Hilti Corporation
9494 Schaan
Liechtenstein

Feldkircherstrasse 100 I P.O. Box 333
www.hilti.com

Rechtsform: Aktiengesellschaft I Sitz: 9494 Schaan
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Environmental report

HIK-T (01)

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Author	Andreas Bertram, FIT-Umwelttechnik GmbH		
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1 Life Cycle Assessment „HIK-T (01)“

1.1 Technical data and material distribution

Table 1.1: Technical data and material distribution

IT- Number	Product name	Pcs. per salespack	Weight [kg]	Material
2340922	Anchor rod HIK-T 8.8 16/220 M12	4	2,654	Steel, Stainless Steel, Polymer, Cardboard
2340923	Anchor rod HIK-T 8.8 16/220 M12	20	12,754	Steel, Stainless Steel, Polymer, Cardboard
2340924	Anchor rod HIK-T A4 16/220 M12	4	2,703	Stainless Steel, Polymer, Cardboard
2340925	Anchor rod HIK-T A4 16/220 M12	20	13,000	Stainless Steel, Polymer, Cardboard
2340926	Anchor rod HIK-T 8.8 12/160 M12	4	1,604	Steel, Stainless Steel, Polymer, Cardboard
2340927	Anchor rod HIK-T A4 12/160 M12	4	1,619	Stainless Steel, Polymer, Cardboard

1.2 Description of the applied method

A life cycle assessment according to DIN EN ISO 14040/44, was performed on a product of HILTI AG (HIK-T (01)), which considers the entire life cycle of the product (cradle to grave). The accounting data come from the source: GaBi 10, and are evaluated from IPCC 2001, August 2016.

The entire life cycle of the product is divided into the following stages:

- Raw material,
- Production,
- Use,
- End of life,
- Transportation.

The data for the raw material acquisition of the product is provided by HILTI AG in a specific data collection form.

Each material is assigned component specific to one or more manufacturing processes to describe the production process as precisely as possible.

The products produce no emissions in the “Use” phase.

In the “End of life” it is assumed, that the entire product is first fed to a reduction process. A Shredder (QZ 1600 HD) from MeWa, is used for separating and crushing the individual materials. The respective credits come from the material recycling of metals, as well as from the energy recovery of the paper and the polymers.

The “Transportation” scenario is based on the Limit Stretch of the EPTA study published by Sphera and is evaluated according to the weight of the product. The first transport reflects the transport distances, which are essential for bringing together the individual components (by sea- a container ship for 16 800 km for 30% of the product weight, by road- a truck for 4 716 km for 70% of the product weight).
The second transport reflects the distribution of the product to the various sales companies within the EU (2 300 km by road in a truck for 100% of the product weight). The emissions of both transports are added together in this report.

1.3 Life Cycle Assessment

1.3.1 Anchor rod HIK-T 8.8 16/220 M12

IT- Number	Product name	Pcs. per Sales pack	Weight [kg]	Material
2340922	Anchor rod HIK-T 8.8 16/220 M12	4	2,654	Steel, Stainless Steel, Polymer, Cardboard

Environmental impact category	Total	Raw material	Produc-tion	Use	End of life	Transpor-tation
Global Warming Potential (GWP 100 years) [kg CO2-eq.]	5,706	6,552	0,919	0,000	-2,795	1,029
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	2,44E-11	1,286E-11	1,576E-11	0,000E+00	-4,375E-12	1,153E-13
Acidification Potential (AP) [kg SO2-eq.]	1,79E-02	1,826E-02	1,907E-03	0,000E+00	-7,511E-03	5,284E-03
Eutrification Potential (EP) [kg $(PO4)^{3-}$ eq.]	2,39E-03	1,923E-03	2,133E-04	0,000E+00	-5,865E-04	8,413E-04
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	6,87E-04	2,286E-03	1,341E-04	0,000E+00	-1,204E-03	-5,295E-04
Abiotic Depletion Potential non-Fossil Resources (ADPE) [kg Sb-eq.]	2,31E-05	2,287E-05	2,886E-07	0,000E+00	-6,303E-08	5,240E-08
Abiotic Depletion Potential Fossil Fuels (ADPF) [MJ]	7,65E+01	8,692E+01	1,024E+01	0,000E+00	-3,451E+01	1,383E+01
Energy (net calorific value) [MJ]	8,47E+01	8,970E+01	1,692E+01	0,000E+00	-3,579E+01	1,389E+01
Energy ren. (net calorafic value) [MJ]	2,03E+01	1,373E+01	9,215E+00	0,000E+00	-2,766E+00	8,087E-02
Water consumption [kg]	4,52E+01	3,912E+01	8,848E+00	0,000E+00	-2,873E+00	1,108E-01
Air pollution [m^3]	3,83E+02	6,890E+02	5,893E+01	0,000E+00	-4,231E+02	5,800E+01
Water pollution [m^3]	9,95E-01	8,534E-01	2,555E-01	0,000E+00	-1,925E-01	7,869E-02
Hazardous waste for disposal [kg]	7,84E-05	7,837E-05	1,459E-09	0,000E+00	-5,567E-10	4,879E-11
Disposed of non-hazardous waste [kg]	8,94E-02	1,050E-01	1,257E-02	0,000E+00	-2,954E-02	1,407E-03
Disposed of radioactive waste [kg]	3,27E-03	1,109E-03	2,653E-03	0,000E+00	-5,110E-04	2,220E-05

