How to use the Shelf life calculator

Long Huynh

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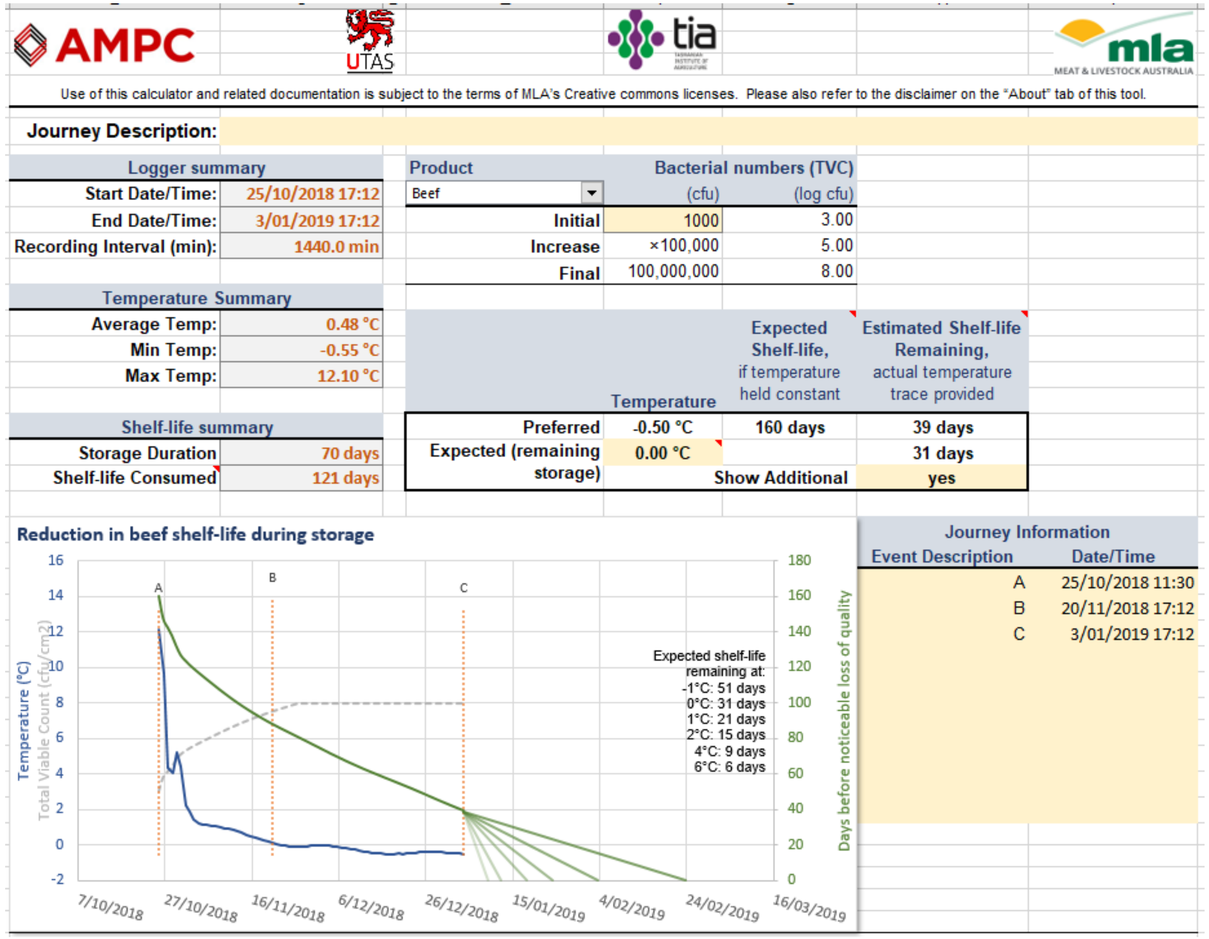
What is Shelf life?

The length of time food can be stored and still good to eat

- Fit for purpose and consumption

The Shelf life calculator overview

This calculator can be used to predict remaining shelf life of vacuum packed beef and lamb, based on storage temperature, and an estimation of the microbial load (Total Viable Count (TVC)) at the time of packing.



