

## Introduction

Rechargeable Lithium batteries are becoming an integral part of everyday life thanks to their light weight, long life and high energy density compared to Sealed Lead Acid battery equivalents. With these advantages, their rapid uptake into New Zealand's burgeoning RV & Recreational market has aided in the mainstream acceptance of the technology, but highlighted varying safety and performance differences between the many available brands with cheaper options potentially falling short in performance and return on investment or worse, potentially faulty and dangerous.



Differences in components such as the cells used and battery management system capability all define the quality, safety and performance of the product but this information is not always available.

## What should the average consumer look for before buying a Lithium battery?

Warren Buffet is credited with saying “Price is what you pay. Value is what you get.” - we strongly recommend consumers adopt this perspective when looking at any Lithium battery purchase.

When the goods you're buying are locked in a sealed battery case, the easiest way to ensure you are getting a quality Lithium battery that meets the most stringent of battery standards is to ask “Does it have a UN38.3 Certificate?”

## UN 38.3 - Not just for transport, it's also peace of mind

UN38.3 refers to Part 38, paragraph 3 of the *United Nations Manual of Tests and Criteria for the Transport of Dangerous Goods*. This is the guidance used by the Airline and Maritime shipping industries as best practice to safely transport lithium batteries.

The manual requires that lithium batteries must pass a rigorous testing programme to ensure the safety of lithium battery transportation. From a consumer perspective, a UN38.3 certificate means the quality assurance has been done for you.



## What are the benefits of choosing UN38.3 Certified batteries?

Choosing UN38.3 Certified lithium batteries means that the batteries:

Have a proven build quality featuring high grade cells and components.

Have been tested in extreme conditions (heat/cold/vibration) meaning they will perform to expectations in normal operating conditions.

Have protection against short circuit, overcharge/over-discharge, and are shock and impact resistant – ensuring they're safe in the unlikely event of accidents.

Can reliably operate at very high charge and discharge rates.

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## What is involved in UN38.3 Lithium Battery Testing?

Testing to UN38.3 can only be performed by an approved independent testing laboratory and requires lithium batteries to pass a combination of significant environmental, mechanical, and electrical stresses.

These same test criteria are necessary for safe transport on planes and ships, it is equally applicable to consumer everyday applications including RV usage.

Test Item		Test Description
T.1	Altitude Simulation	This test simulates air transport under low-pressure conditions.
T.2	Thermal Test	This test assesses cell and battery seal integrity and internal electrical connections. The test is conducted using rapid and extreme temperature changes.
T.3	Vibration Test	This test simulates vibration during transport.
T.4	Shock Test	This test simulates possible impacts during transport.
T.5	External Short Circuit Test	This test simulates an external short circuit.
T.6	Impact / Crush Test	These tests simulate mechanical abuse from an impact or crush that may result in an internal short circuit.
T.7	Overcharge Test	This test evaluates the ability of a rechargeable battery to withstand an overcharge condition.
T.8	Forced Discharge Test	This test evaluates the ability of a primary or a rechargeable cell to withstand a forced discharge condition.

## I'm not transporting the battery - why would UN38.3 matter to me?

If you put a battery in a caravan/4x4/boat – it's being transported.

You don't buy the best car with a 5 star ANCAP rating with the intention of crashing it. Safety is a big factor in Lithium batteries.

You are assured a UN38.3 Certified product will perform well in normal conditions.