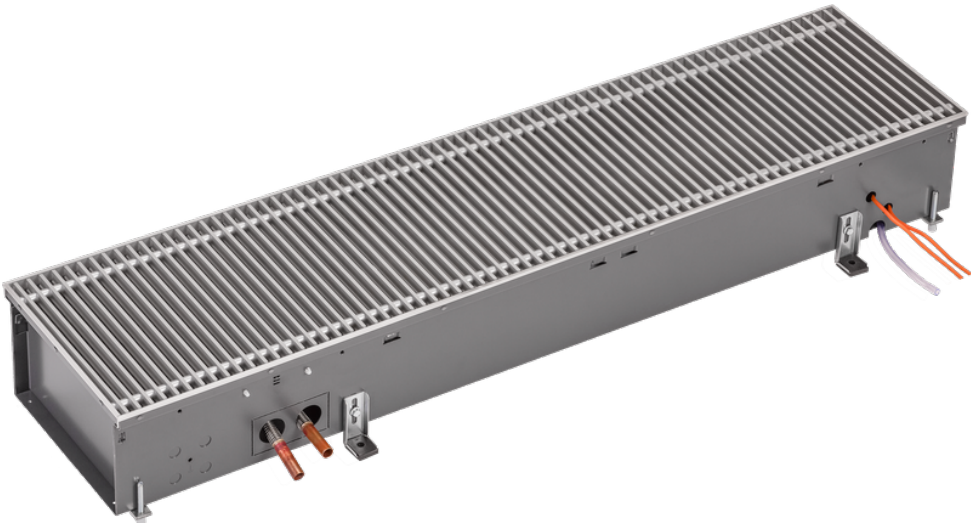




Environmental Product Declaration - (EPD)  
Katherm HK

|                |                                 |      |
|----------------|---------------------------------|------|
| Height         | mm                              | 160  |
| Width          | mm                              | 290  |
| Length         | mm                              | 2000 |
| System         | 2-pipe electric heating element |      |
| Grille finish  | Aluminium, bronze finish        |      |
| Control option | KaControl                       |      |



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)

Table of Contents

|                            |   |
|----------------------------|---|
| Basic data .....           | 2 |
| Resource use .....         | 3 |
| Waste & Output Flows ..... | 3 |
| Restriction Notice .....   | 4 |
| List of terms .....        | 5 |

