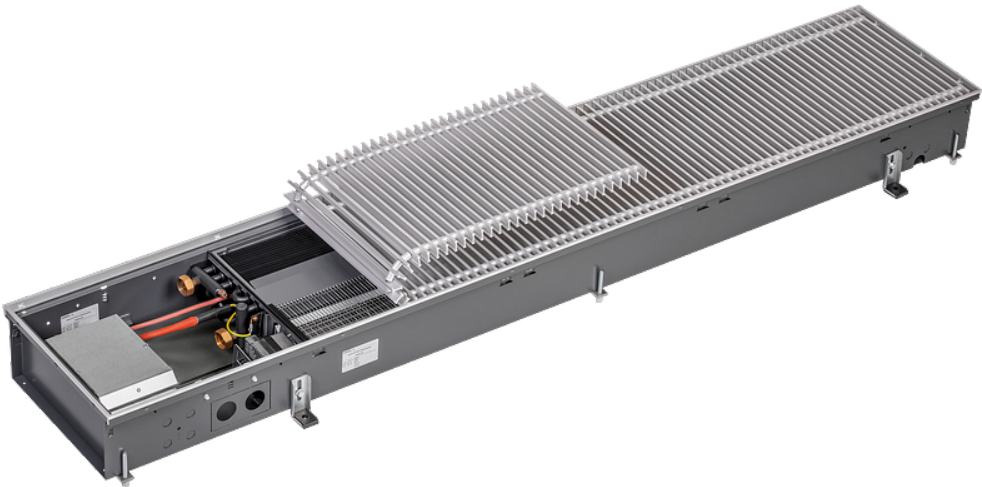




Environmental Product Declaration - (EPD)
Katherm HK E



The EPD data presented here is based on a verified EPD from the program holder EPD International AB. The data contained therein has been converted to the above-mentioned article number. (Verified EPD: EPD-IES-0012154)

