

☒ **CTL Provisional DECISION SHEET (PDSH)**
☐ **CTL DECISION SHEET (DSH)**

Standard(s) (incl. year)	Subclause(s)	Tracking No.
IEC 60335-1:2020	12	2296A
Category		
HOUS		
Subject	Keywords	Developed by
Calculation parameters when charging under an ambient temperature of $20\text{ °C} \pm 5\text{ °C}$	Specified operating region for charging as the functions of Cell surface temperature	ETF 1
Question		
When the charging test is carried out at an ambient temperature of $20\text{ °C} \pm 5\text{ °C}$, the temperature T_{cell} shall be calculated as follows (linear corrections): – $T_{\text{cell}} = T_{\text{meas}} + (T_{\text{amb(max)}} - T_{\text{amb(test)}})$, for the maximum recommended ambient temperature for charging ($T_{\text{cell 1}}$); – $T_{\text{cell}} = T_{\text{meas}} - (T_{\text{amb(test)}} - T_{\text{amb(min)}})$, for the minimum recommended ambient temperature for charging ($T_{\text{cell 2}}$). The question is: What should be used as $T_{\text{amb(max)}}$ and $T_{\text{amb(min)}}$ in above calculation formula?		
Decision		
For the point of view of appliances, an ambient temperature 10 °C to 40 °C shall be corresponding to standard temperature range of cell. Then the charging test data (T_{meas}) under $20\text{ °C} \pm 5\text{ °C}$ shall be corrected with the range of 10 °C to 40 °C. If the minimum ambient temperature for charging the battery is less than 10 °C, the specified operating region has been verified by the repeated test at the specified minimum ambient temperature $^{+5}_{-0}\text{ °C}$; linear corrections for T_{meas} are unnecessary because is equal to T_{cell} at this temperature If the maximum ambient temperature for charging the battery is greater than 40 °C, the specified operating region has been verified by the repeated test at the specified maximum ambient temperature $^{+5}_{-0}\text{ °C}$; linear corrections for T_{meas} are unnecessary because is equal to T_{cell} at this temperature		
Explanatory notes		
<u>Enquiry:</u>		
Date:	2025-09-03	
<u>PDSH 2296:</u>		
Year of publication:	2025	
To be approved at CTL plenary:	2026	
<u>PDSH 2296A:</u> TC 61/MT31 has reviewed the original PDSH 2296 and requested a modification of the decision for clarification. They propose moving the content of notes 3) and 4) to the decision.		

Additionally, they suggest adding a new note 5) explaining the intention of the standard to use the temperature corrections of CI 12 as calculated values

DSH

Publication date:

TC 61/MT31 has reviewed the original PDSH 2296 and requested a modification of the decision for clarification. They propose moving the content of notes 3) and 4) to the decision. Additionally, they suggest adding a new note 5) explaining the intention of the standard to use the temperature corrections of CI 12 as calculated values. In case of doubt, these values may be confirmed by direct measurement, which is the preferred method for compliance criteria. TC 61/MT31 informs that a new text for this clause will be proposed in the next modification of the standard to avoid any misinterpretations.

- 1) In IEC 62133-2 Annex A, Figure A.1 (same as Figure 14 in IEC60335-1) represent the specified operating region for charging as functions of the cell surface temperature. Both V_{cmax} and I_{cmax} remain unchanged within the standard temperature range.

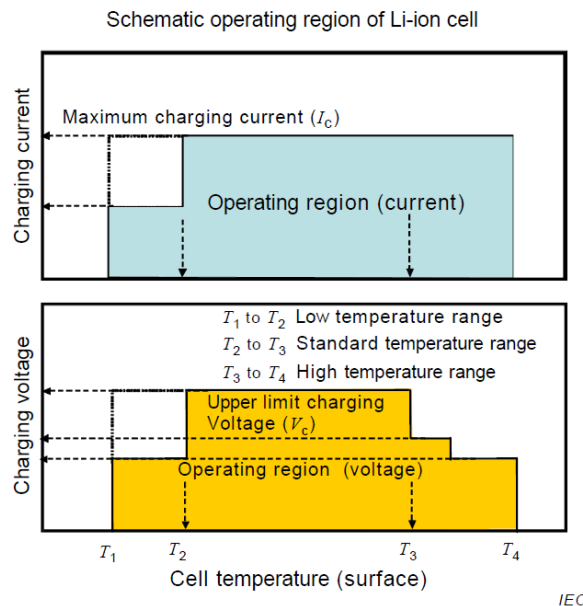


Figure A.1 – Representation of lithium ion cells operating region for charging

- 2) The charging test at ambient temperature $20\text{ °C} \pm 5\text{ °C}$ is a representative test condition but shall be used to verify the result of the specified operating region at standard temperature range (T_2 to T_3), instead of for one point, therefore, T_{meas} shall be corrected two times. The test voltages for each cell and charging current shall be within the colored zone between T_2 to T_3 and $T_2 \leq T_{cell\ 2} < T_{cell\ 1} \leq T_3$ in Figure A.1
- 3) If the minimum ambient temperature for charging the battery is less than 10 °C , the specified operating region has been verified by the repeated test at the specified minimum ambient temperature $^{+5}_{-0}\text{ °C}$; linear corrections for T_{meas} are unnecessary.
- 4) If the maximum ambient temperature for charging the battery is greater than 40 °C , the specified operating region has been verified by the repeated test at the specified maximum ambient temperature $^{+5}_{-0}\text{ °C}$; linear corrections for T_{meas} are unnecessary.
- 5) If the temperature correction by calculation indicates that the specified operating region for charging was exceeded for a particular ambient temperature, the test may be repeated with the charging system at that ambient temperature. If the measured results do not exceed the operating region for charging, the charging system shall be considered to fulfil this test.