What you need for the model:

- Temperature profile and date/time
- Species type Beef or Lamb
- Starting Micro Count

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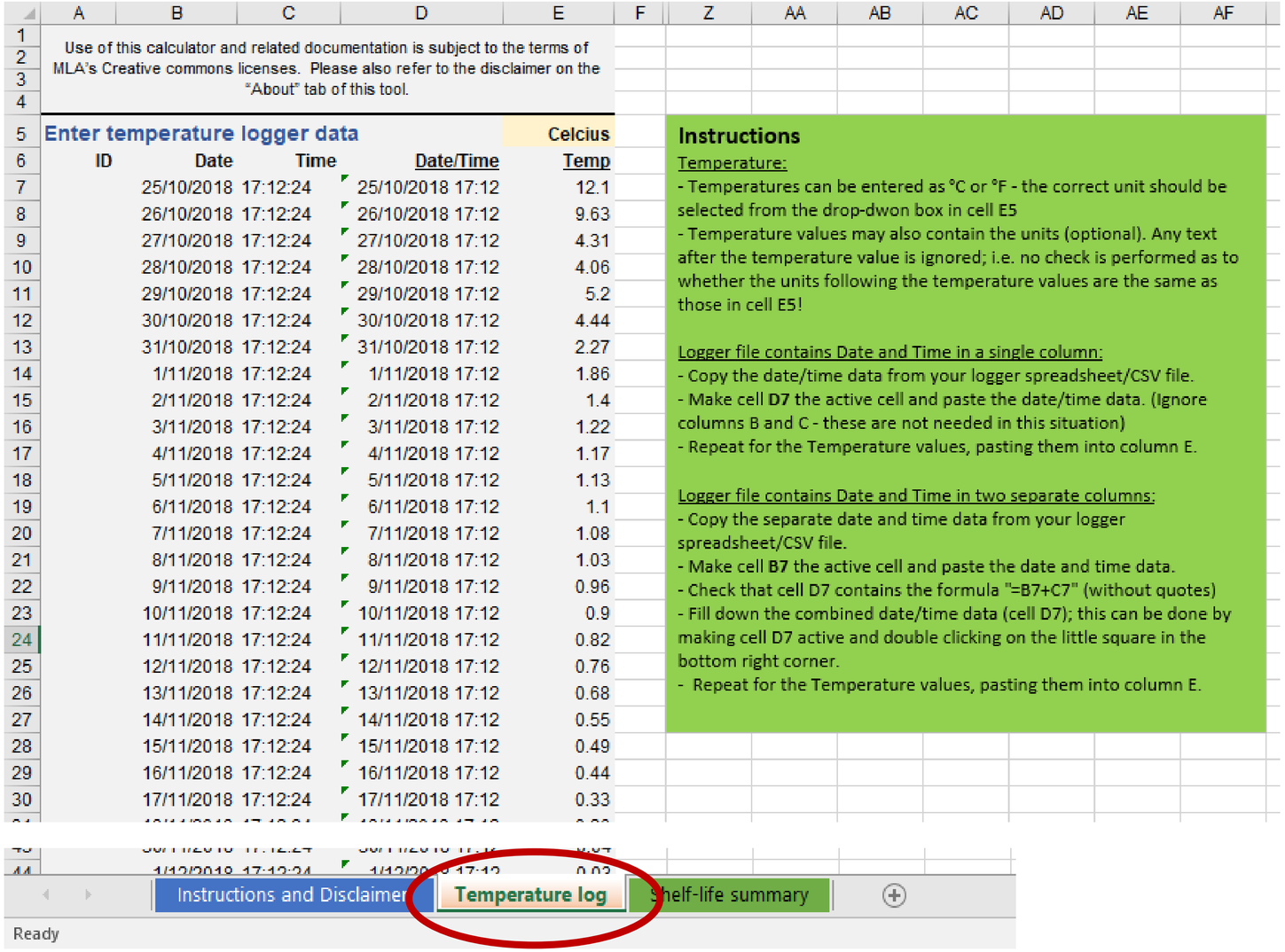

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Enter temperature logger data — Celcius