## 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    | 1.64E+02 | 5.42E+00 | 2.30E+00  | 1.72E+02  | 8.98E+00 | 3.73E+00 | 3.73E-01 | 1.04E-01 | 2.03E+00 | 3.61E+02 | 0.00E+00 | 2.53E-01 | 6.01E+00 | 1.27E-01 | -1.10E+02 |
| GWP - fossil     | kg CO2 eq    | 1.63E+02 | 5.42E+00 | 4.74E+00  | 1.73E+02  | 8.98E+00 | 7.58E-01 | 3.64E-01 | 8.20E-02 | 2.01E+00 | 3.61E+02 | 0.00E+00 | 2.53E-01 | 6.01E+00 | 1.27E-01 | -1.09E+02 |
| GWP - Biogenic   | kg CO2 eq    | 0.00E+00 | 0.00E+00 | -2.45E+00 | -2.45E+00 | 1.48E-03 | 2.97E+00 | 1.84E-03 | 1.69E-04 | 6.47E-03 | 2.17E-01 | 0.00E+00 | 8.52E-05 | 1.40E-04 | 3.59E-04 | -2.90E-01 |
| GWP - Luluc      | kg CO2 eq    | 1.61E+00 | 2.62E-03 | 1.13E-02  | 1.63E+00  | 1.70E-03 | 5.20E-04 | 6.95E-03 | 2.20E-02 | 9.30E-03 | 4.27E-01 | 0.00E+00 | 1.24E-04 | 9.19E-05 | 9.23E-05 | -1.20E+00 |
| ODP              | kg CFC-11 eq | 3.84E-06 | 1.23E-07 | 4.59E-08  | 4.00E-06  | 1.57E-07 | 7.58E-09 | 1.22E-08 | 2.81E-09 | 2.76E-08 | 1.84E-05 | 0.00E+00 | 5.78E-09 | 2.53E-08 | 2.99E-09 | -2.88E-06 |
| AP               | mol H+ eq    | 2.13E+00 | 1.35E-02 | 1.15E-02  | 2.15E+00  | 3.89E-02 | 3.18E-03 | 2.01E-03 | 6.31E-04 | 8.80E-02 | 9.19E-01 | 0.00E+00 | 6.29E-04 | 1.01E-03 | 9.03E-04 | -1.51E+00 |
| EP - fresh water | kg P eq      | 1.81E-01 | 3.96E-04 | 6.67E-03  | 1.88E-01  | 2.72E-04 | 2.37E-04 | 2.88E-04 | 2.81E-05 | 7.00E-03 | 3.57E-02 | 0.00E+00 | 1.88E-05 | 2.69E-05 | 3.32E-05 | -1.27E-01 |
| EP - marine      | kg P eq      | 2.01E-01 | 3.71E-03 | 3.79E-03  | 2.08E-01  | 1.50E-02 | 7.21E-04 | 4.28E-04 | 1.44E-04 | 5.20E-03 | 2.55E-01 | 0.00E+00 | 1.72E-04 | 4.19E-04 | 3.38E-04 | -1.34E-01 |
| EP - country     | mol N eq     | 2.26E+00 | 3.81E-02 | 2.96E-02  | 2.33E+00  | 1.60E-01 | 6.63E-03 | 3.48E-03 | 9.39E-04 | 6.70E-02 | 2.90E+00 | 0.00E+00 | 1.76E-03 | 4.33E-03 | 3.61E-03 | -1.53E+00 |
| POCP             | kg NMVOC     | 8.63E-01 | 2.20E-02 | 9.06E-03  | 8.94E-01  | 5.36E-02 | 2.79E-03 | 1.07E-03 | 3.71E-04 | 2.00E-02 | 8.43E-01 | 0.00E+00 | 1.03E-03 | 1.16E-03 | 1.22E-03 | -6.08E-01 |
| ADPE             | kg Sb eq     | 1.87E-02 | 1.50E-05 | 8.39E-06  | 1.88E-02  | 7.83E-06 | 2.97E-06 | 1.49E-06 | 8.63E-07 | 1.12E-03 | 8.64E-04 | 0.00E+00 | 7.11E-07 | 4.77E-07 | 2.58E-07 | -1.37E-02 |
| ADPF             | MJ           | 2.15E+03 | 8.21E+01 | 7.18E+01  | 2.31E+03  | 1.23E+02 | 1.59E+01 | 7.83E+00 | 1.08E+00 | 2.67E+01 | 9.38E+03 | 0.00E+00 | 3.87E+00 | 1.01E+00 | 2.74E+00 | -1.43E+03 |
| WDP              | m³ depriv.   | 4.21E+01 | 3.90E-01 | 2.02E-01  | 4.27E+01  | 3.13E-01 | 3.80E-01 | 1.58E-01 | 3.22E-02 | 9.92E-01 | 1.52E+01 | 0.00E+00 | 1.84E-02 | 6.42E-02 | 1.16E-01 | -2.12E+01 |
| GWP-GHG          | kg CO2 eq    | 1.65E+02 | 5.43E+00 | 4.82E+00  | 1.75E+02  | 9.00E+00 | 7.60E-01 | 3.73E-01 | 1.04E-01 | 2.03E+00 | 3.61E+02 | 0.00E+00 | 2.56E-01 | 6.01E+00 | 1.28E-01 | -1.10E+02 |
| PM               | disease inc. | 1.40E-05 | 5.31E-07 | 1.14E-07  | 1.46E-05  | 2.86E-07 | 5.80E-08 | 1.12E-08 | 6.68E-09 | 2.69E-07 | 5.83E-06 | 0.00E+00 | 2.51E-08 | 7.09E-09 | 1.95E-08 | -8.98E-06 |
| IR               | kBq U-235 eq | 2.30E+01 | 1.03E-01 | 1.13E+00  | 2.42E+01  | 7.48E-02 | 3.75E-02 | 1.88E-01 | 3.04E-03 | 2.44E-01 | 3.23E+02 | 0.00E+00 | 4.86E-03 | 6.75E-03 | 3.61E-03 | -1.53E+01 |
| ETP - FW         | CTUe         | 2.22E+03 | 3.95E+01 | 1.62E+01  | 2.28E+03  | 5.99E+01 | 5.85E+00 | 2.28E+00 | 2.30E+00 | 1.19E+02 | 6.03E+02 | 0.00E+00 | 1.86E+00 | 1.33E+01 | 1.20E+00 | -1.58E+03 |
| HTP - C          | CTUh         | 8.86E-07 | 2.39E-09 | 1.28E-09  | 8.90E-07  | 1.72E-09 | 7.32E-09 | 1.58E-10 | 5.59E-11 | 2.21E-08 | 9.59E-08 | 0.00E+00 | 1.13E-10 | 5.11E-10 | 7.09E-11 | -5.46E-07 |
| HTP - NC         | CTUh         | 2.12E-05 | 5.88E-08 | 3.31E-08  | 2.12E-05  | 9.60E-08 | 3.43E-08 | 3.94E-09 | 1.38E-09 | 1.16E-06 | 2.17E-06 | 0.00E+00 | 2.76E-09 | 4.79E-09 | 7.94E-10 | -1.54E-05 |
| SQP              | -            | 1.19E+03 | 8.26E+01 | 3.43E+02  | 1.61E+03  | 4.01E+01 | 1.65E+00 | 2.13E+00 | 1.33E+00 | 2.88E+01 | 4.06E+03 | 0.00E+00 | 3.91E+00 | 3.13E-01 | 6.29E+00 | -4.65E+02 |

