



Domestic Refrigerated Appliances Actions and Assumptions: Australia Data

The aim of this document is to detail the actions and assumptions made in interpreting and processing the data specified above during the mapping and benchmarking of domestic refrigerated appliances. It is designed to be read in parallel with the “Summary Overall Mapping and Benchmarking Approach to Domestic Refrigerated Appliances”. Section numbers in each document should align.

1 Overview of the mapping and benchmarking outputs for domestic refrigerated appliances

No data specific actions.

2 The mapping and benchmarking process for domestic refrigerated appliances

2.1 Data Cleaning and Pre-processing

2.1.1 Data cleaning

- a. No data cleaning required.

2.1.2 Pre-processing

The pre-processing of data:

- a. Allocation of Mapping and Benchmarking and EU product types. This allocation was based on the Australian "Group" field. Allocation for the Refrigerators, Freezers and Refrigerator Freezer Data sets as follows:

| Australian Grouping | M&B Type | M&B Configuration | EU Category |
|------------------------------------|---|---|-------------|
| 1 | Refrigerator only | Refrigerator only | 1 |
| 2 (where frozen compartment <=14l) | Refrigerator only | Refrigerator only | 4 |
| 2 (where frozen compartment >14l) | Refrigerators with freezer compartments | Refrigerators with freezer compartments | 4 |
| 3 | Refrigerators with freezer compartments | Refrigerators with freezer compartments | 5 |
| 4 * | Fridge/ Freezer | Freezer bottom | 6 |
| 5B | Fridge/ Freezer | Freezer bottom | 6 |
| 5T/5 | Fridge/ Freezer | Freezer top | 6 |
| 5S | Fridge/ Freezer | Side by side | 6 |
| 6U | Freezer only | Upright | 8 |
| 7 | Freezer only | Upright | 8 |
| 6C | Freezer only | Chest | 9 |

- b. Compartments within the various Australian unit types were allocated to one of mapping and benchmarking compartment categories based on the table below (note where a third compartment was recorded, it was assumed to be a chill compartment):

| Australian Grouping | Compartment Allocations for Fresh, Frozen and "Other Compartment Volumes (T=degC) | | | | | |
|---|---|--|--|--|---|------------------------------|
| | $14^{\circ}\text{C} \geq T > 5^{\circ}\text{C}$ | $5^{\circ}\text{C} \geq T > 3^{\circ}\text{C}$ | $3^{\circ}\text{C} > T > -2^{\circ}\text{C}$ | $-2^{\circ}\text{C} \geq T > -9^{\circ}\text{C}$ | $-9^{\circ} \geq T > -15^{\circ}\text{C}$ | $T \leq -15^{\circ}\text{C}$ |
| | Comp 1 | Comp 2 | Comp 3 | Comp 4 | Comp 5 | Comp 6 |
| 1 | | Fresh Volume | | | | |
| 2 (where frozen compartment $\leq 14\text{l}$) | | Fresh Volume | Other Volume | Frozen Volume | | |
| 2 (where frozen compartment $> 14\text{l}$) | | Fresh Volume | Other Volume | Frozen Volume | | |
| 3 | | Fresh Volume | Other Volume | | Frozen Volume | |
| 4 | | Fresh Volume | Other Volume | | | <i>Frozen Volume</i> |
| 5B | | Fresh Volume | Other Volume | | | <i>Frozen Volume</i> |
| 5T | | Fresh Volume | Other Volume | | | <i>Frozen Volume</i> |
| | | Fresh Volume | Other Volume | | | <i>Frozen Volume</i> |
| 5S | | Fresh Volume | Other Volume | | | <i>Frozen Volume</i> |
| 6U | | | | | | <i>Frozen Volume</i> |
| 7 | | | | | | <i>Frozen Volume</i> |
| 6C | | | | | | <i>Frozen Volume</i> |

The individual compartment and external test temperatures are assumed to be as follows (note compartment 2 and compartment 6 are regulated test temperatures, other compartments are assumed at the mid-point of local compartment ranges):

| Compartment | | 1 | 2 | 3 | 4 | 5 | 6 | External |
|---|--|-----|-----|-----|--------|-------|-------|----------|
| Refrigerator only and refrigerators with freezer compartments | with freezer <14 l or 0°C >= T >= -6°C | N/A | 3°C | 0°C | -6.5°C | N/A | N/A | 32°C |
| | with freezer -6°C >= T >= -12°C | N/A | 3°C | 0°C | -6.5°C | -12°C | N/A | 32°C |
| Refrigerator Freezer Combinations | | N/A | 3°C | 0°C | N/A | N/A | -15°C | 32°C |
| Freezer Only | | N/A | N/A | N/A | N/A | N/A | -15°C | 32°C |

2.2 Production of Graphical Mapping Outputs

Local adjusted volume test methodology used:

$$\text{Total Adjusted Volume} = \text{Volume fresh} + n * \text{Volume frozen}$$

Where

| M&B Compartment*: | Factor: |
|---------------------------|---------|
| $14 > T > 5$ | N/A |
| $5 \geq T > 0$ | 1 |
| $T = 0$ | 1.1 |
| $0 > T \Rightarrow -6$ | 1.2 |
| $-6 > T \Rightarrow -12$ | 1.4 |
| $-12 > T \Rightarrow -18$ | 1.6 |

*see section 2.1.2 b.

2.3 Normalisation

Due to the change in mandatory regulations in 2001, and the significant increase in data captured from this period onward, data from prior to 2001 is not considered comparable with that afterwards, and as such this is not included in the benchmarking report.

2.3.1 Normalisation Overview

No data specific actions.

2.3.2 Allocation of declared UEC to compartments

The adaptation of the EU methodology used in this analysis requires knowledge of the compartment defrost type. This can be deduced from the listed Australia Group as follows:

| Australian Grouping | Defrost type |
|------------------------------------|---------------------------|
| 1 | Auto |
| 2 (where frozen compartment <=14l) | Manual |
| 2 (where frozen compartment >14l) | Manual |
| 3 | Manual |
| 4 | Partial-Auto (fresh only) |
| 5 | Auto |
| 5B | Auto |
| 5T | Auto |
| 5S | Auto |
| 6U | Manual |
| 6C | Manual |
| 7 | Auto |

2.3.3 Normalisation of “compartment EC” for test temperature variations and calculation of normalised UEC

The assumed Australian test temperatures for each compartment (and external) for each product type are given in the table in section 2.1.2 b).

2.3.4 Calculation of Normalised UEE

No data specific actions.

2.3.5 Calculation of normalised EEI

No data specific actions.