

**General instructions:** The LifeTrack programming spreadsheet is protected (no password needed) to prevent accidental alterations. Those cells that can be altered by user data have a blue background. Units of time are given in days. When hours or minutes are desired, enter in a fractional value (such as 5/24 for 5 hours) as needed.

1: What temperature does your material freeze at, and does freezing damage it? Many solutions freeze around 0 °C or a few degrees under 0 °C. Enter the freezing temperature here.

2: Does freezing destroy your material? If it does, then enter a lifetime of 0 days here. If it is not affected by freezing, enter any number greater than 1.

LifeTrack design template	Parameter	Units
Freezing temp degrees (oC)	-1	Degrees
Lifetime below freezing (days)	0	Days
Refrigerated temp degrees (oC)	4	Degrees
Refrigerated lifetime (days)	13	Days
Room temp degrees (oC)	20	Degrees
Room temp lifetime (days)	1	Days
Drop-dead temperature (oC)	70	Degrees

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3: "Refrigerated temperature" can often be anything from 1-8 °C. Typically 4 °C is standard.

4: Enter the number of days your material lasts at the refrigerated temperature.

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5: Continue on and enter in the "room temperature" official temperature and lifetime.

6: The "drop-dead" temperature is the temperature at which the product instantly dies. You may have to estimate this using graphs and your best judgment.

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*Note: Programming is for expert users. Beginning users should consider pre-programmed CliniSense LifeTrack units. CliniSense is not responsible for problems due to improper programming*

7: Other parameters: Enter in the time that should elapse between each different temperature measurement (1 to 60). Shorter times are more accurate but decrease battery life, and can also reduce the dynamic range of the calculations (see step 15).

8: The onboard data logger logs temperature in increments of 30 minutes, using a separate timer. Enter the desired value here (30 - 5760 minutes) [corresponds to logging intervals between 0.5 hours and 192 hours].

Minutes per sample	10
Logger rate (minutes)	30
Delay time (minutes)	1
Max lifetime clipping	100%
Data download name (max 10 char)	
Milk	
Data download ID code (max 12 char)	
Milk demo 1	

Minutes per sample	10
Logger rate (minutes)	30
Delay time (minutes)	1
Max lifetime clipping	100%
Data download name (max 10 char)	
Milk	
Data download ID code (max 12 char)	
Milk demo 1	

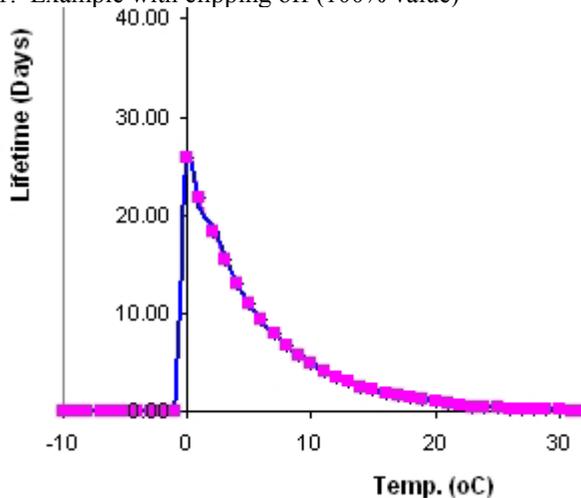
9: To set a LifeTrack "start-up" delay to allow for packaging and handling. Enter the number of minutes of delay desired (0 to 1440) here.

10: If the LifeTrack calculated lifetime is too high at some temperatures, it can be "clipped" to the appropriate level. A value of 1 means 100% (no clipping). Examine the graph and data tables to see the effect of clipping

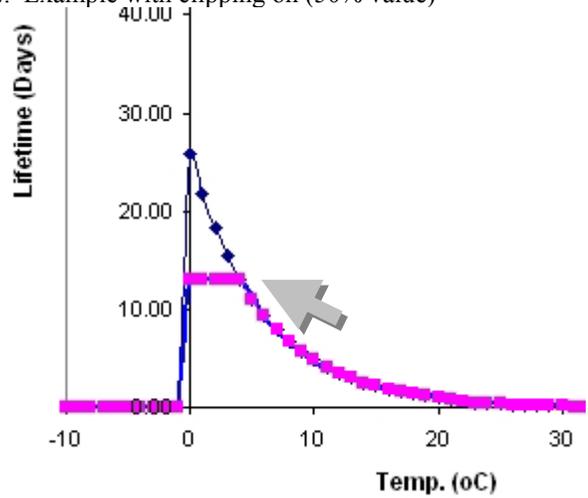
Minutes per sample	10
Logger rate (minutes)	30
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Max lifetime clipping	100%
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Max lifetime clipping	100%
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11: Example with clipping off (100% value)



12: Example with clipping on (50% value)



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13: Enter the name of the product (alphanumeric 1-10 characters) and the product id code (alphanumeric, 1-12 characters).

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Delay time (minutes)	1
Max lifetime clipping	100%
Data download name (max 10 char)	
Milk	
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Milk demo 1	

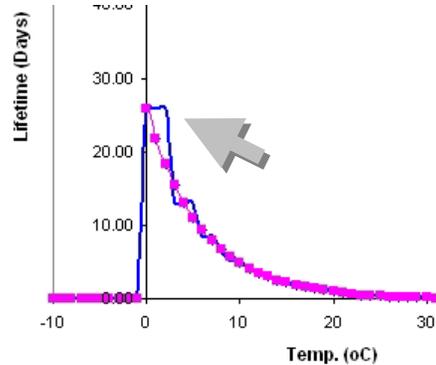
14: The Lifetime threshold value allows you to set the LifeTrack to indicate "expired" at some percentage of the maximum life.