## Resource use

| impact category | unit | A1       | A2       | A3       | A1-A3    | A4       | A5       | B2       | B3       | B4       | B6       | C1       | C2       | C3       | C4       | D         |
|-----------------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| PERE            | MJ   | 6.38E+02 | 1.19E+00 | 7.55E+01 | 7.15E+02 | 8.36E-01 | 5.23E-01 | 1.70E+00 | 2.74E-01 | 5.87E+00 | 2.10E+03 | 0.00E+00 | 5.64E-02 | 8.80E-02 | 4.72E-02 | -3.59E+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   | 6.38E+02 | 1.19E+00 | 7.55E+01 | 7.15E+02 | 8.36E-01 | 5.23E-01 | 1.70E+00 | 2.74E-01 | 5.87E+00 | 2.10E+03 | 0.00E+00 | 5.64E-02 | 8.80E-02 | 4.72E-02 | -3.59E+02 |
| PENRE           | MJ   | 2.15E+03 | 8.21E+01 | 7.18E+01 | 2.31E+03 | 1.23E+02 | 1.59E+01 | 7.83E+00 | 1.10E+00 | 2.67E+01 | 9.38E+03 | 0.00E+00 | 3.87E+00 | 1.01E+00 | 2.74E+00 | -1.43E+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   | 2.15E+03 | 8.21E+01 | 7.18E+01 | 2.31E+03 | 1.23E+02 | 1.59E+01 | 7.83E+00 | 1.10E+00 | 2.67E+01 | 9.38E+03 | 0.00E+00 | 3.87E+00 | 1.01E+00 | 2.74E+00 | -1.43E+03 |
| SM              | 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  |
| RSF             | 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  |
| NRSF            | 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  |
| FW              | m³   | 1.45E+00 | 1.62E-02 | 2.80E-02 | 1.50E+00 | 1.36E-02 | 1.86E-02 | 6.17E-03 | 1.35E-03 | 6.77E-02 | 2.34E+00 | 0.00E+00 | 7.67E-04 | 5.25E-03 | 3.02E-03 | -8.22E-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   | 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 |
| NHWD            | kg   | 0.00E+00 | 0.00E+00 | 1.15E+01 | 1.15E+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   | 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 |
| 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   | 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 | 3.43E+01 | 0.00E+00 | 0.00E+00 |
| MER             | 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 | 2.51E+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

