

Study of Cost Savings Gained
by using a
Sturdy Products 140lt Bio Bin
versus a
Standard 140lt Wheel Bin



STURDY PRODUCTS LIMITED
Blessington, Co Wicklow
Tel: +353 (0)45 865044
E-mail: sales@sturdyproducts.com
Website: www.sturdyproducts.com

Company Profile

With over 27 years experience, Sturdy Products Limited is a market leader in the Plastic Rotational Moulding industry. Based in Blessington, Co. Wicklow the company operates from its 32,000 sq/ft facility on a 4 acre site, offering over 300 products to market sectors which include Domestic, Construction, Environmental, Agricultural and Equestrian. We also distribute products for some Blue Chip companies. Sturdy Products offers a complete Custom Moulding service to its clients, from initial concept right through to product manufacture, all under one roof. The company has the capability to manufacture plastic products up to 12 cubic metres in size.

Sturdy Products Limited has been supplying waste containers to Councils, Local Authorities and Waste Contractors throughout the whole of Ireland for many years. The containers range from 90lt up to 1280lt and are available in both plastic and steel. The range also includes a Standard 140lt Brown Bin as well as the new 140lt Bio Bin on which this experiment is based.

Background to Experiment

With the addition of the 140lt Bio Bin to our current range of wheel bins, it was decided to analyse the organic waste weight reduction over a three week period using the Bio Bin versus a Standard 140lt Brown Bin.

The bins were filled with identical type and consistency of organic waste which consisted of grass cuttings, hedge cuttings, vacuum cleaner contents, uncooked waste vegetables and 2 litres of liquid. Each bin was filled with exactly the same quantity of waste – 23.9kg.

Analysis

Over the course of the experiment the following areas were analysed:

- Weight Loss
- Volume Loss
- Quality of Compost
- Saving for Operator through reduced disposal costs at the weighbridge
- Saving in Transport
- Carbon Footprint

Twice per week the weight of waste, waste volume reduction and outside temperature were recorded. A photograph of each bin and its contents was also taken and level which the waste dropped in each bin was marked.



STURDY PRODUCTS LIMITED
 Blessington, Co Wicklow
 Tel: +353 (0)45 865044
 E-mail: sales@sturdyproducts.com
 Website: www.sturdyproducts.com

STANDARD 140lt WHEEL BIN versus 140lt BIO BIN

Weight of Bins:	Standard 140lt Wheel Bin	10.3 kg
	140lt Bio Bin	11.5 kg

The Following items were placed in both bins:

Uncooked Vegetable Waste:	12.0 kg
Vacuum Cleaner Contents:	1.0kg
Hedge Clippings:	3.7 kg
Grass:	5.4 kg
2 Litres of Liquid:	1.8 kg
Total Weight of Waste	23.9 kg

Total Weight of Bins + Waste:	Standard 140lt Wheel Bin	34.2 kg
	140lt Bio Bin	35.4 kg

Standard 140lt Wheel Bin



140lt Bio Bin



STURDY PRODUCTS LIMITED
 Blessington, Co Wicklow
 Tel: +353 (0)45 865044
 E-mail: sales@sturdyproducts.com
 Website: www.sturdyproducts.com

WEEK 1

Tuesday 01.04.2008

Temperature: 12°

Total Weight of Standard 140lt Wheel Bin + Waste:	33.8 kg
Less Weight of Bin:	10.3 kg
Weight of Waste:	23.5kg
Waste Weight Loss:	0.4kg
Volume Reduction	12.9lt

Total Weight of 140lt Bio Bin + Waste:	34.1kg
Less Weight of Bin:	11.5 kg
Weight of Waste:	23.9kg
Waste Weight Loss:	1.3 kg
Volume Reduction	14.8lt



Standard 140lt Wheel Bin



140lt Bio Bin

Note: The level of waste is slightly higher in the Bio Bin at the start. This is because of the false 'drainage floor' in the Bio Bin