evaluated from CML 2001, August 2016

1.3.2 Anchor rod HIK-T 8.8 16/220 M12

IT- Number	Product name	Pcs. per Sales pack	Weight [kg]	Material
2340923	Anchor rod HIK-T 8.8 16/220 M12	20	12,754	Steel, Stainless Steel, Polymer, Cardboard

Environmental impact category	Total	Raw material	Produc-tion	Use	End of life	Transpor-tation
Global Warming Potential (GWP 100 years) [kg CO2-eq.]	26,049	30,705	4,670	0,000	-14,271	4,945
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	1,10E-10	5,335E-11	8,009E-11	0,000E+00	-2,402E-11	5,540E-13
Acidification Potential (AP) [kg SO2-eq.]	8,32E-02	8,755E-02	9,686E-03	0,000E+00	-3,942E-02	2,540E-02
Eutrification Potential (EP) [kg $(PO4)^{3-}$ eq.]	1,02E-02	8,455E-03	1,083E-03	0,000E+00	-3,379E-03	4,043E-03
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	2,75E-03	1,075E-02	6,812E-04	0,000E+00	-6,132E-03	-2,545E-03
Abiotic Depletion Potential non-Fossil Resources (ADPE) [kg Sb-eq.]	1,15E-04	1,136E-04	1,466E-06	0,000E+00	-3,743E-07	2,518E-07
Abiotic Depletion Potential Fossil Fuels (ADPF) [MJ]	3,43E+02	4,005E+02	5,200E+01	0,000E+00	-1,759E+02	6,647E+01
Energy (net calorific value) [MJ]	3,83E+02	4,137E+02	8,594E+01	0,000E+00	-1,832E+02	6,674E+01
Energy ren. (net calorafic value) [MJ]	8,61E+01	5,391E+01	4,682E+01	0,000E+00	-1,505E+01	3,886E-01
Water consumption [kg]	2,12E+02	1,836E+02	4,495E+01	0,000E+00	-1,662E+01	5,325E-01
Air pollution [m^3]	1,79E+03	3,341E+03	2,993E+02	0,000E+00	-2,133E+03	2,788E+02
Water pollution [m^3]	4,07E+00	3,402E+00	1,298E+00	0,000E+00	-1,008E+00	3,782E-01
Hazardous waste for disposal [kg]	3,92E-04	3,916E-04	7,413E-09	0,000E+00	-3,359E-09	2,345E-10
Disposed of non-hazardous waste [kg]	3,77E-01	4,840E-01	6,386E-02	0,000E+00	-1,774E-01	6,762E-03
Disposed of radioactive waste [kg]	1,60E-02	5,275E-03	1,348E-02	0,000E+00	-2,888E-03	1,067E-04

evaluated from CML 2001, August 2016

1.3.3 Anchor rod HIK-T A4 16/220 M12

IT- Number	Product name	Pcs. per Sales pack	Weight [kg]	Material
2340924	Anchor rod HIK-T A4 16/220 M12	4	2,703	Stainless Steel, Polymer, Cardboard

