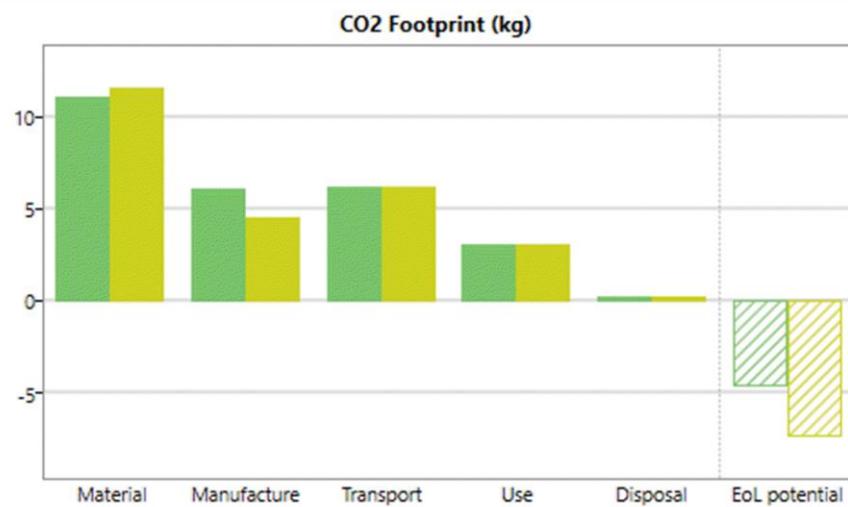




GRANTA SELECTOR

# Getting Started with Granta Selector

## Eco Audit tool



# 1 About these exercises

The Getting Started exercises provide an overview of the key tools and features in *Granta Selector*, and form a set of tutorials to help you familiarize yourself with the software. You can choose whether to work through them in order, or complete only the exercises relevant to you. They are intended for use with *Granta Selector 2021 R2*, and may not work correctly with earlier or later versions of *Granta Selector*.

There are also [Quick Start Videos](#) provided online to teach you about *Granta Selector*. The exercises can be used independently of the videos, or alongside them, to test and check your knowledge.

This set of exercises guides you through a case study using Eco Audit, comparing the environmental impact of two plastics used to make water bottles.

<i>Introduction to the Eco Audit Tool</i> .....	3
Exercise 1 : Product Definition .....	3
Exercise 2 : Compare Eco Audits .....	6
Exercise 3 : Saving and Exporting.....	7

## 1.1 Document conventions

In this document:

- ❖ Each step of the exercises is shown on a gold background, like this.

More detailed instructions appear below the main instruction.

Text on elements in the software (such as buttons, dialogs and tabs) appears in bold, **like this**. The names of records, datatables, and documents are emphasised *like this*.

Words and numbers that you type as you follow the instructions appear in monotype, like this.

## Introduction to the Eco Audit Tool

The Eco Audit Tool estimates the energy used and CO<sub>2</sub> produced during five key life phases of a product (material, manufacture, transport, use, and end of life) and identifies which is the dominant phase. This is the starting point for eco-aware product design, as it identifies which parameters need to be targeted to reduce the eco-footprint of the product.

In this case study:

- A brand of bottled mineral water is sold in 1 liter PET bottles with polypropylene caps.
- A bottle weighs 40 g, the cap 1 g.
- Bottles and caps are molded, filled, and transported 550 km from the French Alps to England by 14 tonne truck, refrigerated for 2 days, and then sold.
- The overall lifetime of the bottle is one year.

### Exercise 1: Product Definition

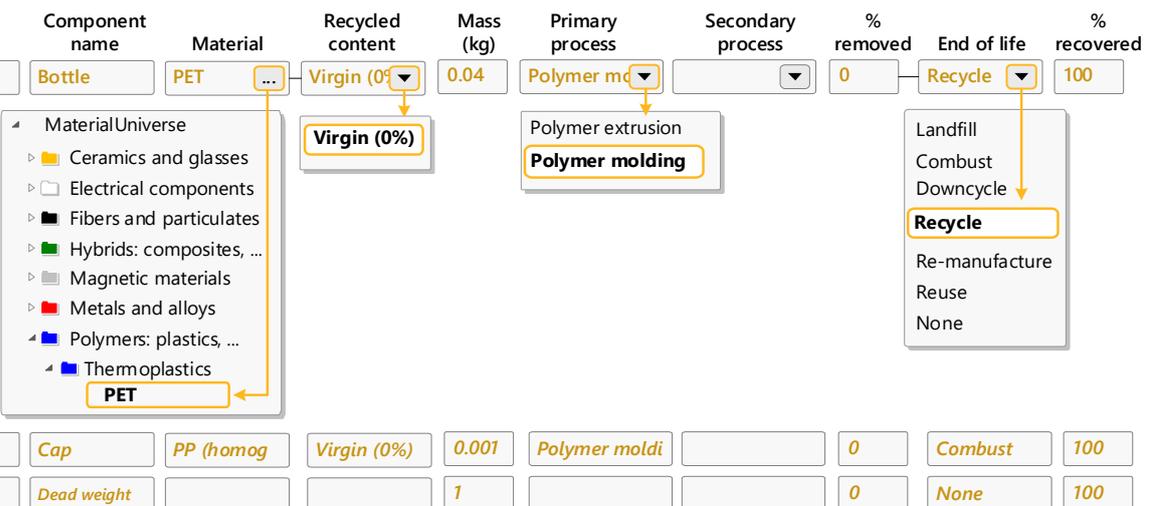
An example product file for this case study is installed with *Granta Selector* in the *Samples* folder, *Bottle mineral water.prd*. This section details how to recreate the example product file.