ID	Date	Time	Date/Time	Temp
	25/10/2018	17:12:24	25/10/2018 17:12	12.1
	26/10/2018	17:12:24	26/10/2018 17:12	9.63
	27/10/2018	17:12:24	27/10/2018 17:12	4.31
	28/10/2018	17:12:24	28/10/2018 17:12	4.06
	29/10/2018	17:12:24	29/10/2018 17:12	5.2
	30/10/2018	17:12:24	30/10/2018 17:12	4.44
	31/10/2018	17:12:24	31/10/2018 17:12	2.27
	1/11/2018	17:12:24	1/11/2018 17:12	1.86
	2/11/2018	17:12:24	2/11/2018 17:12	1.4
	3/11/2018	17:12:24	3/11/2018 17:12	1.22
	4/11/2018	17:12:24	4/11/2018 17:12	1.17
	5/11/2018	17:12:24	5/11/2018 17:12	1.13
	6/11/2018	17:12:24	6/11/2018 17:12	1.1
	7/11/2018	17:12:24	7/11/2018 17:12	1.08
	8/11/2018	17:12:24	8/11/2018 17:12	1.03
	9/11/2018	17:12:24	9/11/2018 17:12	0.96
	10/11/2018	17:12:24	10/11/2018 17:12	0.9
	11/11/2018	17:12:24	11/11/2018 17:12	0.82
	12/11/2018	17:12:24	12/11/2018 17:12	0.76
	13/11/2018	17:12:24	13/11/2018 17:12	0.68
	14/11/2018	17:12:24	14/11/2018 17:12	0.55
	15/11/2018	17:12:24	15/11/2018 17:12	0.49
	16/11/2018	17:12:24	16/11/2018 17:12	0.44
	17/11/2018	17:12:24	17/11/2018 17:12	0.33

Instructions

Temperature:
- Temperatures can be entered as °C or °F - the correct unit should be selected from the drop-dwon box in cell E5
- Temperature values may also contain the units (optional). Any text after the temperature value is ignored; i.e. no check is performed as to whether the units following the temperature values are the same as those in cell E5!

Logger file contains Date and Time in a single column:
- Copy the date/time data from your logger spreadsheet/CSV file.
- Make cell **D7** the active cell and paste the date/time data. (Ignore columns B and C - these are not needed in this situation)
- Repeat for the Temperature values, pasting them into column E.

Logger file contains Date and Time in two separate columns:
- Copy the separate date and time data from your logger spreadsheet/CSV file.
- Make cell **B7** the active cell and paste the date and time data.
- Check that cell D7 contains the formula "=B7+C7" (without quotes)
- Fill down the combined date/time data (cell D7); this can be done by making cell D7 active and double clicking on the little square in the bottom right corner.
- Repeat for the Temperature values, pasting them into column E.

1:

Manually enter temperature data and time

or

Copy and paste Temperature/date and time profile from a data logger

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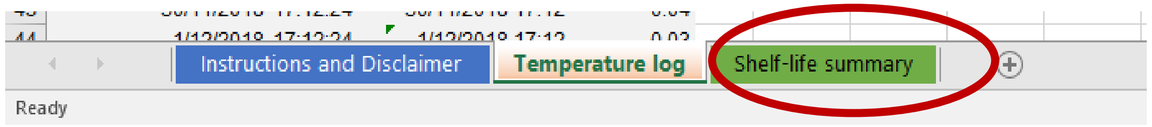
How to use the model cont

2. Select Tab “Shelf life summary”



3.Select Species type Beef or Lamb

Product	Bacterial numbers (TVC)	
Lamb	(cfu)	(log cfu)
Beef	650	2.81
Lamb	×3,798	3.58
Increase	2,468,612	6.39
Final		

4.Enter Micro Count in Colony Forming Units

Product	Bacterial numbers (TVC)	
Lamb	(cfu)	(log cfu)
Initial	650	2.81
Increase	×3,798	3.58
Final	2,468,612	6.39

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How to use the model cont

5.Enter specific dates and event during the journey

Journey Information	
Event Description	Date/Time
Abattoir	6/12/2016 15:27
To Aus port	13/12/2016 0:00
Shipping	20/12/2016 0:00
Port of entry	5/01/2017 0:00
Warehouse	14/01/2017 17:07

6.Enter future storage temperature

	Temperature	Expected Shelf-life, if temperature held constant	Estimated Shelf-life Remaining, actual temperature trace provided
Preferred	-0.50 °C	146 days	86 days
Expected (remaining storage)	0.00 °C		68 days
		Show Additional	no