Environmental impact category	Total	Raw material	Produc-tion	Use	End of life	Transpor-tation
Global Warming Potential (GWP 100 years) [kg CO2-eq.]	9,574	10,466	0,938	0,000	-2,878	1,048
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	2,22E-11	1,041E-11	1,609E-11	0,000E+00	-4,410E-12	1,174E-13
Acidification Potential (AP) [kg SO2-eq.]	5,58E-02	5,621E-02	1,946E-03	0,000E+00	-7,698E-03	5,382E-03
Eutrification Potential (EP) [kg $(PO4)^{3-}$ eq.]	4,94E-03	4,468E-03	2,176E-04	0,000E+00	-6,041E-04	8,569E-04
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	2,32E-03	3,955E-03	1,369E-04	0,000E+00	-1,233E-03	-5,393E-04
Abiotic Depletion Potential non-Fossil Resources (ADPE) [kg Sb-eq.]	1,74E-04	1,734E-04	2,944E-07	0,000E+00	-6,328E-08	5,338E-08
Abiotic Depletion Potential Fossil Fuels (ADPF) [MJ]	1,39E+02	1,492E+02	1,045E+01	0,000E+00	-3,520E+01	1,409E+01
Energy (net calorific value) [MJ]	1,55E+02	1,600E+02	1,727E+01	0,000E+00	-3,648E+01	1,414E+01
Energy ren. (net calorafic value) [MJ]	4,13E+01	3,458E+01	9,402E+00	0,000E+00	-2,791E+00	8,237E-02
Water consumption [kg]	2,17E+02	2,113E+02	9,028E+00	0,000E+00	-2,969E+00	1,128E-01
Air pollution [m^3]	1,09E+03	1,404E+03	6,014E+01	0,000E+00	-4,329E+02	5,908E+01
Water pollution [m^3]	2,07E+00	1,925E+00	2,607E-01	0,000E+00	-1,959E-01	8,015E-02
Hazardous waste for disposal [kg]	6,09E-04	6,090E-04	1,489E-09	0,000E+00	-5,480E-10	4,969E-11
Disposed of non-hazardous waste [kg]	2,84E-01	3,004E-01	1,283E-02	0,000E+00	-3,055E-02	1,433E-03
Disposed of radioactive waste [kg]	6,54E-03	4,319E-03	2,707E-03	0,000E+00	-5,113E-04	2,261E-05

evaluated from CML 2001, August 2016

1.3.4 Anchor rod HIK-T A4 16/220 M12

IT- Number	Product name	Pcs. per Sales pack	Weight [kg]	Material
2340925	Anchor rod HIK-T A4 16/220 M12	20	13,000	Stainless Steel, Polymer, Cardboard

Environmental impact category	Total	Raw material	Produc-tion	Use	End of life	Transpor-tation
Global Warming Potential (GWP 100 years) [kg CO2-eq.]	45,391	50,272	4,764	0,000	-14,686	5,040
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	9,91E-11	4,108E-11	8,170E-11	0,000E+00	-2,420E-11	5,647E-13
Acidification Potential (AP) [kg SO2-eq.]	2,73E-01	2,773E-01	9,880E-03	0,000E+00	-4,036E-02	2,588E-02
Eutrification Potential (EP) [kg $(PO4)^{3-}$ eq.]	2,29E-02	2,118E-02	1,105E-03	0,000E+00	-3,467E-03	4,121E-03
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	1,09E-02	1,909E-02	6,949E-04	0,000E+00	-6,276E-03	-2,594E-03
Abiotic Depletion Potential non-Fossil Resources (ADPE) [kg Sb-eq.]	8,68E-04	8,664E-04	1,495E-06	0,000E+00	-3,755E-07	2,567E-07
Abiotic Depletion Potential Fossil Fuels (ADPF) [MJ]	6,53E+02	7,117E+02	5,305E+01	0,000E+00	-1,794E+02	6,775E+01
Energy (net calorific value) [MJ]	7,34E+02	7,650E+02	8,767E+01	0,000E+00	-1,867E+02	6,803E+01
Energy ren. (net calorafic value) [MJ]	1,91E+02	1,582E+02	4,775E+01	0,000E+00	-1,517E+01	3,961E-01
Water consumption [kg]	1,07E+03	1,044E+03	4,585E+01	0,000E+00	-1,710E+01	5,427E-01
Air pollution [m^3]	5,33E+03	6,918E+03	3,054E+02	0,000E+00	-2,182E+03	2,841E+02
Water pollution [m^3]	9,45E+00	8,761E+00	1,324E+00	0,000E+00	-1,024E+00	3,855E-01
Hazardous waste for disposal [kg]	3,04E-03	3,045E-03	7,561E-09	0,000E+00	-3,315E-09	2,390E-10
Disposed of non-hazardous waste [kg]	1,35E+00	1,461E+00	6,514E-02	0,000E+00	-1,825E-01	6,892E-03
Disposed of radioactive waste [kg]	3,23E-02	2,132E-02	1,375E-02	0,000E+00	-2,889E-03	1,087E-04

evaluated from CML 2001, August 2016

1.3.5 Anchor rod HIK-T 8.8 12/160 M12

IT- Number	Product name	Pcs. per Sales pack	Weight [kg]	Material
2340926	Anchor rod HIK-T 8.8 12/160 M12	4	1,604	Steel, Stainless Steel, Polymer, Cardboard

