

REQUEST FOR COLLECTION CONTAINERS AND USED BATTERIES TO SUPPORT FIRE & RESCUE NSW RESEARCH TO IMPROVE UNDERSTANDING AND MANAGEMENT OF INCIDENTS INVOLVING LI-ON

Project overview

- ABRI and the BSC have been supporting Fire and Rescue NSW (FRNSW) as they embark on their Safety of Alternative and Renewable Energy Technologies (SARET) Research Program, which seeks to better understand and manage incidents involving lithium-ion batteries, reducing their linkage to fires.
- As part of this program, Fire & Rescue NSW is looking to test different compositions of portable, mixed batteries to understand impacts of lithium-ion batteries.
- Fire & Rescue is planning to undertake the testing in February.

Request for containers and used batteries to support

- This document sets out the testing scenarios and equipment requirements for FRNSW testing of mixed used batteries (small, portable, less than 5kg).
- ABRI is inviting interested members and participants in the project to date to provide a short (one page) expression of interest to contribute resources to FRNSW to support the testing. Please provide expressions of interest to the ABRI secretariat via email at secretariat@batteryrecycling.org.au by midday (AEST) Friday 4 February 2022.
- Companies contributing resources to the project will be publicly acknowledged.
- FRNSW does not engage in commercial R&D projects and will not endorse any products used in testing. As such, the Program will be focused on contributing to public knowledge and utilising results for the public good. This means that specific products (e.g. containers) may not be publicly recognised in the testing report.
- Where multiple ABRI members offer to contribute resources for the same item, then the ABRI Executive Committee members (who are not contributing resources to the project) will review applications including to:
 - Support equitable outcomes
 - Recognise member contributions to the project to date
- Once the ABRI Executive Committee establishes a list of companies contributing to the project, ABRI will discuss arrangements for transporting the used batteries with the participating parties.
- FRNSW is talking to the NSW EPA about the need for approvals to store the used batteries at their testing facility.

Used and new battery requirements

- Used batteries provided should be 5kg or less and represent batteries dropped off for recycling.
- Any battery shape or type so long as it is under 5kg can be submitted. Fire & Rescue NSW may look at future refinements to testing depending on the outcomes of this project.

Item	Min. Qty. Required
New lithium-ion 18650 cells of the same size and capacity. A means to charge them to 100% SoC will also be required to provide a consistent ignition source for the multiple tests.	90 cells
Spent LiB (any format)	114 kg
Spent Alkaline	165 kg
Spent Lead acid	84 kg
Spent Li-primary	9 kg
Spent NiCad	12 kg
Spent NiMH	9 kg

Containers required for testing

- To support consistency of testing, all containers under each category must be the same. For example, for tests involving a 2L plastic or tin buckets, Fire & Rescue NSW will require three buckets which are the same.

Item	Min. Qty. Required
2L plastic or tin bucket	3
10L plastic bucket	12
20L plastic tube stand	12
15L fire resistant liner	12

100L drop off unit (+/1 10%) – FRNSW is looking for different containers used as part of the BSC program and/or specifications so they can develop their own container for testing.

Test scenarios

- Series A – this is to test different container sizes without batteries to understand how the containers respond to fire situations
- Series B – this is to test used batteries all of the same chemistry to understand how the battery chemistries respond to fire situations. Fire and Rescue NSW will develop a container specifically for this situation.
- Series C – this is to test different lithium ion/mixed battery combinations

Series	Configuration	Container size	Container type	Ignition	Fill quantity (kg)	Fill composition
A	1	15L	Test container*	LiB	0	N/A
	2	2L	Plastic or tin bucket	LiB	0	N/A
	3	10L	Plastic bucket	LiB	0	N/A
	4	20L	Plastic tube stand	LiB	0	N/A
	5	15L (12-15kg)	Fire resistant liner	LiB	0	N/A
B	6	15L	Test container*	LiB	2	100% LiB
	7			LiB	2	100% Alkaline
	8			LiB	2	100% Lead acid
	9			LiB	2	100% Li-primary
	10			LiB	2	100% NiCad
	11			LiB	2	100% NiMH
C	12	10L	Plastic bucket	LiB	10	15% LiB, 85% mixed
	13			LiB	10	30% LiB, 70% mixed
	14			LiB	10	45% LiB, 55% mixed
	15	20L	Plastic tube stand	LiB	10	15% LiB, 85% mixed
	16			LiB	10	30% LiB, 70% mixed
	17			LiB	10	45% LiB, 55% mixed
	18	15L (12-15kg)	Fire resistant liner	LiB	10	15% LiB, 85% mixed
	19			LiB	10	30% LiB, 70% mixed

Series	Configuration	Container size	Container type	Ignition	Fill quantity (kg)	Fill composition
	20			LiB	10	45% LiB, 55% mixed
	21	15L	Test container*	LiB	10	15% LiB, 85% mixed
	22			LiB	10	30% LiB, 70% mixed
	23			LiB	10	45% LiB, 55% mixed