The prediction graph

The graph will update as you enter or change the inputs

Temperature Summary	
Average Temp:	-1.04 °C
Min Temp:	-1.67 °C
Max Temp:	4.00 °C

Shelf-life summary	
Storage Duration	39 days
Shelf-life Consumed	32 days

Journey Information	
Event Description	Date/Time
Abattoir	6/12/2016 15:27
To Aus port	13/12/2016 0:00
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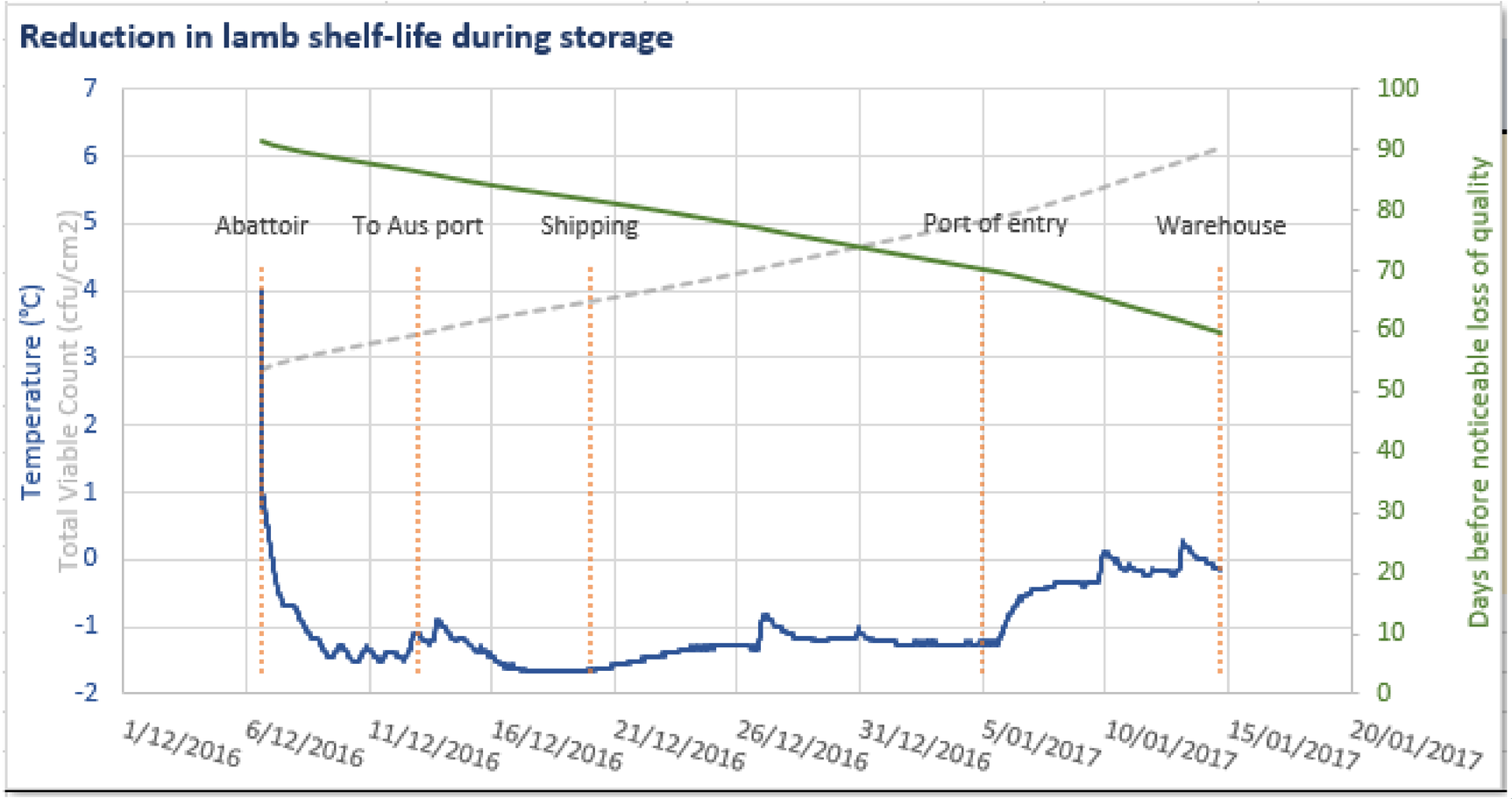
Port of entry	5/01/2017 0:00
Warehouse	14/01/2017 17:07