Environmental impact category	Total	Raw material	Produc-tion	Use	End of life	Transpor-tation
Global Warming Potential (GWP 100 years) [kg CO2-eq.]	4,327	4,206	0,505	0,000	-1,006	0,622
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	1,71E-11	1,199E-11	8,670E-12	0,000E+00	-3,583E-12	6,970E-14
Acidification Potential (AP) [kg SO2-eq.]	1,40E-02	1,328E-02	1,048E-03	0,000E+00	-3,516E-03	3,195E-03
Eutrification Potential (EP) [kg $(PO4)^{3-}$ eq.]	1,85E-03	1,441E-03	1,172E-04	0,000E+00	-2,218E-04	5,086E-04
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	6,87E-04	1,519E-03	7,361E-05	0,000E+00	-5,854E-04	-3,201E-04
Abiotic Depletion Potential non-Fossil Resources (ADPE) [kg Sb-eq.]	2,28E-05	2,264E-05	1,586E-07	0,000E+00	-5,690E-08	3,168E-08
Abiotic Depletion Potential Fossil Fuels (ADPF) [MJ]	6,05E+01	6,603E+01	5,612E+00	0,000E+00	-1,955E+01	8,362E+00
Energy (net calorific value) [MJ]	6,54E+01	6,857E+01	9,286E+00	0,000E+00	-2,081E+01	8,396E+00
Energy ren. (net calorafic value) [MJ]	1,64E+01	1,349E+01	5,068E+00	0,000E+00	-2,211E+00	4,889E-02
Water consumption [kg]	4,03E+01	3,610E+01	4,863E+00	0,000E+00	-7,673E-01	6,698E-02
Air pollution [m^3]	2,86E+02	4,307E+02	3,235E+01	0,000E+00	-2,118E+02	3,507E+01
Water pollution [m^3]	8,16E-01	7,486E-01	1,404E-01	0,000E+00	-1,202E-01	4,758E-02
Hazardous waste for disposal [kg]	7,77E-05	7,769E-05	8,012E-10	0,000E+00	-7,395E-10	2,950E-11
Disposed of non-hazardous waste [kg]	7,95E-02	7,808E-02	6,909E-03	0,000E+00	-6,332E-03	8,506E-04
Disposed of radioactive waste [kg]	1,98E-03	1,008E-03	1,459E-03	0,000E+00	-5,002E-04	1,342E-05

evaluated from CML 2001, August 2016

1.3.6 Anchor rod HIK-T A4 12/160 M12

IT- Number	Product name	Pcs. per Sales pack	Weight [kg]	Material
2340927	Anchor rod HIK-T A4 12/160 M12	4	1,619	Stainless Steel, Polymer, Cardboard

Environmental impact category	Total	Raw material	Produc-tion	Use	End of life	Transpor-tation
Global Warming Potential (GWP 100 years) [kg CO2-eq.]	5,899	5,791	0,511	0,000	-1,031	0,628
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	1,62E-11	1,098E-11	8,766E-12	0,000E+00	-3,594E-12	7,034E-14
Acidification Potential (AP) [kg SO2-eq.]	2,95E-02	2,874E-02	1,059E-03	0,000E+00	-3,572E-03	3,224E-03
Eutrification Potential (EP) [kg $(PO4)^{3-}$ eq.]	2,88E-03	2,477E-03	1,185E-04	0,000E+00	-2,271E-04	5,133E-04
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	1,35E-03	2,196E-03	7,443E-05	0,000E+00	-5,940E-04	-3,231E-04
Abiotic Depletion Potential non-Fossil Resources (ADPE) [kg Sb-eq.]	8,42E-05	8,407E-05	1,604E-07	0,000E+00	-5,697E-08	3,197E-08
Abiotic Depletion Potential Fossil Fuels (ADPF) [MJ]	8,57E+01	9,134E+01	5,675E+00	0,000E+00	-1,975E+01	8,439E+00
Energy (net calorific value) [MJ]	9,40E+01	9,713E+01	9,389E+00	0,000E+00	-2,101E+01	8,474E+00
Energy ren. (net calorafic value) [MJ]	2,50E+01	2,200E+01	5,124E+00	0,000E+00	-2,218E+00	4,934E-02
Water consumption [kg]	1,11E+02	1,063E+02	4,917E+00	0,000E+00	-7,962E-01	6,760E-02
Air pollution [m^3]	5,75E+02	7,213E+02	3,271E+01	0,000E+00	-2,147E+02	3,539E+01
Water pollution [m^3]	1,25E+00	1,185E+00	1,420E-01	0,000E+00	-1,212E-01	4,801E-02
Hazardous waste for disposal [kg]	2,94E-04	2,942E-04	8,101E-10	0,000E+00	-7,369E-10	2,977E-11
Disposed of non-hazardous waste [kg]	1,59E-01	1,577E-01	6,986E-03	0,000E+00	-6,637E-03	8,584E-04
Disposed of radioactive waste [kg]	3,31E-03	2,317E-03	1,475E-03	0,000E+00	-5,003E-04	1,354E-05

evaluated from CML 2001, August 2016