For an explanation of the calculations used at each stage, click **Help**  in the heading.

#### ❖ Define materials, manufacture, and end of life

Create a Bill of materials (BoM), selecting a *Primary process* and *End of life* destination. You can also enter a secondary process (optional).

Qty	Component name	Material	Recycled content	Mass (kg)	Primary process	Secondary process	% removed	End of life	% recovered
100	Bottle	PET	Virgin (0%)	0.04	Polymer molding		0	Recycle	100
100	Cap	PP (homog)	Virgin (0%)	0.001	Polymer molding		0	Combust	100
100	Dead weight			1			0	None	100

### ❖ Define method(s) and distance of transport

Transportation from site of manufacture to point of sale.

Stage Name	Transport type	Distance (km)
<input type="text" value="Bottling plant to point of sale"/>	<input type="text" value="14 tonne truck"/> ▼	<input type="text" value="550"/>
	<div style="border: 1px solid gray; padding: 5px;">         Sea freight          Rail freight  <input type="text" value="14 tonne truck"/>          Air freight – long haul          ...       </div>	

### ❖ Define conditions during use

Product Life and Country of use:

Product life:	<input type="text" value="1"/> years
Country of use:	<input type="text" value="United Kingdom"/> ▼
	<div style="border: 1px solid gray; padding: 5px;">         France          Germany  <input type="text" value="United Kingdom"/>          ...       </div>

Static Mode:

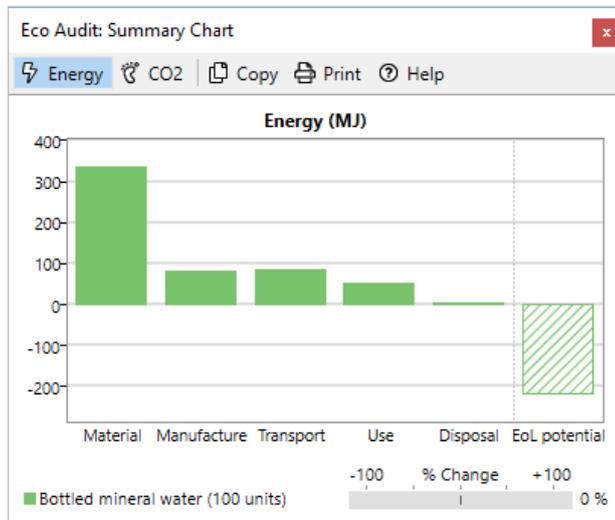
Energy used to refrigerate product at point of sale (average energy required to refrigerate 100 bottles at 4°C = 0.12kW).

Product uses the following energy:

Energy input and output:	<input type="text" value="Electric to mechanical (electric motors)"/> ▼	
Power rating:	<input type="text" value="0.12"/>	<input type="text" value="kW"/> ▼
Usage:	<input type="text" value="2"/> days per year	
Usage:	<input type="text" value="24"/> hours per day	
		<div style="border: 1px solid gray; padding: 5px;">         Fossil fuel to thermal, enclosed system          Fossil fuel to electric          Electric to thermal  <input type="text" value="Electric to mechanical (electric motors)"/>          ...       </div>

### ❖ View the summary chart and report

The **Summary chart** enables rapid identification of the dominant life phase. Toggle between views of energy usage or CO<sub>2</sub> footprint.



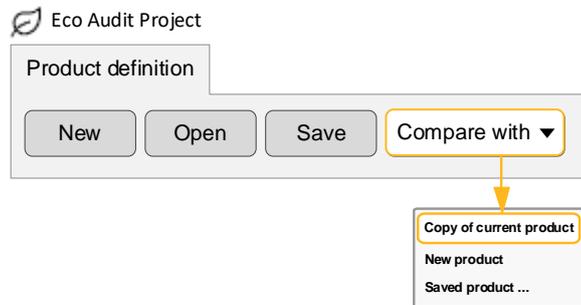
The chart shows that, in this project, *Material* is the dominant life phase. Each life phase can be clicked to show guidance on strategies to reduce its impact.

The **Detailed report** provides a component-by-component breakdown of each life phase, enabling the main contributors to the dominant life phase to be identified.

## Exercise 2: Compare Eco Audits

### ❖ Create a copy of your product for comparison

Click **Compare with** and select **Copy of current product**.