The model is conservative and will predict less shelf life

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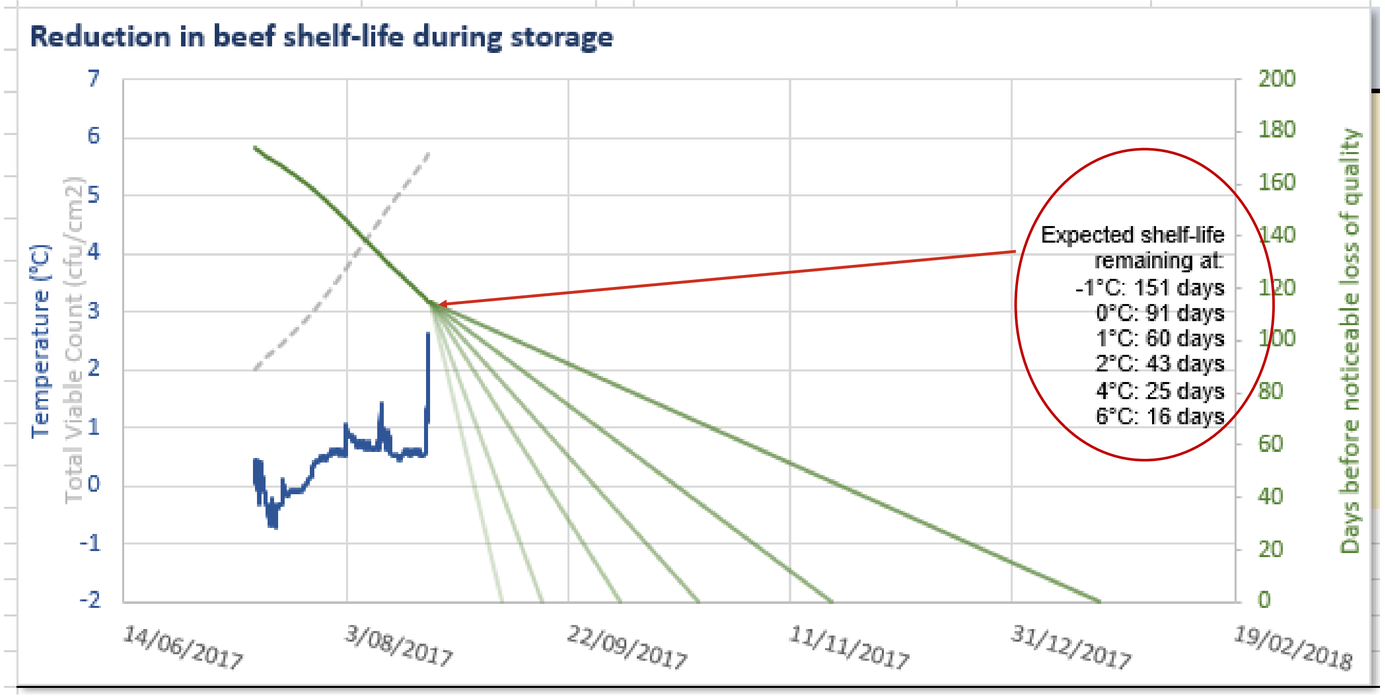
Additional prediction when track ends

The model gives you a quick calculation of remaining shelf life at common temps when your track ends. Ensure you change the “Show Additional” to “YES”

	Temperature	Expected Shelf-life, if temperature held constant	Estimated Shelf-life Remaining, actual temperature trace provided
Preferred	-0.50 °C	174 days	115 days
Expected (remaining storage)	0.00 °C		91 days
		Show Additional	yes



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Shelf life model: constraints

1. **Models covers shelf life for temp less then 8^{o}C only (but being extended)**

Important Note:
The shelf life model is considered to be reliable for temperatures in the range -1 to 8°C. The model may also provide useful insights about shelf life changes for temperatures up to 12°C, however, but has not been shown to be reliable in the temperature range 8 - 12°C. The model should not be used if temperatures in the supply chain exceed 12°C or fall below -2°C. In such circumstances, please contact Meat and Livestock Australia for an expert opinion of the status of the lot.

Questoins

For further information, please contact:

Long Huynh

lhuynh@mla.com.au

+61 2 9463 9164

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