

### Lithium Cells

### Lithium Battery Packs

Test Name	Lithium Cells			Lithium Battery Packs		
	UN Manual of Tests and Criteria, Part III, Section 38.3	UL1642	IEC 62133 2nd Ed.	UN Manual of Tests and Criteria, Part III, Section 38.3	UL2054	IEC 62133 2nd Ed.
External Short Circuit	●	●	●	●	●	●
Abnormal Charge		●	●	●	●	●
Forced Discharge	●	●	●		●	
Crush		●	●			
Impact	●	●				
Mechanical Shock	●	●		●		
Vibration	●	●		●		
Heating		●	●			
Temperature Cycling	●	●		●		
Low Pressure (Altitude)	●	●		●		
Projectile		●				
Abusive Overcharge					●	
Limited Power					●	
Temperature					●	
250 N Steady Force					●	
Mold Stress Relief					●	●
Drop Impact					●	●
Continuous Charging						
Internal Short Circuit						
	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>

**1** = Mandatory    **2** = Application Dependent    **3** = Mandatory for Intl. Market Access

**ZEUS Battery Products supports the required mandatory safety testing. Elective certification is dependent on market and customer requirements. Many of the tests are similar and overlap, but not all standards have the same methods of testing, or sample requirements.**

### Standard    Scope

<b>UN38.3</b>	Standard for the safe shipping of primary and secondary lithium cells and batteries.
<b>UL1642</b>	Includes primary (non-rechargeable) and secondary (rechargeable) lithium cells for use as power sources in products.
<b>UL2054</b>	Includes portable primary (non-rechargeable) and secondary (rechargeable) battery packs for use as power sources in products. These batteries consist of either a single electrochemical cell, or two or more cells connected in series, parallel, or both.
<b>IEC62133</b>	Is the most important standard for exporting Lithium-Ion batteries, including those used in IT equipment, tools, laboratory, household and medical equipment.