SOFTONOMY ™

PACKPROF ™

Demo - Calculations

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1. Introduction

The **Softonomy PackProf** software program is a specialised software product for managing information associated with **packaging**. By using this product, Customers can manage all the packaging information that is used within their business, both incoming and outgoing, and can generate statistical reports that meet compliance criteria, such as those set out by *Repak*.

The **demo version** of **PackProf** uses *sample data* based on a fictitious company. This document outlines the calculations that are performed within the demo. A **User Guide** on the demo is also available and should be consulted before reading this document. Note that the demo version is restricted and requires a software licence. If you have queries relating to **PackProf**, please direct these via email to info@softonomy.ie

2. Overview of Demo Data

The demo is simplified to ensure that the intelligence built into the **PackProf** application can be easily understood. The demo uses *sample data* that is based on a fictitious manufacturer of soft drinks, called **Z-drinks Ltd**. This company manufactures two main products: **Z-Cola, Z-Orange.** The products are manufactured from the following Items: Cola Concentrate, Orange Concentrate, Bottle Caps for Z-Orange, Bottle Caps for Z-Cola, Bottles for Z-Orange (1 litre), Bottles for Z-Cola (1 litre), Water, Gas. The Cola concentrate is supplied from a company called A-Cola Ltd. The Orange concentrate is supplied from a company called B-Orange Ltd. The Bottle Caps are bought in bulk from C-Caps Ltd. The Bottles are bought in bulk from D-Bottles Ltd.

3. Operational Data

For the period **Jul-Dec 2003**, Z-drinks Ltd received delivery of the following ordered supplies:

Item	Units
Cola Concentrate	200
Orange Concentrate	100
Bottle Caps (cola)	80
Bottle Caps (orange)	40
Bottles (cola)	1700
Bottles (orange)	850

To manufacture their products, Z-drinks Ltd use distilled water and mix it with the concentrate along with gas. A single 1,000 litre bulk container of concentrate produces 10,000 1-litre bottles of product. The bottled product is shipped on a pallet, each one carrying 864 bottles. The number of pallets of beverage product distributed by Z-drinks Ltd during the period was as follows:

Product	Ireland	Export	Total
Z-Cola	2310	0	2310
Z-Orange	600	555	1155

4. Packaging Data

4.1 Items

Item ID	Description	In/Out	Supplier	Country	Exported	Product
conc01	Cola Conc.	Input	A Cola Ltd	IE - Ireland	-	Z Cola
conc02	Orange Conc.	Input	B Orange Ltd	IE - Ireland	-	Z Orange
caps01	bottle caps	Input	C caps ltd	IE - Ireland	-	Z Cola
caps02	bottle caps	Input	C caps ltd	IE - Ireland	-	Z Orange
bottles01	bottles	Input	D Bottles Ltd	DE - Germany	-	Z Cola
bottles02	bottles	Input	D Bottles Ltd	DE - Germany	-	Z Orange
cola01	Z-Cola	Output			No	Z Cola
orange01	Z-Orange	Output			Both	Z Orange

4.2 Packaging

Item ID	Description	Type	Weight (kg)	Material Type	No. of pack-aging	Items Per Pack-aging	Number Of Items	Fate
conc01	Bulk Container	primary	20.000	Plastic	1	1	1	reuse
conc01	Metal Cap	primary	0.030	steel	1	1	1	reuse
conc01	pallet wrap	tertiary	0.500	Plastic	1	1	1	disposal
conc02	Bulk Container	primary	25.000	Plastic	1	1	1	reuse
conc02	Metal Cap	primary	0.040	steel	1	1	1	reuse
conc02	pallet wrap	tertiary	0.600	Plastic	1	1	1	disposal
caps01	cardboard box	primary	1.800	paperboard	50	500	25000	RPS
caps01	pallet	tertiary	15.000	wood	1	25000	25000	onward reuse
caps01	pallet wrap	tertiary	0.500	Plastic	1	25000	25000	disposal
caps02	cardboard box	primary	2.000	paperboard	50	500	25000	RPS
caps02	pallet	tertiary	15.000	wood	1	25000	25000	onward reuse
caps02	pallet wrap	tertiary	0.700	Plastic	1	25000	25000	disposal
bottles01	cardboard box	primary	1.900	paperboard	4	300	1200	non RPS
bottles01	pallet	tertiary	15.000	wood	1	1200	1200	onward reuse
bottles01	pallet wrap	tertiary	0.700	Plastic	1	1200	1200	disposal
bottles02	cardboard box	primary	1.600	paperboard	4	300	1200	non RPS
bottles02	pallet	tertiary	15.000	wood	1	1200	1200	onward reuse
bottles02	pallet wrap	tertiary	0.600	Plastic	1	1200	1200	disposal
cola01	case wrap	secondary	0.100	plastic	72	12	864	
cola01	pallet	tertiary	15.000	wood	1	864	864	onward reuse
cola01	bottle	primary	0.050	plastic	864	1	864	end-user
cola01	bottle cap	primary	0.005	plastic	864	1	864	end-user
cola01	pallet wrap	tertiary	1.000	plastic	1	864	864	
orange01	case wrap	secondary	0.100	plastic	72	12	864	
orange01	pallet	tertiary	15.000	wood	1	864	864	onward reuse
orange01	bottle	primary	0.060	plastic	864	1	864	end-user
orange01	bottle cap	primary	0.006	plastic	864	1	864	end-user
orange01	pallet wrap	tertiary	1.000	plastic	1	864	864	