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Basic data

impact category	unit	A1	A2	A3	A1-A3	A4	A5	B2	B3	B4	B6	C1	C2	C3	C4	D
GWP - Total	kg CO2 eq	1.14E+02	4.45E+00	1.89E+00	1.21E+02	7.38E+00	3.06E+00	3.06E-01	8.55E-02	1.67E+00	3.61E+02	0.00E+00	2.08E-01	4.94E+00	1.05E-01	-9.04E+01
GWP - fossil	kg CO2 eq	1.14E+02	4.45E+00	3.90E+00	1.22E+02	7.38E+00	6.22E-01	2.99E-01	6.74E-02	1.66E+00	3.61E+02	0.00E+00	2.08E-01	4.94E+00	1.04E-01	-8.93E+01
GWP - Biogenic	kg CO2 eq	-1.11E-01	0.00E+00	-2.01E+00	-2.12E+00	1.21E-03	2.44E+00	1.51E-03	1.39E-04	5.32E-03	2.17E-01	0.00E+00	7.00E-05	1.15E-04	2.95E-04	-2.38E-01
GWP - Luluc	kg CO2 eq	7.19E-01	2.15E-03	9.27E-03	7.31E-01	1.40E-03	4.28E-04	5.71E-03	1.81E-02	7.64E-03	4.27E-01	0.00E+00	1.02E-04	7.55E-05	7.59E-05	-9.89E-01
ODP	kg CFC-11 eq	8.93E-07	1.01E-07	3.78E-08	1.03E-06	1.29E-07	6.22E-09	1.00E-08	2.31E-09	2.27E-08	1.84E-05	0.00E+00	4.75E-09	2.08E-08	2.46E-09	-2.36E-06
AP	mol H+ eq	1.72E+00	1.11E-02	9.42E-03	1.74E+00	3.20E-02	2.61E-03	1.66E-03	5.18E-04	7.23E-02	9.19E-01	0.00E+00	5.16E-04	8.32E-04	7.42E-04	-1.24E+00
EP - fresh water	kg P eq	1.39E-01	3.26E-04	5.48E-03	1.45E-01	2.23E-04	1.95E-04	2.36E-04	2.31E-05	5.75E-03	3.57E-02	0.00E+00	1.54E-05	2.21E-05	2.72E-05	-1.04E-01
EP - marine	kg P eq	1.53E-01	3.05E-03	3.11E-03	1.59E-01	1.23E-02	5.92E-04	3.52E-04	1.18E-04	4.28E-03	2.55E-01	0.00E+00	1.41E-04	3.44E-04	2.78E-04	-1.10E-01
EP - country	mol N eq	1.77E+00	3.13E-02	2.43E-02	1.82E+00	1.32E-01	5.45E-03	2.86E-03	7.72E-04	5.51E-02	2.90E+00	0.00E+00	1.45E-03	3.56E-03	2.97E-03	-1.25E+00
POCP	kg NMVOC	6.76E-01	1.81E-02	7.45E-03	7.01E-01	4.41E-02	2.29E-03	8.82E-04	3.05E-04	1.64E-02	8.43E-01	0.00E+00	8.44E-04	9.52E-04	1.00E-03	-4.99E-01
ADPE	kg Sb eq	1.54E-02	1.23E-05	6.89E-06	1.55E-02	6.43E-06	2.44E-06	1.23E-06	7.09E-07	9.23E-04	8.64E-04	0.00E+00	5.85E-07	3.92E-07	2.12E-07	-1.12E-02
ADPF	MJ	1.48E+03	6.75E+01	5.90E+01	1.61E+03	1.01E+02	1.31E+01	6.43E+00	8.89E-01	2.19E+01	9.38E+03	0.00E+00	3.18E+00	8.27E-01	2.25E+00	-1.17E+03
WDP	m³ depriv.	5.30E+01	3.20E-01	1.66E-01	5.34E+01	2.57E-01	3.12E-01	1.30E-01	2.65E-02	8.15E-01	1.52E+01	0.00E+00	1.51E-02	5.28E-02	9.55E-02	-1.74E+01
GWP-GHG	kg CO2 eq	1.16E+02	4.46E+00	3.96E+00	1.25E+02	7.40E+00	6.24E-01	3.06E-01	8.55E-02	1.67E+00	3.61E+02	0.00E+00	2.10E-01	4.94E+00	1.05E-01	-9.06E+01
PM	disease inc.	8.99E-06	4.37E-07	9.35E-08	9.52E-06	2.35E-07	4.77E-08	9.19E-09	5.49E-09	2.21E-07	5.83E-06	0.00E+00	2.06E-08	5.83E-09	1.60E-08	-7.38E-06
IR	kBq U-235 eq	8.32E+00	8.45E-02	9.29E-01	9.33E+00	6.15E-02	3.08E-02	1.54E-01	2.50E-03	2.01E-01	3.23E+02	0.00E+00	3.99E-03	5.54E-03	2.97E-03	-1.26E+01
ETP - FW	CTUe	1.16E+03	3.25E+01	1.33E+01	1.20E+03	4.92E+01	4.81E+00	1.87E+00	1.89E+00	9.80E+01	6.03E+02	0.00E+00	1.52E+00	1.09E+01	9.89E-01	-1.30E+03
HTP - C	CTUh	6.10E-07	1.96E-09	1.05E-09	6.13E-07	1.42E-09	6.02E-09	1.30E-10	4.60E-11	1.82E-08	9.59E-08	0.00E+00	9.29E-11	4.20E-10	5.83E-11	-4.48E-07
HTP - NC	CTUh	1.58E-05	4.83E-08	2.72E-08	1.58E-05	7.89E-08	2.82E-08	3.24E-09	1.14E-09	9.53E-07	2.17E-06	0.00E+00	2.27E-09	3.94E-09	6.53E-10	-1.26E-05
SQP	-	9.02E+02	6.79E+01	2.82E+02	1.25E+03	3.29E+01	1.36E+00	1.75E+00	1.09E+00	2.36E+01	4.06E+03	0.00E+00	3.22E+00	2.57E-01	5.16E+00	-3.82E+02