Friday 04.04.2008

Temperature: 13°

Total Weight of Standard 140lt Wheel Bin + Waste:	33.6 kg
Less Weight of Bin:	10.3 kg
Weight of Waste:	23.3kg
Waste Weight Loss:	0.6 kg
Volume Reduction	12.2lt

Total Weight of 140lt Bio Bin + Waste:	33.6kg
Less Weight of Bin:	11.5 kg
Weight of Waste:	22.1kg
Waste Weight Loss:	1.8 kg
Volume Reduction	13.0lt



Standard 140lt Wheel Bin



140lt Bio Bin



STURDY PRODUCTS LIMITED
 Blessington, Co Wicklow
 Tel: +353 (0)45 865044
 E-mail: sales@sturdyproducts.com
 Website: www.sturdyproducts.com

WEEK 2

Tuesday 08.04.2008

Temperature: 8°

Total Weight of Standard 140lt Wheel Bin + Waste:	33.4kg
Less Weight of Bin:	10.3 kg
Weight of Waste:	23.1kg
Waste Weight Loss:	0.8kg
Volume Reduction	5.7lt

Total Weight of 140lt Bio Bin + Waste:	32.9kg
Less Weight of Bin:	11.5 kg
Weight of Waste:	21.4kg
Waste Weight Loss:	2.5kg
Volume Reduction	7.7lt



Standard 140lt Wheel Bin



140lt Bio Bin

Friday 11.04.2008

Temperature: 10°

Total Weight of Standard 140lt Wheel Bin + Waste:	33.2 kg
Less Weight of Bin:	10.3 kg
Weight of Waste:	22.9kg
Waste Weight Loss:	1.0 kg
Volume Reduction	5.0lt

Total Weight of 140lt Bio Bin + Waste:	32.6kg
Less Weight of Bin:	11.5 kg
Weight of Waste:	21.1kg
Waste Weight Loss:	2.8 kg
Volume Reduction	6.6lt



Standard 140lt Wheel Bin



140lt Bio Bin



STURDY PRODUCTS LIMITED
 Blessington, Co Wicklow
 Tel: +353 (0)45 865044
 E-mail: sales@sturdyproducts.com
 Website: www.sturdyproducts.com

WEEK 3

Tuesday 15.04.2008

Temperature: 13°

Total Weight of Standard 140lt Wheel Bin + Waste:	33.0kg
Less Weight of Bin:	10.3 kg
Weight of Waste:	22.7kg
Waste Weight Loss:	1.2kg
Volume Reduction	4.3lt

Total Weight of 140lt Bio Bin + Waste:	32.1kg
Less Weight of Bin:	11.5 kg
Weight of Waste:	20.6kg
Waste Weight Loss:	3.3kg
Volume Reduction	7.4lt



Standard 140lt Wheel Bin



140lt Bio Bin

Friday 18.04.2008

Temperature: 8°

Total Weight of Standard 140lt Wheel Bin + Waste:	32.7 kg
Less Weight of Bin:	10.3 kg
Weight of Waste:	22.4kg
Waste Weight Loss:	1.5 kg
Volume Reduction	3.6lt

Total Weight of 140lt Bio Bin + Waste:	31.6kg
Less Weight of Bin:	11.5 kg
Weight of Waste:	20.1kg
Waste Weight Loss:	3.8 kg
Volume Reduction	5.1lt



Standard 140lt Wheel Bin



140lt Bio Bin



STURDY PRODUCTS LIMITED
 Blessington, Co Wicklow
 Tel: +353 (0)45 865044
 E-mail: sales@sturdyproducts.com
 Website: www.sturdyproducts.com

RESULTS

Standard 140lt Wheel Bin (*waste starting weight – 23.9kg*)

WEEK	WEIGHT LOSS	% WEIGHT REDUCTION	VOLUME REDUCTION	% VOLUME REDUCTION
1	.06kg	2.51%	25.1lt	17.9%
2	1.0kg	4.18%	10.8lt	7.7%
3	1.5kg	6.27%	7.9lt	5.6%

140lt Bio Bin (*waste starting weight – 23.9kg*)

WEEK	WEIGHT LOSS	% WEIGHT REDUCTION	VOLUME REDUCTION	% VOLUME REDUCTION
1	1.8kg	7.53%	27.8lt	19.8%
2	2.8kg	11.71%	14.3lt	10.2%
3	3.8kg	15.89%	12.5lt	8.9%



Contents of Standard 140lt Wheel Bin after three weeks. Contents were wet, loose and semi-composted.



