

# Eco Materials Adviser: Opportunity Report

Part/Assembly number: Assy, Door  
Conducted by: miread@grantadesign.com

Date: 10/15/2012

This report is intended to help you identify where the biggest opportunities exist to improve the environmental performance of your assembly. For each environmental indicator, there is a summary for all parts analyzed. There is also a detailed breakdown that reveals the parts that are currently contributing most to the eco impact of your assembly.

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Notes:

- If your assembly exceeds 20 parts, then only the first 20 parts are included in this analysis
- For information on how these figures are calculated, and how to interpret them, please see the appendices at the end of this report.

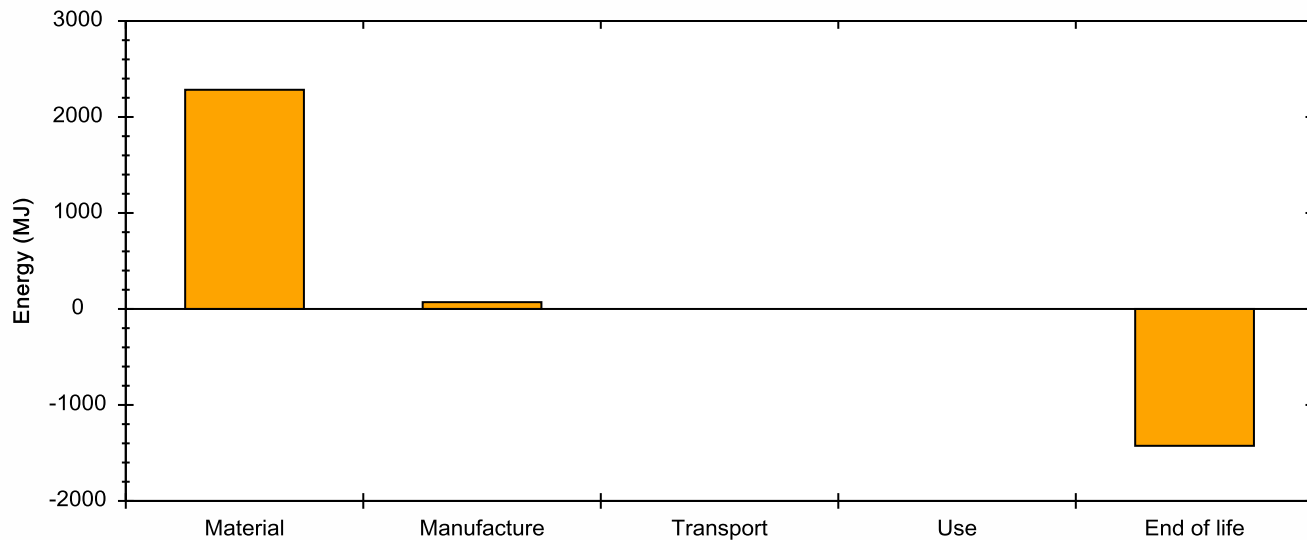
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### Energy usage: summary for 19 parts analyzed



	Energy (MJ)	Percentages
Material	2300	250 %
Manufacture	71	8 %
Transport	Available in Full Version of Eco Materials Adviser	
Use	Available in Full Version of Eco Materials Adviser	
End of life	-1400	-150 %
Total	930	100 %

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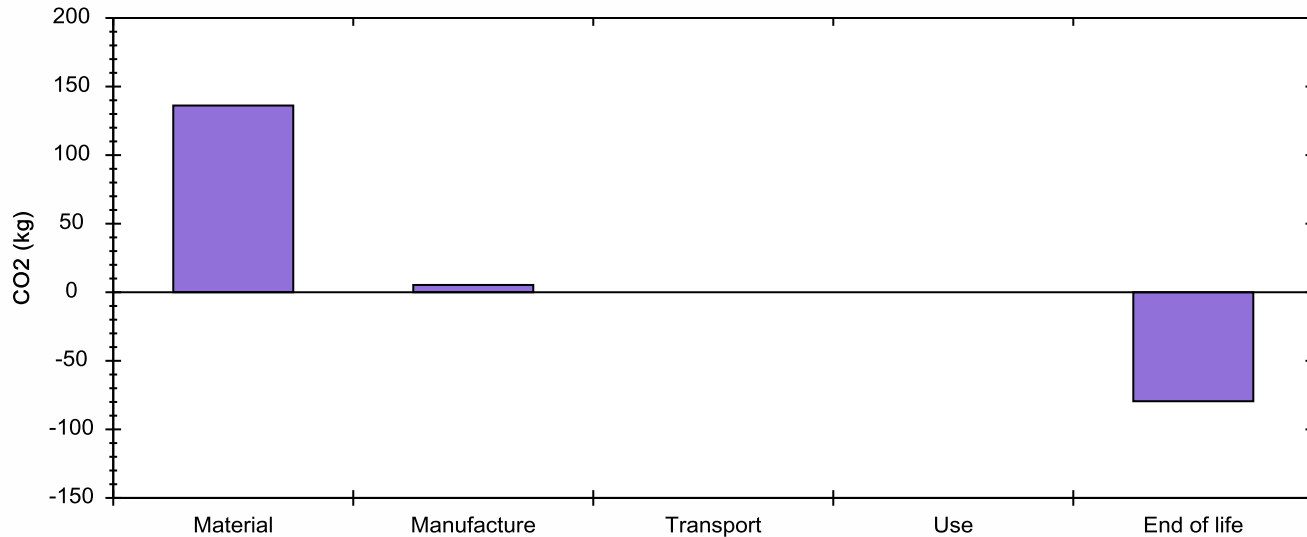
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### CO2 footprint: summary for 19 parts analyzed



