

PRBA – The Rechargeable Battery Association Safety Policy on Use and Handling of Stand-alone Cylindrical Lithium ion Cells

Misuse of stand-alone lithium ion cells such as 18650s and similar cylindrical-sized cells is an increasing safety concern. Cells are being misused as stand-alone battery products without a proper protective case and the necessary safety and protection components. For example, stand-alone 18650 lithium ion cells without necessary safety protection components are being provided to and/or handled by consumers and used in devices like e-cigarettes and vaping devices. This paper states PRBA’s policy on the appropriate use of stand-alone cylindrical cells for these and similar applications.



18650 cells

1. A stand-alone and removable lithium ion cell that is used without the necessary safety protection features like those found in multi-cell battery packs or cells intended to be used as “single cell lithium ion batteries” present a unique and significant safety risk for all involved in their handling.
2. Stand-alone and removable lithium ion cells not marketed as “single cell lithium ion batteries” should not be handled by consumers. When removed from multi-cell battery packs, handled and/or used by consumers as rechargeable batteries in e-cigarettes and vaping devices, or other products for which they were not originally designed, these cells can be easily damaged and compromised. Even with an intact protective wrapper (plastic sleeve that is attached on the outside of the cell) external shorts can occur when cells are placed in a consumer’s pockets, backpacks, or handbags if they contact common items like keys or coins or other metal objects. These can lead to a severe thermal event. Damage to the protective wrapper makes this scenario much more likely.
3. The safety risk increases if a cell was previously used in a multi-cell battery pack and is “re-wrapped” and reused in an e-cigarette, vaping device, or other product for which it was not originally designed. In these instances, the history of the cell is unknown and the cell may have been compromised due to prior usage, abuse, or damage. In addition, the new wrapper may suggest that the cell is appropriate for consumer use as a removable, rechargeable battery when it is not, and/or may misrepresent the capacity (in milli-ampere hours), voltage, or other important features of the cell.
4. In light of the foregoing considerations, PRBA strongly opposes the inclusion in devices or replacement use of stand-alone and removable cylindrical lithium ion cells that can



Single cell lithium ion battery



be handled by consumers. A single consumer product lithium ion cell should only be used as a power source for products if the following conditions are met:

- a. The lithium ion cell was assembled into a single cell lithium ion battery with a proper outer protective case and safety and protective components, and was tested in accordance with the requirements found in Sub-section 38.3 of the UN Manual of Tests and Criteria.
 - b. The single cell lithium ion battery, product, and charger is equipped with the circuitry that will prevent overcharge and over-discharge conditions and include safety features that will preclude external short circuits.
 - c. The single cell lithium ion battery, product, and charger has been tested as a system or to an industry recognized standard (*e.g.*, IEC, UL) to ensure the safe use of the product.
5. PRBA strongly opposes use of reconditioned cells, and urges that any such cells comply with the conditions of 4.a., 4.b., and 4.c. of this policy and our policy on reconditioned lithium ion cells and batteries that is available on PRBA's [website](#).