

TAREA Guideline on how to handle battery waste

1.0 BACKGROUND

The chemical waste that is found most at Tanzania Renewable Energy Association (TAREA) Offices is the battery. When a battery capacity goes below 80% of its nominal capacity, TAREA considers it aged. For lead-acid batteries (Pb), regeneration/recovery can be performed before definitely considering the battery as broken.

After that and for all battery chemistries, safe storage must be put in place before collection and recycling/repurposing/life shelf elongation are done.

2.0 APPLICABILITY

This is applicable for systems (Neo, FP¹, STS², SHS³, SBS⁴) and appliances (radio, torch, haircutter etc.) batteries.

3.0 NECESSARY EQUIPMENT

- 1) Safety boots (for lead acid battery handling)
- 2) Protective goggles
- 3) N99 mask (for lead acid batteries only) and
- 4) Gloves EN ISO 37401: 2016 and
- 5) Overall.

¹ Fenix Power

² Solar Television System

³ Solar Home System

⁴ Solar Business System

SAFE BATTERY STORAGE

Stage	Description	Responsible	Documentation (R= referenced, E = edited)
Identify the battery type/chemistry	Look up the specifications on the battery and identify the chemistry. Lithium batteries can have the following names: ▪ Li ▪ Li-ion ▪ LFP⁵ ▪ LiFePO₄ ▪ NMC⁶ Lead-acid batteries can have the following names: ▪ Pb⁷ ▪ Lead carbon ▪ GEL ▪ DCS ▪ OPzV ▪ OPzS	▪ Technical officer	
Discharging to a safe state of charge (optional)	For lithium batteries, it is recommended but not compulsory to fully discharge batteries. Safe discharge can be done quickly by connecting halogen light bulbs, and a power resistor with high wattage.	▪ Technica officer	

⁵ Lithium Iron Phosphate

⁶ Nickel Manganese Cobalt

⁷ Lead

Cleaning	Ensure the battery is clean, with no signs of leakage or dust. If signs of leakage are visible, please wear immediately gloves in compliance with standard EN ISO 37401: 2016, protective goggles, and put the battery in a plastic bag before continuing. DO NOT ATTEMPT TO DRAIN THE BATTERY ACID	▪ Technical officer	
Protection	Tape the poles with non-electroconductive material (adhesive, carton) all around and cover all the conductive parts of the poles.	▪ Technical officer	
Labelling and storage	<u>LITHIUM</u> Place the isolated battery in a plastic bin with a clear label in English and the local language “HAZARDOUS – BROKEN LITHIUM BATTERIES”. The batteries pile must not exceed the bin enclosures’ top. Maximum piling level: 5cm below the top edge. Make sure the bin is in a separated and marked area: - outside the warehouse, in a secure, shaded and ideally lockable area (with a fence for example), - in the warehouse, ideally nearby an exit door to get airflow, - additional rented place nearby the warehouse dedicated to e-waste, ▪ far from flammable materials, generators, and backup systems ▪ not under direct sunlight, rain, floods, ▪ with temperatures below 40 Celsius degrees, ▪ with a maintained fire extinguisher nearby (dry powder type fire extinguishers)	▪ Technical officer	

Labelling and storage	 The batteries must be staked poles facing up, and not exceed the edge of the pallet. Each layer separated by thick cardboard. The batteries stack must not exceed 3 layers. Once full, the pallet shall be wrapped with plastic film.	▪ Technical officer	
Safety & Management	▪ At least 2 team leaders and/or officers shall be trained in fire accident management and hazardous waste management ▪ When the e-waste area is locked, keys shall be assigned to a trained person. When absent, the key is handed over to another trained person when possible. ▪ Access to storage areas shall be limited to only trained or appointed personnel ▪ Ensure fire extinguishers are frequently checked and maintained		

Version Control and Modification History

Version	Date	Description of the Modification	Content approved by	Quality approved by	Author(s)
1.0					

Enactment



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Chairperson

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