Product Carbon Footprint for the the Consumable „MM- System“

November 2010

1 Technical Data and Material Distribution

Component Name	IT- Number	Mass [kg]	Material
MM-C-16	418748	1,13	Steel
MM-C-30	418749	1,558	Steel
MM-C-30 3m M10	418776	2,337	Steel
MM-C-36	418750	2,584	Steel
MM-C-36 3m M10	418751	3,876	Steel
MM-B-30/200	418752	0,278	Steel
MM-B-30/300	418753	0,356	Steel
MM-B-36/300	418754	0,585	Steel
MM-B-36/450	418755	0,778	Steel
MM-B-36/600	418756	0,971	Steel
MM-A-90	418757	0,075	Steel
MM-AH-90	418758	0,052	Steel
MM-ST M8x40	418777	0,0413	Steel
MM-ST M8x60	418778	0,0474	Steel
MM-ST M8x80	418779	0,0536	Steel
MM-ST M8x100	418780	0,0605	Steel
MM-ST M10x40	418782	0,0528	Steel
MM-ST M10x60	418791	0,0626	Steel

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1 Technical Data and Material Distribution

Component Name	IT- Number	Mass [kg]	Material
MM-ST M10x80	418792	0,0725	Steel
MM-ST M10x100	418793	0,0821	Steel
MM-R-16-36	418762	0,39	Steel
MM-S M6	418759	0,025	Steel
MM-S M8	418760	0,025	Steel
MM-S M10	418761	0,024	Steel
MM-T-16-36	418763	0,106	Steel
MM-RI 20m	418767	6,66	EPDM
MM-RI 10cmx100	418768	0,033	EPDM
MM-CW M8	418769	0,015	Steel
MM-CW M10	418770	0,015	Steel
MM-AB	418772	0,23	Steel
MM-WN M6	418764	0,0083; 0,001	Steel; PP
MM-WN M8	418765	0,0086; 0,001	Steel; PP
MM-WN M10	418766	0,0082; 0,001	Steel; PP
MM-E-16	418773	0,002	Steel
MM-E-30	418774	0,003	Steel
MM-E-36	418775	0,004	Steel

2 Summary

A life cycle assessment according to DIN EN ISO 14040/44, was performed on a product of HILTI AG (MM System), which considers the entire life cycle of the product (cradle to grave).

The data for the "Raw material" distribution of the product come from a dismantling and disassembling that was already carried out by an external partner.
In the „Use" phase of the product it is assumed that there are no emissions.

The accounting data come from the source: GaBi 4.0, and are evaluated after CML 2001, Nov 2009.

Environmental Impact category	Total	Material	Production	End of life	Transport
Global Warming Potential (GWP 100 years) [kg CO2-eq.]	88.34	45.97	16.95	14.10	11.32
Acidification Potential (AP) [kg SO2-eq.]	3.47E-01	0.15	0.11	-1.96E-03	9.51E-02
Abiotic Depletion (ADP) [kg Sb-eq.]	1.42E-03	5.24E-04	8.99E-04	-1.04E-07	2.38E-07
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	6.35E-06	4.57E-06	2.19E-06	-4.30E-07	2.24E-08
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	4.58E-02	0.03	8.11E-03	3.25E-03	7.94E-03
Energy (net calorific value) [MJ]	1925.13	1316.86	476.43	-29.70	161.54
Energy ren. (net calorafic value) [MJ]	3.83E+01	20.27	20.41	-2.57	0.21
Waste for disposal (kg)	1.86E+02	133.36	34.17	18.28	0.39
Dangerous Waste [kg]	4.76E-01	0.41	0.07	0.00	0.00
Inert Waste [kg]	1.85E+02	132.64	33.90	18.29	0.39
Radioactive Waste [kg]	1.36E-02	2.87E-03	1.45E-02	-3.96E-03	2.79E-04
Hazard-free Waste [kg]	5.05E-01	0.31	0.20	1.96E-11	0.00
Water consumption [kg]	1.08E+03	805.61	282.43	-6.58	0.99
Water pollution [kg]	1.25E-01	0.08	3.94E-02	1.19E-03	1.01E-03
Air pollution [kg]	6.88E-01	0.41	0.11	0.03	0.14

