Life Cycle Assessment for the chemical product „HILTI CP 606“

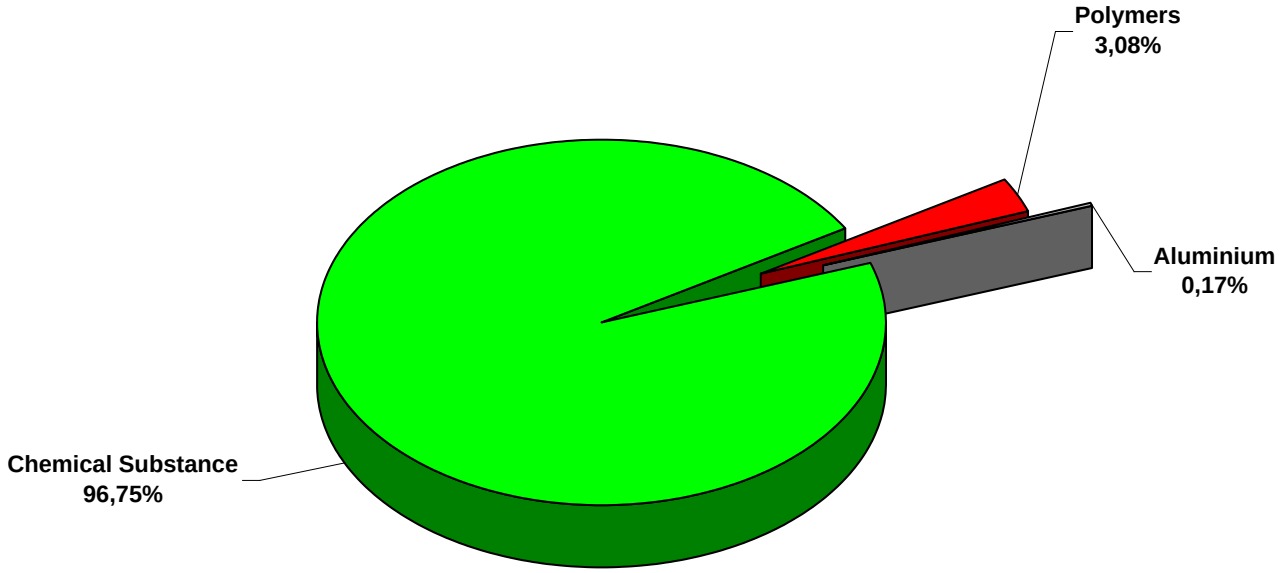
July 2011

1 Technical data

Product:	**CP 606**	**Generation:**	**01**
Serial number:	**209634**		
Weight:	**0,9585 kg**		
Packaging unit:	**1 pcs.**		

2 Material Distribution

Material	Mass [g]	Mass [%]
Aluminium	1,6	0,17
Chemical Substance	925,4	96,75
Polymers	29,5	3,08
Total mass	956,5	100



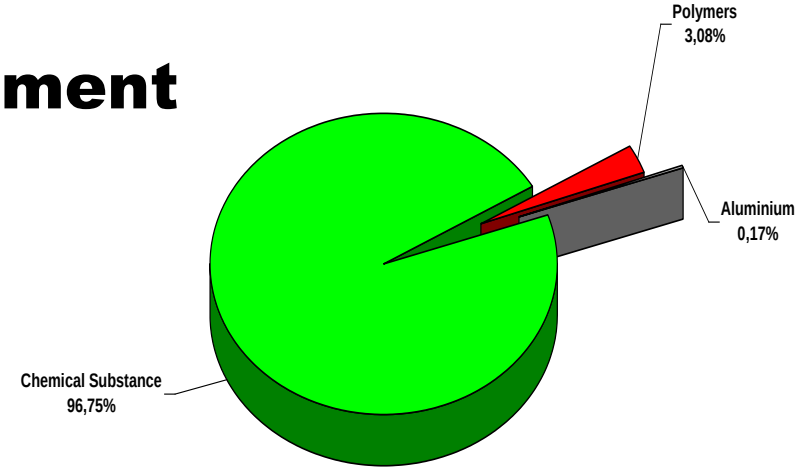
3 Summary

A life cycle assessment according to DIN EN ISO 14040/44 was performed on a chemical product of HILTI AG (CP 606), which considers the entire life cycle of the product (cradle to grave).
The data for the material distribution of the unit come from a dismantling and disassembling, that was already carried out by an external partner.
The accounting data come from the source: GaBi 4.0, and are evaluated after CML 2001, Nov 09.

Enviromental impact category	Total	Raw material	Production	Use	End of life	Transportation
Global Warming Potential (GWP 100 years) [kg CO2-eq.]	2,52E+00	1,30E+00	1,40E-01	0,00	6,00E-01	4,80E-01
Acidification Potential (AP) [kg SO2-eq.]	7,27E-03	2,70E-03	8,10E-04	0,00	-3,40E-04	4,10E-03
Abiotic Depletion (ADP) [kg Sb-eq.]	1,22E-06	1,20E-06	1,20E-08	0,00	-4,30E-09	1,00E-08
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	6,70E-08	5,90E-08	2,50E-08	0,00	-1,80E-08	9,60E-10
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	9,11E-04	4,00E-04	4,10E-05	0,00	1,30E-04	3,40E-04
Energy (net calorific value) [MJ]	3,57E+01	2,80E+01	2,00E+00	0,00	-9,70E-01	6,70E+00
Energy ren. (net calorafic value) [MJ]	4,30E-01	3,60E-01	1,50E-01	0,00	-8,90E-02	8,90E-03
Dangerous Waste [kg]	9,20E-03	6,80E-03	2,40E-03	0,00	0,00E+00	0,00E+00
Inert Waste [kg]	2,72E+00	1,60E+00	3,90E-01	0,00	7,10E-01	1,70E-02
Radioactive Waste [kg]	7,12E-04	6,20E-04	3,10E-04	0,00	-2,30E-04	1,20E-05
Hazard-free Waste [kg]	1,10E-03	1,10E-03	1,00E-07	0,00	8,40E-13	0,00E+00
Water consumption [l]	2,99E+00	2,90E+00	3,30E-01	0,00	-2,80E-01	4,20E-02
Water pollution [m^3]	6,51E-04	4,50E-04	2,60E-05	0,00	2,50E-05	1,50E-04
Air pollution [m^3]	6,28E+00	1,90E+00	2,30E-01	0,00	4,10E+00	4,80E-02

