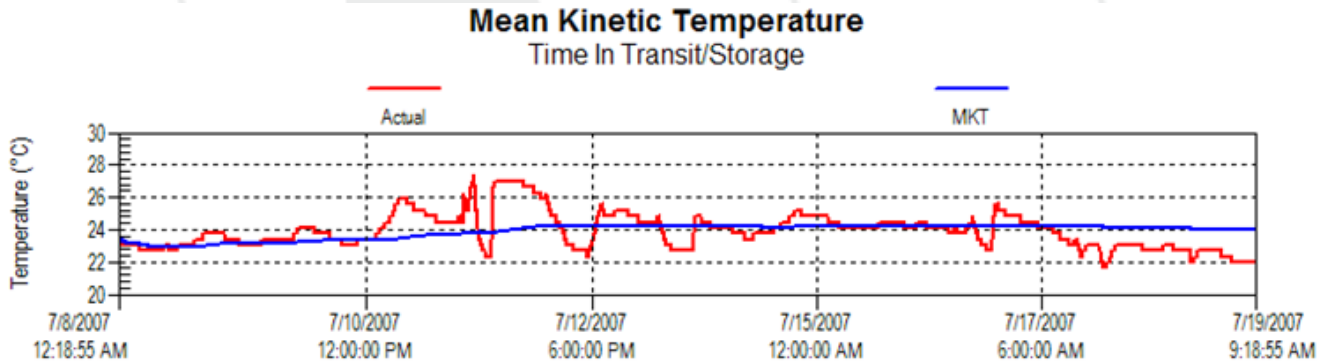




## Mean Kinetic Temperature

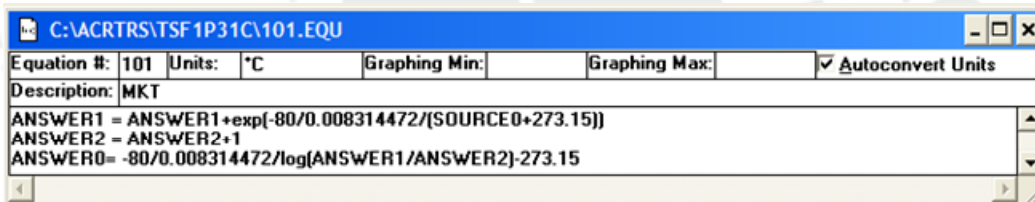
Applying Mean Kinetic Temperature (MKT) is simple using ACR TrendReader Software – the Compound Line function is easy to implement and can be modified to suit any application.

The Mean Kinetic value is used to express temperature exposure of liquids and solids taking into account brief excursions that would otherwise trigger false alarms. MKT is calculated by taking the sum of data logged temperature readings weighted exponentially to the rise in temperature based on the molecular energy of the material in question. Applying expert rules is critical to the successful implementation of such an analysis – the equation processor in TrendReader software allows customization so a different algorithm can be applied for each specific case with limited user interaction.

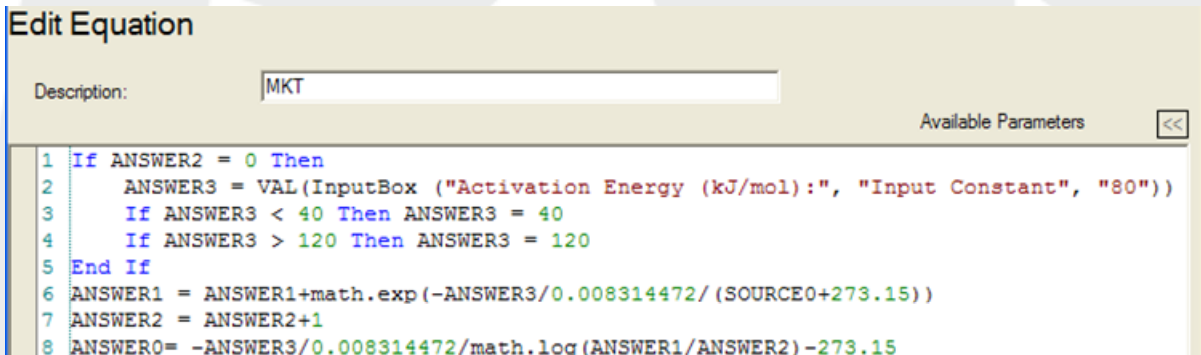


### Solution:

Create new equation in TrendReader 1 – Equation->New Equation



Create new Compound Line equation in TrendReader 2 – Equations->Compound Line...