5. Calculations

5.1 Packaging Table

Calculations are performed on the data in the Packaging Table to produce the following:

- Quantity (number) of Items contained in a shipped unit
- the weight (kg) of a packaging type required for a single Item
- the weight (kg) of a packaging type required for a shipped unit

Example: **Bottle Caps (caps01)**

Cardboard Box:

weight:	1.8 (kg)
amount of packaging in a shipped unit:	50 (boxes)
quantity of Items in packaging:	500 (bottle caps)

calculations:

Quantity (no.) of Items in a shipped unit:	50 x 500 = 25,000 caps
weight (kg) of packaging for a single Item:	1.8 / 500 = 0.0036 kg (=3.6g)
amount of packaging in a shipped unit:	1.8 * 50 = 90 kg

Similar calculations are performed for each packaging entry (ie: pallet, pallet wrap) resulting in the following data:

Item ID	Description	Weight (kg)	Amount of Packaging	Qty Items Per Packaging	Number Of Items	Weight Per Item	Weight Per Shipping Unit
caps01	cardboard box	1.8	50	500	25000	0.00360	90.0
caps01	pallet	15.0	1	25000	25000	0.00060	15.0
caps01	pallet wrap	0.5	1	25000	25000	0.00002	0.5

5.2 Irish Sourced - Input Packaging

This section details Total Tonnes (including reuse packaging) of Input Packaging that is Irish-sourced. In the demo data, this will include packaging from: conc01, conc02, caps01, caps02, as determined by the *Country* column. (Figures in **bold** are inserted into the report).

Example: Paper/Cardboard

caps01:

Quantity:	80
Boxes:	50
Weight:	1.8 kg
Tonnes:	7.2 (= 80 * 50 * 1.8 / 1000)

caps02:

Quantity:	40
Boxes:	50
Weight:	2.0 kg
Tonnes:	4.0 (= 40 * 50 * 2 / 1000)

Total: **11.2 tonnes** (= 7.2 + 4.0)

Similar calculations are performed on the other packaging types:

Steel: **0.010 tonnes**
= (200 * 0.03 / 1000) [conc01: metal caps]
+ (100 * 0.04 / 1000) [conc02: metal caps]

Plastic: **6.728 tonnes**
= (200 * 20 / 1000) [conc01: bulk container]
+ (200 * 0.5 /1000) [conc01: pallet wrap]
+ (100 * 25 / 1000) [conc02: bulk container]
+ (100 * 0.6 / 1000) [conc02: pallet wrap]
+ (80 * 0.5 / 1000) [caps01: pallet wrap]
+ (40 * 0.7 / 1000) [caps02: pallet wrap]

Wood: **1.800 tonnes**
= (80 * 15 / 1000) [caps01: pallets]
+ (40 * 15 / 1000) [caps02: pallets]

This section also details **Reuse Packaging Suitable for Continued Reuse** as determined by the *Fate* column.

Example: Steel

conc01: metal caps are returned to the supplier = (200 * 0.03 / 1000) = 0.006
conc02: metal caps are returned to the supplier = (100 * 0.04 / 1000) = 0.004
Total: **0.010 tonnes**

Similarly, the plastic bulk containers (conc01, conc02) are returned to the suppliers (= **6.5 tonnes**). The pallet wrap is disposed and is not tallied, the boxes are collected by an RPS contractor and are not tallied, whereas the pallets are available for onward reuse and because they are not in a formal reuse loop, are not tallied.

5.3 Imported - Input Packaging

This section details the Total Tonnes (including reuse packaging) of Input Packaging per packaging type that is Imported. In the demo data, this will include packaging from: bottles01, bottles02, as determined by the *Country* column.

Example: Paper/Cardboard

bottles01:

Quantity:	1700
Boxes:	4
Weight:	1.9 kg
Tonnes:	12.920 (=1700 * 1.9 * 4 / 1000)

bottles02:

Quantity:	850
Boxes:	4
Weight:	1.6 kg
Tonnes:	5.440 (=850 * 1.6 * 4 / 1000)

Total: **18.360 tonnes**

Similar calculations are performed on the other packaging types:

Plastic: **1.700 tonnes** = (1700 * 0.7 * 1 / 1000) + (850 * 0.6 * 1 / 1000)
Wood: **38.250 tonnes** = (1700 * 15 / 1000) + (850 * 15 / 1000)

There is nothing in the reuse section as a non-RPS contractor collects the paperboard, the pallet wrap is disposed and the pallets are made available for onward reuse and are not in a formal reuse loop.

