Initiation

the start point of an event

Initial test – (thermal runaway screening test)

- A fully charged cell is placed in a pre-heated oven at 50^{o}C and is monitored for surface temperature. Once the surface temperature is equal to the oven temperature the oven temperature is increased to 200^{o}C. Monitoring continues throughout the period of warming until both the oven and the surface temperature of the battery are 200^{0}C and then continued for a further 60 mins.

Initial test – (thermal runaway screening test)

- Recording should be such that both time and temperatures are recorded so that cell temperature fluctuations can be observed and if it occurs the point of thermal runaway can be determined. When thermal runaway occurs the maximum surface temperature of the cell is to be recorded (if possible).

Initial test – (thermal runaway screening test)

- The test will continue and at the end the cell will be examined for rupture unless it has disintegrated.
- Number of samples to be tested 10. Results for temperature will be average, other considerations will be majority. The results of this screening test could be used as follows:

Initial test – (thermal runaway screening test)

- Cells entering thermal runaway, rupturing or disintegrating at less than 50^{o}C will be category A
- Cells entering thermal runaway, rupturing or disintegrating between 50^{O}C and 150^{0}C will be category B
- Cells entering thermal runaway, rupturing or disintegrating over 150^{o}C will be category C
- Cells entering thermal runaway at 200^{o}C that have not ruptured or disintegrated and cells not entering thermal runaway but have ruptured or disintegrated will be category D

Initial test – (thermal runaway screening test)

- Cells that did not enter thermal runaway and have not ruptured or disintegrated will be category E
- The categorisations would then be used to determine what happens next for instance

Initial test – (thermal runaway screening test)

- Categories A, B and C could go to propagation testing unless the output from the cell is insufficient to raise its own temperature to its thermal critical temperature. (Assuming an ambient start point of say 20^{o}C)(I.E. it would require an external input of energy to induce a thermal critical event)
- Category D could go to a new test (on the basis that disintegrating cells render the propagation test void and 200^{o}C is the cut off point for this test)

Initial test – (thermal runaway screening test)

- Category E cells will not be subject to further testing for classification and could be classified as.
- LITHIUM ION CELL thermal critical temperature greater than 200^{o}C