	CO2 (kg)	Percentages
Material	140	220 %
Manufacture	5.3	9 %
Transport	Available in Full Version of Eco Materials Adviser	
Use	Available in Full Version of Eco Materials Adviser	
End of life	-79	-130 %
Total	62	100 %

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### **RoHS compliance and Food-contact compatibility: summary for 19 parts analyzed**

	RoHS	Food
Compliant or compatible parts	19	13
Non-compliant or non-compatible parts	0	3
Conditions apply, status unknown or no material assigned	0	3
Total	19	19

#### **Important:**

A material that is described as 'non-compliant' with the RoHS Directive or 'non-compatible' for food contact applications means that the material is likely to contain substances that: are restricted under the RoHS Directive; or make the material unsuitable for food contact applications, respectively. By default, parts with no material assigned are also assumed to be RoHS non-compliant and food contact non-compatible. See the 'How to improve this analysis' section for details of which parts have no material assigned.

If a material is described as RoHS Directive 'compliant' or food contact 'compatible', it means that there are commercial grades of that material available which are RoHS Directive compliant or suitable for food contact applications respectively.

It is the responsibility of the user to determine the status of the specific material grades used with regard to RoHS Directive compliance and food-contact compatibility.

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## End of life: summary for 19 parts analyzed

	Number of parts
Reuse	0
Recycle	11
Downcycle	2
Combustion	6
Landfill	0
No material assigned	0
Total	19

### Definitions of end of life strategies:

<b>Reuse</b>	Redistribution of a product to a consumer sector that is willing to accept it in its used state, either for its original purpose or for a different one.
<b>Recycle</b>	(Also called closed-loop recycling.) Reprocessing of recovered materials at the end of product life, returning them to the supply chain as a material of similar type, with similar performance and embodied energy.
<b>Downcycle</b>	(Also called open-loop recycling.) Reprocessing of recovered materials at the end of product life, returning them to the supply chain as a material with lower performance and lower embodied energy. For example: conversion of PET bottles into fibers for fleece clothing; crushing of materials into aggregate or filler replacement.
<b>Combustion</b>	Recovery of a proportion of embodied energy (in the form of heat) by controlled combustion.
<b>Landfill</b>	Disposal of a product by committing it to landfill.

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### Energy usage: breakdown for the highest-contributing parts

#### Energy: Material - breakdown by part

	Energy (MJ)	Percentages
Frame, Door:2	1100	49 %
Panel, Door:1	650	28 %
Hinge, Lower:2	300	13 %
PK46.51.11.015:1	57	2 %
Hinge, Upper:2	43	2 %
Remaining parts	100	5 %
Total	2300	100 %

#### Energy: Manufacture - breakdown by part

	Energy (MJ)	Percentages
Panel, Door:1	36	51 %
PK46.51.11.015:1	25	35 %
integral hinge:1	4.2	6 %
integral hinge:2	4.2	6 %
PK46.51.13.003:1	0.36	0.5 %
Remaining parts	0.72	1 %
Total	71	100 %

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### Energy: End of life - breakdown by part

	Energy (MJ)	Percentages
rubber ring:1	-0.073	0 %
rubber ring:2	-0.073	0 %
rubber ring:5	-0.073	0 %
rubber ring:6	-0.073	0 %
rubber ring:3	-0.073	0 %
Remaining parts	-1400	100 %
Total	-1400	100 %

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# CO2 footprint: breakdown for the highest-contributing parts

### CO2: Material - breakdown by part

	CO2 (kg)	Percentages
Frame, Door:2	69	51 %
Panel, Door:1	36	27 %
Hinge, Lower:2	18	13 %
PK46.51.11.015:1	3.9	3 %
Hinge, Upper:2	2.6	2 %
Remaining parts	6.4	5 %
Total	140	100 %

### CO2: Manufacture - breakdown by part

	CO2 (kg)	Percentages
Panel, Door:1	2.7	51 %
PK46.51.11.015:1	1.9	35 %
integral hinge:1	0.31	6 %
integral hinge:2	0.31	6 %
PK46.51.13.003:1	0.027	0.5 %
Remaining parts	0.054	1 %
Total	5.3	100 %

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### CO2: End of life - breakdown by part