Note: To operate in degrees Fahrenheit apply conversion formula to Celsius: (SOURCE0-32)\*5/9.

In the above formulas, the number 80 represents an average kJ/mol which should be changed to the actual Activation Energy value. The TrendReader 2 example prompts for the value each time the MKT Compound Line is applied.

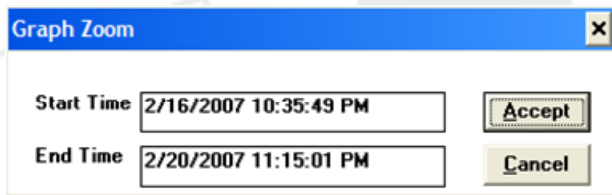


## Operation:

Follow these steps to apply the compound line function:

For TrendReader 1, follow these steps:

1. Backup data logger – Graph appears
2. Click on time axis – Start and End times appear
3. Enter shipment time – Click <Accept>
4. Select from pull down menu Equation->Add Compound Line to Graph
5. Type <caption> in HeaderTitle and 101 in Equation #
6. Select <SOURCE0> and <Int. Temp.> and click <Accept>



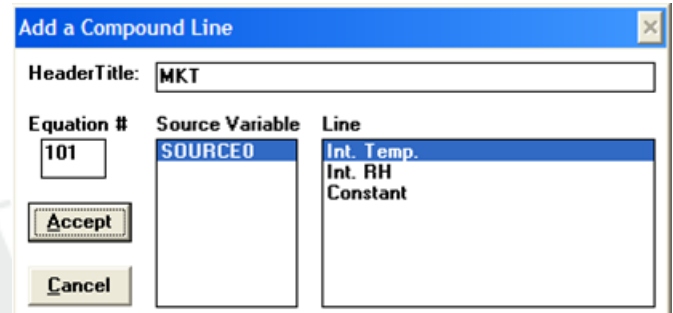
Graph Zoom

Start Time: 2/16/2007 10:35:49 PM

End Time: 2/20/2007 11:15:01 PM

Accept

Cancel



Add a Compound Line

HeaderTitle: MKT

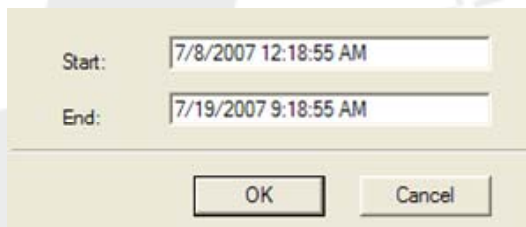
| Equation # | Source Variable | Line       |
|------------|-----------------|------------|
| 101        | SOURCE0         | Int. Temp. |
|            |                 | Int. RH    |
|            |                 | Constant   |

Accept

Cancel

For TrendReader 2, follow these steps:

1. Backup data logger... Graph appears
2. Right Click Graph and select Zoom Method->Date and Time Zoom – Start and End times appear
3. Enter shipment time (click on field and pull down button to use calendar) – Click <OK>
4. Select from pull down menu Graph->Compound Lines->Add Compound Line...
5. Select MKT Equation from pull down list and type <caption> in Line Name
6. Choose the temperature channel <OK>

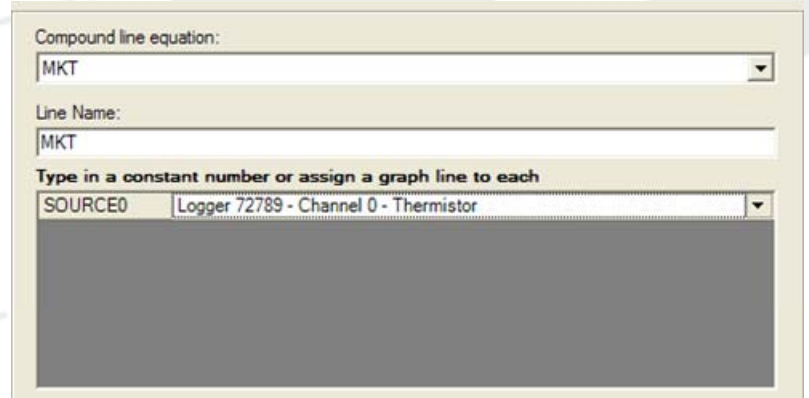


Start: 7/8/2007 12:18:55 AM

End: 7/19/2007 9:18:55 AM

OK

Cancel



Compound line equation:

MKT

Line Name:

MKT

Type in a constant number or assign a graph line to each

SOURCE0 | Logger 72789 - Channel 0 - Thermistor