5.4 Internal Packaging Waste Management

This section details the Total Tonnes (all packaging waste arisings). This is all packaging that ends up as waste on the premises. This is equivalent to:

Irish Sourced Input Packaging + Imported Input Packaging
less any Reuse packaging
less any onward reuse packaging

Example: Plastic

Irish Sourced:	+6.728 tonnes	(reuse: 6.500 tonnes)
Imported:	+1.700 tonnes	(reuse: 0 tonnes)
Reuse packaging:	-6.500 tonnes	
Onward Reuse:	-0 tonnes	

Total: **1.928 tonnes**

Similar calculations are performed for Paperboard (= **29.560 tonnes**)

The next sections detail weights for the categories:
RPS, Non-RPS, Tonnes for Recycling, Recovery, Disposal

Example: Paperboard

caps01:	7.2 tonnes, RPS
caps02:	4 tonnes, RPS

Total RPS: **11.200 tonnes**

Bottles01:	12.920 tonnes, non RPS
Bottles02:	5.440 tonnes, non RPS

Total Non-RPS: **18.360 tonnes**

Tonnes for Recycling: **29.560 tonnes**

The Plastic Wrapping is disposed for all (conc01, conc02, caps01, caps02, bottles01, bottles02) and this adds up to **1.928 tonnes** (0.100, 0.060, 0.040, 0.028, 1.190, 0.510).

5.5 Irish Sourced Output Packaging – Supplied in ROI

This section details the Total Tonnes (including reuse packaging) of Irish-sourced output packaging for items distributed in the Republic of Ireland. This includes the packaging for cola01 and orange01. The only type of packaging used is Plastic. Pallets are not reported in this section as they are onward reuse, which is only reported in the Input sections for Repak.

Calculations: Plastic

cola01

Quantity:	2310	shipped units
case wrap:	7.2 (kg)	per shipped unit
bottle caps:	4.32 (kg)	per shipped unit

Total: 26.611 tonnes = (2310 * (7.2 + 4.32)) / 1000

A similar calculation is carried out for 600 shipped units of orange01:
7.430 tonnes

Total: **34.042 tonnes**

- Z-drinks Ltd is neither a Materials Manufacturer nor a Convertor, so these fields are left blank.
- They are a Brandholder/Importer, hence all items are included (= **34.042 tonnes**)
- They are a Distributor, hence all items are included (= **34.042 tonnes**)
- They are not a Retailer, but what gets reported in this entry is what the Retailer must remove before the product can be sold, so this is case wrap:

Quantity:	2310 + 600
Weight:	7.2 (kg)

Total: **20.952 tonnes**

There is no reuse packaging suitable for continued reuse.

5.6 Imported Output Packaging - Supplied in ROI

This section details the Total Tonnes (including reuse packaging) of Imported output packaging for items distributed in the Republic of Ireland. This includes the packaging for cola01 and orange01. The only type of packaging used is Plastic. Pallets are not reported in this section as they are onward reuse.

Calculations: Plastic

cola01

Quantity:	2310	shipped units
pallet wrap:	1.0 (kg)	per shipped unit
bottles:	43.2 (kg)	per shipped unit

Total: 102.102 tonnes = (2310 * (1.0 + 43.2)) / 1000

A similar calculation is carried out for 600 shipped units of orange01:
31.704 tonnes

Total: **133.806 tonnes**

- Z-drinks Ltd is neither a Materials Manufacturer nor a Convertor, so these fields are left blank.
- They are a Brandholder/Importer, and all items are included (= **133.806 tonnes**)
- They are a Distributor, and all items are included (= **133.806 tonnes**)
- They are not a Retailer, but what gets reported in this entry is what the Retailer must remove before the product can be sold, so this is pallet wrap:

Quantity:	2310 + 600
Weight:	1.0 (kg)

Total: **2.910 tonnes**

There is no reuse packaging suitable for continued reuse.

5.7 All Exports

This section details Empty Packaging and Filled Packaging that is Exported. This includes the packaging for orange01 only, as cola01 is not exported. Once again, the only type of packaging used is Plastic. The company does not produce empty packaging, so this entry is left blank. For filled packaging:

Calculations: Plastic

orange01

Quantity:	555
Case wrap:	7.2 (kg)
pallet wrap:	1.0 (kg)
bottles:	51.84 (kg)
bottle caps:	5.184 (kg)

Total: **36.199 tonnes** =(555 * (7.2 + 1.0 + 51.84 + 5.184))/1000