Lifetime threshold	100%
Stab. point precision	8
Clipped Max life (days)	
12.94	

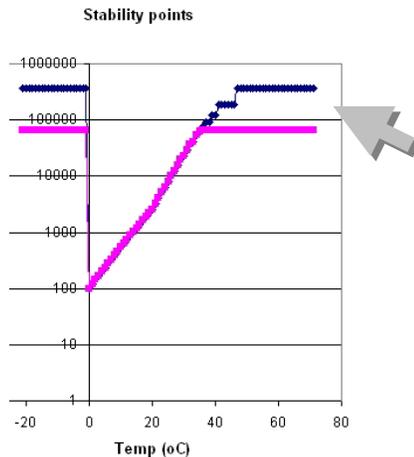
15: The LifeTrack uses 16-bit integer arithmetic, which has a limited dynamic range. The stability point precision value allows you to adjust the stability algorithm for overall best performance.

Lifetime threshold	100%
Stab. point precision	8
Clipped Max life (days)	
12.94	

15a: If the precision is set too low (here set to 1), there can be a "stair step" type inaccuracy that affects the "good stability portion" of the curve. This can be removed by increasing the precision.



15b If the precision is set too high (here set to 100) accuracy at the "poor stability" ends can suffer. This can make the LifeTrack expire prematurely.



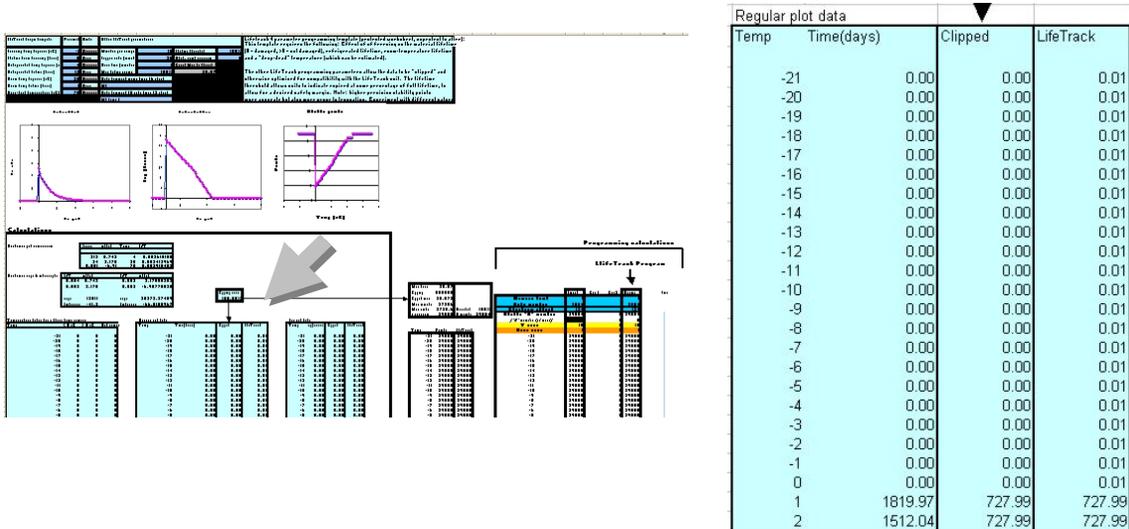
15c. Generally, it is best to set the lowest stability point precision that gives an acceptable curve at the "good stability" end. Typically this is around 2-10.

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Stab. point precision	8
Clipped Max life (days)	
12.94	

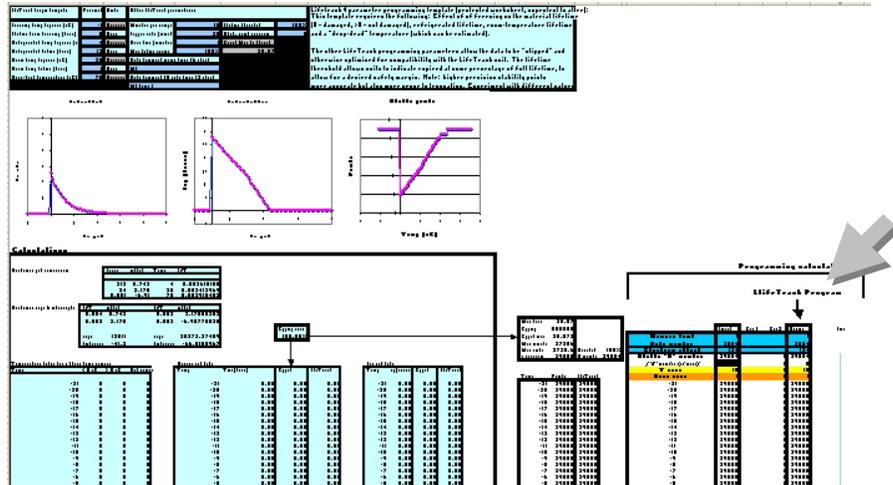
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16: A table giving the numeric results of the LifeTrack programming calculations is in the lower middle of the file.

17: This table shows the temperature (left), the predicted stability Time(days), the effect of clipping, and finally the actual digital LifeTrack performance.



18: After you are finished entering and adjusting the parameters, the completed programming values and calculations can be found in the "LifeTrack Program" column on the lower right portion of the spreadsheet.



19: Other LifeTrack programming spreadsheets may have more parameters, but are otherwise used in the same way.

20: Before using the LifeTrack unit, it is important to do proper quality assurance and "reality checks" versus the actual material at a variety of different temperatures.