

**Carbon Footprint Ltd**

Worting House  
Church Lane  
Basingstoke  
Hampshire  
RG23 8PX, UK

Tel: 01256 345 645

Fax: 01256 811 876

emma.percy@carbonfootprint.com

www.carbonfootprint.com

8 August 2017

## **Product Emissions Comparison for Catalytic Burners Ltd vs. Traditional Industry Chafer**

Catalytic Burners Ltd (henceforth Catalytic Burners) has commissioned Carbon Footprint Ltd to undertake a like for like product comparison, analysing the difference in emissions from usage and disposal using their Castle Chafer system, to the same emissions from a Traditional Chafer system.

### **Calculation Scope**

The scope of the product comparison covers only the usage and disposal of the gas/gel cans and stainless steel roll top (after the end of its life) of both the Castle Chafer and Traditional Chafer. Emissions from the raw materials, manufacture and transport of the products are outside of the scope of this assessment as this is a comparison of performance. Emissions have been calculated using emissions factors published by Defra<sup>1</sup> (June 2016) and United States EPA<sup>2</sup>.

### **Calculation Scenario**

Both the Castle Chafer and the Traditional Chafer have been compared using a 1 hour scenario where the Castle Chafer uses 11.5g of LPG fuel (Butane 70%/ Propane 30%) and disposes of the 150g gas can (apportioned to 1 hour of use) and the Traditional Chafer uses 200g of Methanol and 750g of water and disposes of the empty 50g gel can. The Castle Chafer does not require water when in use and the method of disposal for both products is through closed loop recycling.

This one hour scenario has then been scaled up to an average lifetime scenario of 6 years which Catalytic Burners assumes equates to 8,400 hours. Within the scenario for the disposal of both products, the weight of the stainless steel roll top chafer for each respective product has been included, as their life time is approximately 6 years

### **Emissions from Usage**

The following table details the emissions from the use of both the Chafer systems for a 1 hour scenario and a lifetime scenario of 8,400 hours. The Caste Chafer gas can has a full run time of 20 hours, so the emissions have been apportioned to a 1 hour event. In addition, for the traditional chafer system, 3 litres of water is used for a 4 hour event, so water usage has also been apportioned for the 1 hour scenario.

<sup>1</sup> Department for Environment, Food and Rural Affairs (2016) 'Greenhouse Gas Reporting – UK Conversion Factors' - <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2016>

<sup>2</sup> Environmental Protection Agency (2014) 'Emissions Factors for Greenhouse Gas Inventories' - [https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors\\_2014.pdf](https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf)

There is a 84.4% saving in GHG emissions by using the Castle Chafer system (in comparison with the Traditional Chafer), however the difference in emissions during use is the result of the different amount of fuel used by the chafers, rather than the type of fuel.

Product	1 hour scenario			Lifetime Scenario (8400 hours)		
	Emissions from Fuel (gCO <sub>2</sub> e)	Emissions from Water usage (gCO <sub>2</sub> e)	Total Emissions (gCO <sub>2</sub> e)	Emissions from Fuel (kgCO <sub>2</sub> e)	Emissions from Water usage (kgCO <sub>2</sub> e)	Total Emissions (kgCO <sub>2</sub> e)
Castle Chafer	33.83	0.00	<b>33.83</b>	284.18	0.00	<b>284.18</b>
Traditional Chafer	216.62	0.26	<b>216.88</b>	1819.62	2.17	<b>1821.78</b>

### Emissions from Disposal

As the Castle Chafer system gas can has a lifetime of 20 hours, the disposal emissions for the 1 hour scenario have been apportioned. Catalytic Burners has assumed that all gas/gel cans are recycled for both scenarios and the weight of the steel roll top chafer has been included in the emissions for the lifetime scenario. Furthermore, for the lifetime scenario, 8,400 gel cans (50g) are recycled vs. 420 gas cans (150g) for the Castle Chafer system are recycled which is where the GHG emission saving is made.

Product	1 hour scenario			Lifetime Scenario (8400 hours)		
	Weight (kg)	Disposal Route	Emissions (gCO <sub>2</sub> e)	Weight (kg)	Disposal Route	Emissions (kgCO <sub>2</sub> e)
Castle Chafer	0.150	Recycling	<b>0.16</b>	13.42	Recycling	<b>1.60</b>
Traditional Chafer	0.050	Recycling	<b>1.05</b>	10.55	Recycling	<b>9.04</b>

### Total

The total emissions for each scenario, relating to both usage and disposal of each system is detailed below.

Product	1 hour scenario	Lifetime scenario (8400 hours)
	Total Emissions (gCO <sub>2</sub> e)	Total Emissions (kgCO <sub>2</sub> e)
Castle Chafer	33.99	285.78
Traditional Chafer	217.93	1830.82

This assessment and report was produced by:



Emma Percy BSc (Hons)  
Environmental Consultant  
Carbon Footprint Ltd