4 Life Cycle Assessment

4.1 Raw material



Global Warming Potential (GWP 100 years) [kg CO2-eq.]	1,30E+00
Acidification Potential (AP) [kg SO2-eq.]	2,70E-03
Abiotic Depletion (ADP) [kg Sb-eq.]	1,20E-06
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	5,90E-08
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	4,00E-04
Energy (net calorific value) [MJ]	2,80E+01
Energy ren. (net calorafic value) [MJ]	3,60E-01
Dangerous Waste [kg]	6,80E-03
Inert Waste [kg]	1,60E+00
Radioactive Waste [kg]	6,20E-04
Hazard-free Waste [kg]	1,10E-03
Water consumption [l]	2,90E+00
Water pollution [m^3]	4,50E-04
Air pollution [m^3]	1,90E+00

4 Life Cycle Assessment

4.2 Production

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	1,40E-01
Acidification Potential (AP) [kg SO2-eq.]	8,10E-04
Abiotic Depletion (ADP) [kg Sb-eq.]	1,20E-08
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	2,50E-08
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	4,10E-05
Energy (net calorific value) [MJ]	2,00E+00
Energy ren. (net calorafic value) [MJ]	1,50E-01
Dangerous Waste [kg]	2,40E-03
Inert Waste [kg]	3,90E-01
Radioactive Waste [kg]	3,10E-04
Hazard-free Waste [kg]	1,00E-07
Water consumption [l]	3,30E-01
Water pollution [m³]	2,60E-05
Air pollution [m³]	2,30E-01

In production, the following substances are consumed or emitted for one kg of product weight.

Type	Quantity	Unit
El. Energy	187,99	Wh
Th. Energy	66,98	Wh
Water	0,024	L
Inert waste	0,0116	kg
Waste for recycling	0,0086	kg
Waste for disposal	0,0007	kg
Aceton	0,0002	l
Spiritus	0,0001	l

4 Life Cycle Assessment

4.3 Use

In the use phase no emissions, waste and pollution are produced.

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	0,00
Acidification Potential (AP) [kg SO2-eq.]	0,00
Abiotic Depletion (ADP) [kg Sb-eq.]	0,00
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	0,00
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	0,00
Energy (net calorific value) [MJ]	0,00
Energy ren. (net calorafic value) [MJ]	0,00
Dangerous Waste [kg]	0,00
Inert Waste [kg]	0,00
Radioactive Waste [kg]	0,00
Hazard-free Waste [kg]	0,00
Wate rconsumption [l]	0,00
Water pollution [m^3]	0,00
Air pollution [m^3]	0,00

4 Life Cycle Assessment

4.4 End of life

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	6,00E-01
Acidification Potential (AP) [kg SO2-eq.]	-3,40E-04
Abiotic Depletion (ADP) [kg Sb-eq.]	-4,30E-09
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	-1,80E-08
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	1,30E-04
Energy (net calorific value) [MJ]	-9,70E-01
Energy ren. (net calorafic value) [MJ]	-8,90E-02
Dangerous Waste [kg]	0,00E+00
Inert Waste [kg]	7,10E-01
Radioactive Waste [kg]	-2,30E-04
Hazard-free Waste [kg]	8,40E-13
Water consumption [l]	-2,80E-01
Water pollution [m^3]	2,50E-05
Air pollution [m^3]	4,10E+00

Here we assume that the product is completely deposited.

Due to the organic materials resulting in credits, there is a positive impact on the overall result of the product.

4 Life Cycle Assessment

4.5 Transportation

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

For transport by sea a container ship with about 27 500 dwt is accepted.

Transport mode	Distance [km]	Mass [%]
Sea	16800	30
Truck	4716	70
Total	21516	100

Transport mode	Distance [km]	Mass [%]
Truck	2300	100

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	4,80E-01
Acidification Potential (AP) [kg SO2-eq.]	4,10E-03
Abiotic Depletion (ADP) [kg Sb-eq.]	1,00E-08
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	9,60E-10
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	3,40E-04
Energy (net calorific value) [MJ]	6,70E+00
Energy ren. (net calorafic value) [MJ]	8,90E-03
Dangerous Waste [kg]	0,00E+00
Inert Waste [kg]	1,70E-02
Radioactive Waste [kg]	1,20E-05
Hazard-free Waste [kg]	0,00E+00
Water consumption [l]	4,20E-02
Water pollution [m³]	1,50E-04
Air pollution [m³]	4,80E-02

This transport scenario is based on the assumptions of the limit stretch 2009 EPTA study by PE International, and was evaluated for the product weight.

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 summarized here.