|                                                                                                    |                                                               |
|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| <b>GWP - Total</b> Climate change - total                                                          | <b>RSF</b> Renewable secondary fuels                          |
| <b>GWP - fossil</b> Climate change - fossil                                                        | <b>NRSF</b> Non-renewable secondary fuels                     |
| <b>GWP - Biogenic</b> Climate change - biogenic                                                    | <b>FW</b> Net use of fresh water                              |
| <b>GWP - Luluc</b> Climate change - land use and land use change                                   | <b>HWD</b> Hazardous waste disposed                           |
| <b>ODP</b> Ozone Depletion                                                                         | <b>NHWD</b> Non-hazardous waste disposed                      |
| <b>AP</b> Acidification                                                                            | <b>RWD</b> Radioactive waste disposed                         |
| <b>EP - fresh water</b> Eutrophication aquatic freshwater                                          | <b>CRU</b> Components for reuse                               |
| <b>EP - marine</b> Eutrophication aquatic marine                                                   | <b>MFR</b> Material for recycling                             |
| <b>EP - country</b> Eutrophication terrestrial                                                     | <b>MER</b> Materials for energy recovery                      |
| <b>POCP</b> Photochemical ozone formation                                                          | <b>EE (Electrical)</b> Exported energy electrical             |
| <b>ADPE</b> Depletion of abiotic resources - minerals and metals                                   | <b>EE (Thermal)</b> Exported energy thermal                   |
| <b>ADPF</b> Abiotic resource depletion - fossil fuels                                              | <b>A1</b> Raw Material Supply                                 |
| <b>WDP</b> Water use                                                                               | <b>A2</b> Raw Material Transport                              |
| <b>GWP-GHG</b> Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology | <b>A3</b> Manufacturing                                       |
| <b>PM</b> Particulate Matter emissions                                                             | <b>A1-A3</b> A1-A3                                            |
| <b>IR</b> Ionizing radiation, human health                                                         | <b>A4</b> Transport to Site                                   |
| <b>ETP - FW</b> Ecotoxicity (fresh water)                                                          | <b>A5</b> Installation                                        |
| <b>HTP - C</b> Human toxicity, cancer effects                                                      | <b>B2</b> Maintenance                                         |
| <b>HTP - NC</b> Human toxicity, non-cancer effects                                                 | <b>B3</b> Repair                                              |
| <b>SQP</b> Land use related impacts/Soil quality                                                   | <b>B4</b> Replacement                                         |
| <b>PERE</b> Use of renewable primary energy excluding resources used as raw materials              | <b>B6</b> Operational Energy Use                              |
| <b>PERM</b> Use of renewable primary energy resources used as raw materials                        | <b>C1</b> Deconstruction / Demolition                         |
| <b>PERT</b> Total use of renewable primary energy                                                  | <b>C2</b> Transport                                           |
| <b>PENRE</b> Use of non-renewable primary energy excluding resources used as raw materials         | <b>C3</b> Waste Processing                                    |
| <b>PENRM</b> Use of non-renewable primary energy resources used as raw materials                   | <b>C4</b> Disposal                                            |
| <b>PENRT</b> Total use of non-renewable primary energy                                             | <b>D</b> Future reuse, recycling orenergy recovery potentials |
| <b>SM</b> Secondary material                                                                       |                                                               |



## This is how you can reach us

[www.kampmanngroup.com](http://www.kampmanngroup.com) | [info@kampmanngroup.com](mailto:info@kampmanngroup.com) | +49 591 7108-660 | Kampmann GmbH & Co. KG