	CO2 (kg)	Percentages
rubber ring:1	0.028	0 %
rubber ring:2	0.028	0 %
rubber ring:5	0.028	0 %
rubber ring:6	0.028	0 %
rubber ring:3	0.028	0 %
Remaining parts	-80	100 %
Total	-79	100 %

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### Water usage: breakdown for the highest-contributing parts

#### Water: Material - breakdown by part

	Water (liters)	Percentages
Frame, Door:2	6400	76 %
Panel, Door:1	1000	12 %
Hinge, Lower:2	480	6 %
PK46.51.11.040:2	110	1 %
PK46.51.11.015:1	98	1 %
Remaining parts	250	3 %
Total	8400	100 %

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## Cost: breakdown for the highest-contributing parts

### Cost: Material - breakdown by part

	Cost (USD)	Percentages
Panel, Door:1	28	41 %
Frame, Door:2	17	24 %
Hinge, Lower:2	17	24 %
Hinge, Upper:2	2.4	3 %
PK46.51.11.015:1	1.3	2 %
Remaining parts	4.1	6 %
Total	70	100 %

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**To improve the accuracy of your analysis, please address the following issues:**

- i** No process assigned to Frame, Door:2.
- i** No process assigned to PK46.51.11.040:2.
- i** No process assigned to 2108-6105015:2.
- i** No process assigned to Hinge, Upper:2.
- i** No process assigned to Hinge, Lower:2.
- i** No process assigned to Handle, Door:1.
- i** No process assigned to rubber ring:1.
- i** No process assigned to rubber ring:2.
- i** No process assigned to rubber ring:5.
- i** No process assigned to rubber ring:6.
- i** No process assigned to rubber ring:3.
- i** No process assigned to rubber ring:4.

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### Appendix A: How are these figures calculated?

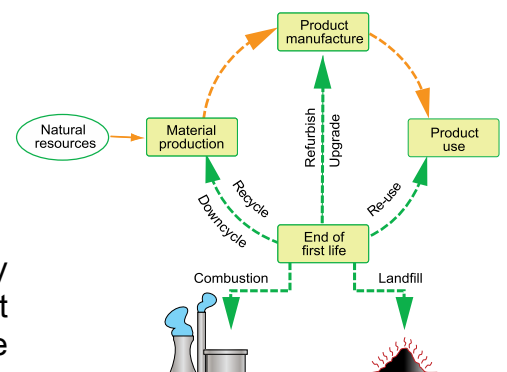
The environmental indicators included in this analysis are based on detailed, quantitative studies of the natural resources and energy required to:

- produce a material,
- process that material in manufacturing operations,
- manage that material at the end of its useful life.

These studies allow us to say how much energy is consumed or how much CO<sub>2</sub> is released into the atmosphere in order to produce, process and manage 1kg of a material.

The base version of the Eco Materials Adviser focuses on the analysis of the material production, product manufacture and end of life phases of the product lifecycle. The full version extends this analysis to include the eco impacts associated with the transport and use phases.

For each material in the database a default end of life strategy has been assigned (recycle, landfill etc.) based on the most common strategy employed in industrial practice today. Where the end of life phase is shown as reducing the eco impact, this is due to the environmental benefits of avoiding the production of virgin materials (or fuel, in the case of combustion with heat recovery). Further explanation of these calculations and the extensive range of data sources can be found in the 'Eco Impact analysis' section of your user guide.



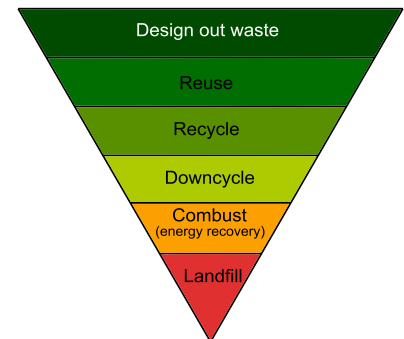
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## Appendix B: The Waste Hierarchy

The principle of the waste hierarchy is to prioritise End of Life (EoL) strategies towards the top of the hierarchy, such as 'reduce' and 'reuse', which help to retain the value and quality of materials, over strategies such as 'combust' and 'landfill' where material value is lost. Note that 'Design out waste' is not an EoL strategy as such but a design principle - look for opportunities to reduce the amount of material used throughout the product lifecycle.

It is important to note that the appropriate EoL strategy for an assembly is not simply determined by the EoL strategy proposed for the constituent parts. This is because the selection of an appropriate EoL strategy for an assembly will also depend on factors such as the methods used to join materials, the structure of the product and the need for certain parts to be treated separately to comply with legislative requirements (e.g. WEEE Directive). For instance, even if all parts of a product are listed as recyclable, this does not necessarily mean that the assembly can be recycled.



Like Eco Materials Adviser? Upgrade to the full version which:

- Has no limit on the number of parts in your assembly
- Features a more comprehensive materials database of around 3,000 materials
- Analyses the full product lifecycle, including transport and use phases

Upgrade now at: <http://inventor.grantadesign.com/en/upgrade.asp>

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