

Changes to the Threshold to Meet the Battery Durability Test Requirement of the Lighting Global Minimum Quality Standards

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Over the past few years, the Lighting Global program developed and instituted the Battery Durability Storage Test in response to reports of battery failures in the market. As described in the Tech Note on [“Shipping and Storage of Sealed Lead-Acid Batteries,”](#) for example, some batteries may slowly self-discharge even when not connected to a load and can be permanently damaged if stored in a discharged state. This damage may result in permanent capacity loss, decreased run time or a non-functional product. Manufacturers can minimize the impacts of storage and poor battery management by limiting the time products are in the supply chain, isolating batteries from loads during shipment, informing distributors and consumers on proper battery management, and using only high quality batteries.

The Battery Durability Storage Test is critical for ensuring the use of high quality batteries; however, on review of the standards used in development of the test method and an assessment of initial results from product testing, the program has decided to revise the passing thresholds to more closely align with existing standards. The program is now adjusting the thresholds required to meet the Minimum Quality Standards in relation to the Battery Durability Storage Test described in IEC TS 62257-9-5 Annex BB.

This change was largely inspired by review of the deep-discharge test outlined in DIN 43539-5 (a German standard for “Maintenance-free SLA Batteries with Grid Plates and Immobilized Electrolyte”).¹ This DIN standard served as the original basis for the development of the Storage Test for SLA batteries. The DIN 43539-5 deep-discharge test requires that the capacity loss after the storage be less than 25%. The Lighting Global program has decided to harmonize with this standard by changing the passing threshold for the Storage Test for all battery chemistries from 20% to 25%. The new threshold will allow for more flexibility, but will still identify quality batteries. The threshold applies to all battery types evaluated under the Lighting Global program, including lead, lithium, and nickel based batteries.

In conjunction with this change to the passing threshold, the Lighting Global team has also decided to evaluate the average capacity loss across all six samples, rather than on an individual basis. The Minimum Quality Standards currently require that 5 of the 6 samples must pass the Battery Durability Storage Test as defined in IEC TS 62257-9-5 Annex BB. With the current revision, batteries will be required to have an average capacity loss after storage of less than 25%, as opposed to five of six samples having a capacity loss of less than 20%. Additionally, to limit variability and ensure consistency in manufacturing, only one of the six batteries tested may have a capacity loss of 35% or greater.

These changes will better harmonize the IEC TS 62257-9-5 with the DIN 43539-5 standard and ensure the Minimum Quality Standards continue to distinguish quality batteries. If you have further questions about the Battery Durability Storage Test requirement, please contact testing@lightingglobal.org.

¹ The acronym DIN stands for *Deutsches Institut für Normung*, which means "German institute for standardization."