Contents of 140lt Bio Bin after three weeks. Contents were dry, compact and useable compost.

SAVINGS BASED ON REDUCTION OF WEIGHT OF WASTE

The following savings calculations are based on a fortnightly collection from 50,000 households and on the assumption that the charge is approximately €100 to dispose 1 tonne of organic waste at the weighbridge in the facility.

Standard 140lt Wheel Bin

50,000 households @ 22.9kg/bin = 1145 tonnes/collection

140lt Bio Bin

50,000 households @ 21.1kg/bin = 1055 tonnes/collection

Saving of 90 tonnes/collection

90 tonnes X €100/tonne disposal cost = €9,000

TOTAL SAVING BY SWITCHING TO A 140lt BIO BIN IS:

€9000 X 26 collections/year = €234,000

SAVINGS BASED ON REDUCTION OF WEIGHT OF WASTE AND SWITCHING TO A 3 WEEK COLLECTION

As the results show on the previous page, the volume of the waste in the Bio Bin reduces by almost 1/3 in the first 2 weeks, allowing for an extra weeks worth of waste to be put into the bin before collection thus allowing for a 3 week collection versus a 2 week collection. The savings calculations below are based on a 3 week collection of 50,000 households.

The saving from weight reduction for 2 weeks = €234,000/year (see above)

The saving from weight reduction for 3 weeks is calculated $(€234,000 \div 2) \times 3 = €351,000$

Switching to a 3 week collection because of the volume reduction it is also possible to achieve further savings relating to the running costs of the waste collection trucks.

Assumptions:

- The collection rate for 50,000 households is approximately 900 houses/day/truck
- It would take a fleet of 11 waste trucks an average of 5 days to collect waste from 50,000 households
- The approximate cost to run a waste truck is €800/day



STURDY PRODUCTS LIMITED
 Blessington, Co Wicklow
 Tel: +353 (0)45 865044
 E-mail: sales@sturdyproducts.com
 Website: www.sturdyproducts.com

11 Trucks X €800 X 5 Days = €44,000 to make 1 collection for the entire region.

Based on a 2 week collection (26/Year), the cost for the year would be:

€44,000 X 26 = €1,144,000/Year

Based on a 3 week collection (17/Year), the cost for the year would be:

€44,000 X 17 = €748,000/Year

Saving: €1,144,000 less €748,000 = €396,000

TOTAL SAVING BY SWITCHING FROM A 140lt BROWN BIN TO A 140lt BIO BIN AND TO A 3 WEEK COLLECTION IS:

€396,000 (Relates to volume loss) + €351,000 (Relates to Weight Loss) = €747,000

CARBON FOOTPRINT SAVINGS BASED ON SWITCHING TO A 3 WEEK COLLECTION

We know that 1 litre of diesel produces approximately .733 kg of carbon and a waste collection truck uses on average 200lt of diesel/day.

200lt of diesel X .733kg of carbon X 5 Days = 733kg of carbon/truck/week

733kg X 11 waste collection trucks/fleet = 8,063kg/fleet/week

Based on a 2 week collection, the total carbon footprint for the fleet for 1 year would be:

8,063kg X 26 Collections/Year = 209,638kg

Based on a 3 week collection, the total carbon footprint for the fleet for 1 year would be:

8,063kg X 17 Collections/Year = 137,071kg

TOTAL CARBON SAVING BY SWITCHING TO A 3 WEEK COLLECTION WOULD BE:

209,638kg less 137,071kg = 72,567kg



STURDY PRODUCTS LIMITED
 Blessington, Co Wicklow
 Tel: +353 (0)45 865044
 E-mail: sales@sturdyproducts.com
 Website: www.sturdyproducts.com