3 Life Cycle Assessment

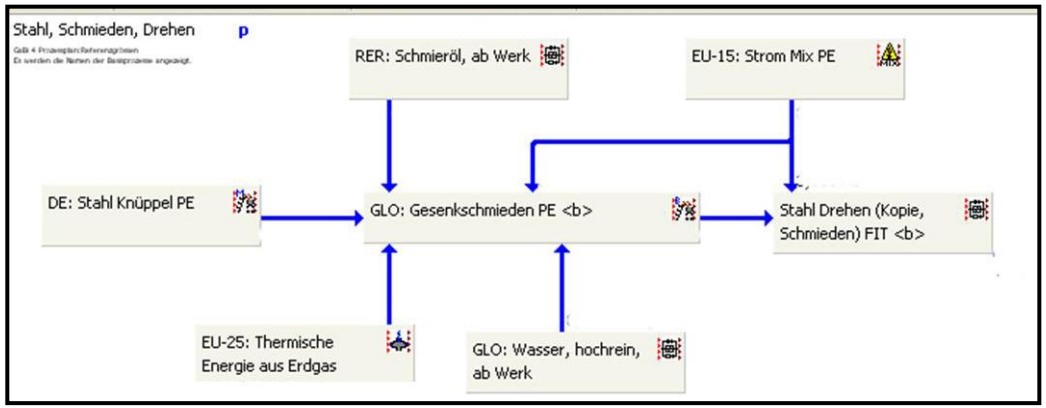
3.1 Raw Material

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	45.97
Acidification Potential (AP) [kg SO2-eq.]	0.15
Abiotic Depletion (ADP) [kg Sb-eq.]	5.24E-04
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	4.57E-06
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	0.03
Energy (net calorific value) [MJ]	1316.86
Energy ren. (net calorafic value) [MJ]	20.27
Waste for disposal (kg)	133.36
Dangerous Waste [kg]	0.41
Inert Waste [kg]	132.64
Radioactive Waste [kg]	2.87E-03
Hazard-free Waste [kg]	0.31
Water consumption [kg]	805.61
Water pollution [kg]	0.08
Air pollution [kg]	0.41

3 Life Cycle Assessment

3.2 Production

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	16.95
Acidification Potential (AP) [kg SO2-eq.]	0.11
Abiotic Depletion (ADP) [kg Sb-eq.]	8.99E-04
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	2.19E-06
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	8.11E-03
Energy (net calorific value) [MJ]	476.43
Energy ren. (net calorafic value) [MJ]	20.41
Waste for disposal (kg)	34.17
Dangerous Waste [kg]	0.07
Inert Waste [kg]	33.90
Radioactive Waste [kg]	1.45E-02
Hazard-free Waste [kg]	0.20
Water consumption [kg]	282.43
Water pollution [kg]	3.94E-02
Air pollution [kg]	0.11



3 Life Cycle Assessment

3.3 End of life

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	14.10
Acidification Potential (AP) [kg SO2-eq.]	-1.96E-03
Abiotic Depletion (ADP) [kg Sb-eq.]	-1.04E-07
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	-4.30E-07
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	3.25E-03
Energy (net calorific value) [MJ]	-29.70
Energy ren. (net calorafic value) [MJ]	-2.57
Waste for disposal (kg)	18.28
Dangerous Waste [kg]	0.00
Inert Waste [kg]	18.29
Radioactive Waste [kg]	-3.96E-03
Hazard-free Waste [kg]	1.96E-11
Water consumption [kg]	-6.58
Water pollution [kg]	1.19E-03
Air pollution [kg]	0.03

Here we assume that the product is completely deposited.

There is a positive impact on the overall result of the product due to the organic materials resulting in credits.

3 Life Cycle Assessment

3.4 Transportation

Transport mode	Distance [km]	Mass [kg]
Sea	16800	6,7839
Truck	4716	15,829
Total	21516	22,6129

For the truck transport, a truck with the pollutant class euro 3 and a volume capacity of 20 tonnes is assumed.

For the transport by sea, a container ship with about 27 500 dwt is assumed.

Transport mode	Distance [km]	Mass [kg]
Truck	2300	22,6129

This transportation scenario is based on the 2009 limit stretch EPTA study by PE International, and is evaluated according to the weight of the product

The first transport reflects the distances, which are essential for bringing together the individual components.

The second transport reflects the distribution of the product to the individual sales companies within the EU.

The emissions of both transports are added together in this report.

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	11.32
Acidification Potential (AP) [kg SO2-eq.]	9.51E-02
Abiotic Depletion (ADP) [kg Sb-eq.]	2.38E-07
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	2.24E-08
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	7.94E-03
Energy (net calorific value) [MJ]	161.54
Energy ren. (net calorafic value) [MJ]	0.21
Waste for disposal (kg)	0.39
Dangerous Waste [kg]	0.00
Inert Waste [kg]	0.39
Radioactive Waste [kg]	2.79E-04
Hazard-free Waste [kg]	0.00
Water consumption [kg]	0.99
Water pollution [kg]	1.01E-03
Air pollution [kg]	0.14

4 Total Score

Environmental Impact category	Total	Material	Production	End of life	Transport
Global Warming Potential (GWP 100 years) [kg CO2-eq.]	88.34	45.97	16.95	14.10	11.32
Acidification Potential (AP) [kg SO2-eq.]	3.47E-01	0.15	0.11	-1.96E-03	9.51E-02
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Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	6.35E-06	4.57E-06	2.19E-06	-4.30E-07	2.24E-08
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	4.58E-02	0.03	8.11E-03	3.25E-03	7.94E-03
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Waste for disposal (kg)	1.86E+02	133.36	34.17	18.28	0.39
Dangerous Waste [kg]	4.76E-01	0.41	0.07	0.00	0.00
Inert Waste [kg]	1.85E+02	132.64	33.90	18.29	0.39
Radioactive Waste [kg]	1.36E-02	2.87E-03	1.45E-02	-3.96E-03	2.79E-04
Hazard-free Waste [kg]	5.05E-01	0.31	0.20	1.96E-11	0.00
Water consumption [kg]	1.08E+03	805.61	282.43	-6.58	0.99
Water pollution [kg]	1.25E-01	0.08	3.94E-02	1.19E-03	1.01E-03
Air pollution [kg]	6.88E-01	0.41	0.11	0.03	0.14