Resource use

impact category	unit	A1	A2	A3	A1-A3	A4	A5	B2	B3	B4	B6	C1	C2	C3	C4	D
PERE	MJ	3.73E+02	9.80E-01	6.20E+01	4.36E+02	6.87E-01	4.29E-01	1.40E+00	2.25E-01	4.82E+00	2.10E+03	0.00E+00	4.64E-02	7.23E-02	3.88E-02	-2.95E+02
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.73E+02	9.80E-01	6.20E+01	4.36E+02	6.87E-01	4.29E-01	1.40E+00	2.25E-01	4.82E+00	2.10E+03	0.00E+00	4.64E-02	7.23E-02	3.88E-02	-2.95E+02
PENRE	MJ	1.48E+03	6.75E+01	5.90E+01	1.61E+03	1.01E+02	1.31E+01	6.43E+00	9.02E-01	2.19E+01	9.38E+03	0.00E+00	3.18E+00	8.27E-01	2.25E+00	-1.17E+03
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.48E+03	6.75E+01	5.90E+01	1.61E+03	1.01E+02	1.31E+01	6.43E+00	9.02E-01	2.19E+01	9.38E+03	0.00E+00	3.18E+00	8.27E-01	2.25E+00	-1.17E+03
SM	kg	8.57E-02	0.00E+00	0.00E+00	8.57E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	5.82E-04	0.00E+00	0.00E+00	5.82E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	3.74E-02	0.00E+00	0.00E+00	3.74E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m³	1.42E+00	1.33E-02	2.30E-02	1.46E+00	1.12E-02	1.53E-02	5.07E-03	1.11E-03	5.56E-02	2.34E+00	0.00E+00	6.30E-04	4.31E-03	2.48E-03	-6.75E-01

Waste & Output Flows

impact category	unit	A1	A2	A3	A1-A3	A4	A5	B2	B3	B4	B6	C1	C2	C3	C4	D
HWD	kg	4.53E+00	0.00E+00	0.00E+00	4.53E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	kg	2.95E+00	0.00E+00	9.44E+00	1.24E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RWD	kg	3.76E-03	0.00E+00	0.00E+00	3.76E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	1.47E-03	0.00E+00	0.00E+00	1.47E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.82E+01	0.00E+00	0.00E+00
MER	kg	6.46E-06	0.00E+00	0.00E+00	6.46E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.06E+00	0.00E+00	0.00E+00
EE (Electrical)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



impact category	unit	A1	A2	A3	A1-A3	A4	A5	B2	B3	B4	B6	C1	C2	C3	C4	D
EE (Thermal)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Restriction Notice

Restriction Notice 1	IR	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.
Restriction Notice 2	ADPE, ADPF, WDP, ETP - FW, HTP - C, HTP - NC, SQP	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.
Restriction Notice 3	GWP-GHG	The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013



List of terms

GWP - Total Climate change - total

GWP - fossil Climate change - fossil

GWP - Biogenic Climate change - biogenic

GWP - Luluc Climate change - land use and land use change

ODP Ozone Depletion

AP Acidification

EP - fresh water Eutrophication aquatic freshwater

EP - marine Eutrophication aquatic marine

EP - country Eutrophication terrestrial

POCP Photochemical ozone formation

ADPE Depletion of abiotic resources - minerals and metals

ADPF Abiotic resource depletion - fossil fuels

WDP Water use

GWP-GHG Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology

PM Particulate Matter emissions

IR Ionizing radiation, human health

ETP - FW Ecotoxicity (fresh water)

HTP - C Human toxicity, cancer effects

HTP - NC Human toxicity, non-cancer effects

SQP Land use related impacts/Soil quality

PERE Use of renewable primary energy excluding resources used as raw materials

PERM Use of renewable primary energy resources used as raw materials

PERT Total use of renewable primary energy

PENRE Use of non-renewable primary energy excluding resources used as raw materials

PENRM Use of non-renewable primary energy resources used as raw materials

PENRT Total use of non-renewable primary energy

SM Secondary material

RSF Renewable secondary fuels

NRSF Non-renewable secondary fuels

FW Net use of fresh water

HWD Hazardous waste disposed

NHWD Non-hazardous waste disposed

RWD Radioactive waste disposed

CRU Components for reuse

MFR Material for recycling

MER Materials for energy recovery

EE (Electrical) Exported energy electrical

EE (Thermal) Exported energy thermal

A1 Raw Material Supply

A2 Raw Material Transport

A3 Manufacturing

A1-A3 A1-A3

A4 Transport to Site

A5 Installation

B2 Maintenance

B3 Repair

B4 Replacement

B6 Operational Energy Use

C1 Deconstruction / Demolition

C2 Transport

C3 Waste Processing

C4 Disposal

D Future reuse, recycling orenergy recovery potentials

Trench Technology - Katherm HK E

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