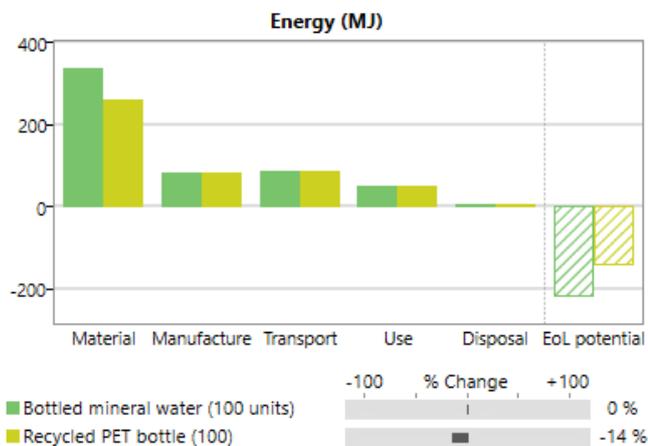
### ❖ Set the following values for the new product:

*Name:* Recycled PET Bottle (100)

*Recycled content:* 35%

### ❖ Generate the **Summary Chart**

The first life energy (not including EoL potential) is reduced by 14%.

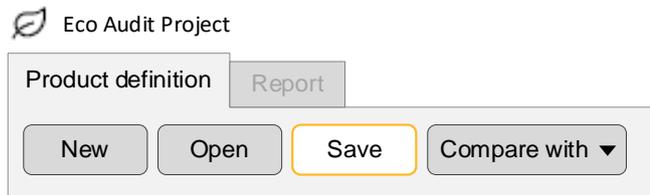


**Note:** You can copy the chart into a document or print it by clicking **Copy** or **Print** at the top of the chart window.

### Exercise 3: Saving and Exporting

Eco Audit projects do not form part of a selection project, so you will need to save them separately.

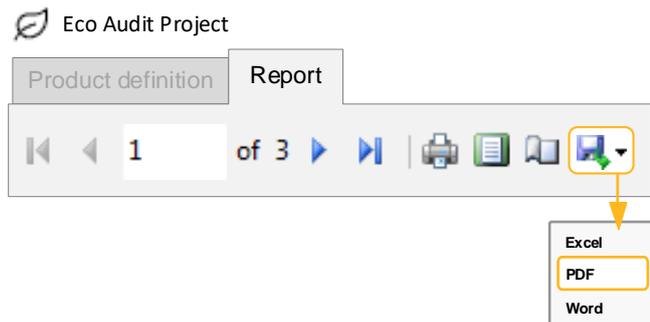
#### ❖ Save the product definition



#### ❖ Generate an Eco Audit report

Click the **Report** tab (or click **Detailed Report** on the Product definition tab).

#### ❖ Export the report as a PDF



**Note:** You will require a PDF reader such as Adobe Reader® to view the exported report.

## Copyright and Trademark Information

© 2021 ANSYS, Inc. All rights reserved. Unauthorized use, distribution or duplication is prohibited.

ANSYS, ANSYS Workbench, AUTODYN, CFX, FLUENT and any and all ANSYS, Inc. brand, product, service and feature names, logos and slogans are registered trademarks or trademarks of ANSYS, Inc. or its subsidiaries located in the United States or other countries. ICEM CFD is a trademark used by ANSYS, Inc. under license. CFX is a trademark of Sony Corporation in Japan. All other brand, product, service and feature names or trademarks are the property of their respective owners. FLEXlm and FLEXnet are trademarks of Flexera Software LLC.

## Disclaimer Notice

THIS ANSYS SOFTWARE PRODUCT AND PROGRAM DOCUMENTATION INCLUDE TRADE SECRETS AND ARE CONFIDENTIAL AND PROPRIETARY PRODUCTS OF ANSYS, INC., ITS SUBSIDIARIES, OR LICENSORS.

The software products and documentation are furnished by ANSYS, Inc., its subsidiaries, or affiliates under a software license agreement that contains provisions concerning non-disclosure, copying, length and nature of use, compliance with exporting laws, warranties, disclaimers, limitations of liability, and remedies, and other provisions. The software products and documentation may be used, disclosed, transferred, or copied only in accordance with the terms and conditions of that software license agreement.

ANSYS, Inc. and ANSYS Europe, Ltd. are UL registered ISO 9001: 2015 companies.

## U.S. Government Rights

For U.S. Government users, except as specifically granted by the ANSYS, Inc. software license agreement, the use, duplication, or disclosure by the United States Government is subject to restrictions stated in the ANSYS, Inc. software license agreement and FAR 12.212 (for non-DOD licenses).

## Third-Party Software

See the legal information in the product help files for the complete Legal Notice for ANSYS proprietary software and third-party software. If you are unable to access the Legal Notice, contact ANSYS, Inc.

Published in the U.S.A.

We welcome your feedback on this document. Please let us know if anything is unclear, if you spot an error, or have an idea for new content, by emailing [granta-docs@ansys.com](mailto:granta-docs@ansys.com)

Document version: SEL21-EA.02  
Published: June 2021