

# Carbon Footprint Impact Calculation for the Implementation of an Extruder

PVC Recycling Limited

November 2009



Supported by



## EXECUTIVE SUMMARY

Following the request of Mr Ian Murray and Ms Joanne Murray a carbon calculation report for the implementation of the equipment for PVC processing on the compounder, Groundwork are pleased to provide you with an overview of the potential savings identified for your business.

### Total Carbon Emissions Savings

As a result of the review we have been able to identify the following possible Carbon emissions savings by installing the compounder

<b>Carbon Savings (CO<sub>2</sub> Tonnes)</b>
4,488

## METHODOLOGY

The Carbon Footprint calculation includes electricity, gas waste, waste recycled, water and water treatment. The latest carbon conversion factors have been used and are included in the Calculation section of this report.

The calculation is based on the following baseline:

- 24 hour, 360 days a year operation
- compounder power consumption 150 KWh
- Current level of production of 1.1 Tonnes of PVC per hour
- Projected level of production of 1.5 Tonnes of PVC per hour
- Steel Recycled 15 Tonnes per week
- Non Ferrous Metal 2 Tonnes per week
- 40 Tonnes of general waste sent to landfill

The usage of each segment of the carbon footprint is calculated from annual figures using from Defra, Environment Agency and Carbon Trust.

Sources:

- Carbon Trust - CTL018 Energy and carbon conversions
- Defra - GHG conversion factors for company reporting, 2008. [www.defra.gov.uk/environment/business/reporting/conversion-factors.htm](http://www.defra.gov.uk/environment/business/reporting/conversion-factors.htm)
- Environment Agency - Carbon calculator for construction activities <http://www.environment-agency.gov.uk/business/sectors/37543.aspx>

## CALCULATIONS

**Table 1. Current PVC Recycling Limited Carbon Footprint**

No	Activity	Units / Year	Kg CO <sub>2</sub> / Unit	Kg CO <sub>2</sub>
1	<i>Electricity</i>	<i>327,272.72 KWh</i>	<i>0.537</i>	<i>175,745.45</i>
2	<i>Gas</i>	<i>N/A</i>	<i>0.185</i>	<i>N/A</i>
3	<i>General Waste</i>	<i>480 Tonnes</i>	<i>81*</i>	<i>38,880</i>
4	<i>PVC Recycled</i>	<i>9,504 Tonnes</i>	<i>-1,500*</i>	<i>-14,256,000</i>
5	<i>Waste Ferrous</i>	<i>780 Tonnes</i>	<i>-1,300*</i>	<i>-1,014,000</i>

6	Waste Non Ferrous	104 Tonnes	-9,000*	-936,000
7	Water	480 m <sup>3</sup>	0.276*	132
8	Water Treatment	480 m <sup>3</sup>	0.693*	333
<b>Totals</b>				<b>-15,990,909.55</b>

\* Please refer to the Carbon Emissions PVC Recycling.xls Excel Document enclosed

**Table 2. After the installation of the 150 KWh compounder**

No	Activity	Units / Year	Kg CO <sub>2</sub> / Unit	Kg CO <sub>2</sub>
1	Electricity	1,623,272.72 KWh	0.537	871,697.45
2	Gas	N/A	0.185	N/A
3	General Waste	480 Tonnes	81*	38,880
4	PVC Recycled	12,960 Tonnes	-1,500*	-19,440,000
5	Waste Ferrous	780 Tonnes	-1,300*	-1,014,000
6	Waste Non Ferrous	104 Tonnes	-9,000*	-936,000
7	Water	480 m <sup>3</sup>	0.276*	132
8	Water Treatment	480 m <sup>3</sup>	0.693*	333
<b>Totals</b>				<b>-20,478,957.55</b>

\* Please refer to the Carbon Emissions PVC Recycling.xls Excel Document enclosed

Based on the Table 1 and Table 2 this project will bring the following changes to PVC Recycling Ltd's carbon footprint.

**Table 3. CO<sub>2</sub> Emissions changes**

No	Activity	Units / Year	Kg CO <sub>2</sub>
1	Electricity	1,296,000 KWh	695,952
2	Gas	N/A	N/A
4	Waste	0 Tonnes	0
5	Waste Recycled	3,456 Tonnes	-5,184,000
5	Water	0 m <sup>3</sup>	0
6	Water Treatment	0 m <sup>3</sup>	0
<b>Total Savings</b>			<b>-4,488,048.45</b>

### Embedded Carbon Emissions of the extruded PVC Recycled

This Carbon footprint can also be contrasted against the direct emissions per tonne for the production of virgin PVC as shown in the table below:

**Table 4. Embedded Carbon Emissions of the extruded PVC Recycled**

Product	Tonnes (Year)	Tonnes CO <sub>2</sub> / Tonne PVC	Tonnes of CO <sub>2</sub> (Year)
PVC Recycled	12,960	0.07	911
Virgin PVC	12,960	2.41**	31,233

\*\*Source: Environment Agency Carbon calculator for construction activities.

### Further Support

To assist your business in achieving these goals quickly and to a high standard, Groundwork can provide a dedicated business advisor to assist you whilst you are focusing on other core business priorities. Many companies using Groundwork services have benefited from this approach which has led us to identify over £8 million savings with Greater Manchester businesses since October 2007.

Our advisory team also have established relationships with suppliers of low carbon technologies, and can signpost businesses to grant support should you wish to invest in such technologies.

We can also provide support to access grant funding so that considered investments in new technology can be cheaper to your business.

For more information on any of the recommendations or to access further support, please contact your dedicated advisor.

## OUR STORY

Groundwork is a national environmental charity that aims to build sustainable businesses. Our aim is to help you stay competitive and successful by reducing your costs as well as your impact on the local and global environment.

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## DISCLAIMER

The Carbon Footprint Review is not a technical compliance audit and no testing or sampling of polluting agents (land, air or water) has taken place. Groundwork and its advisors will make every effort to ensure the information provided through this report is appropriate and accurate, however only the courts can authoritatively interpret the law and only acts and regulations have force of law.

The final decision regarding any advice/information provided by Groundwork is the commercial responsibility of PVC Recycling Limited1351.

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