SORTING AND PACKAGING INSTRUCTIONS

for EOL lithium rechargeable and lithium primary batteries

Lithium batteries are used in numerous devices and come in all shapes and sizes. Therefore, it may not be an easy task to recognize and sort the various kinds of batteries accordingly. The following is intended as a guideline for sorting, packaging and transportation including the mandatory regulations.

We would appreciate it if you kept off non-conforming material, namely:

- radioactive products
- other batteries than lithium primary and lithium secondary specifically, mercury, cadmium and lead batteries
- any other material or waste
- contaminated cushioning materials
- contaminated drums
- defective, mechanically damaged or leaking lithium batteries must be packed according special regulations

We reserve the right to charge additional costs resulting from additional sorting due to non-conforming materials mentioned above, packaging, disposal and logistics cost.

Offers have been calculated on the basis of 98% sorting accuracy and 0,00% mercury. Li-primary and Li-secondary batteries can each be delivered in a mix of subchemistries (Li-P: TCl, MnOx, etc. / Li-Ion: NMC/LCO/LFP, etc.), and sorting will take place at Accurec free of charge. Invoicing will take place on base of sorting report.

In case a customer would like to sort these categories according to our price categories, we provide further sorting criteria below.

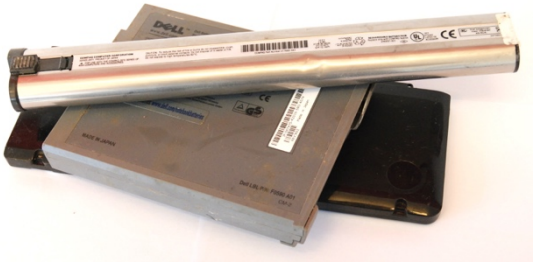
All prices refer to End Of Life batteries. Production waste from any battery chemistry need to be requested and calculated case by case.

CATEGORIES OF END-OF-LIFE RECHARGEABLE LI-ION BATTERIES

1 Consumer battery

means any rechargeable Li-Ion battery, battery pack or accumulator that
(a) is sealed; and
(b) can be hand-carried; and
(c) is used by consumers or professionals in electronics and household applications; and
(d) is not used in cordless power tools or e-bikes; and
(e) is neither an industrial battery nor an automotive battery;
(f) has a protective casing

e.g.
mobile phone
laptop



2 Power tools

means any rechargeable battery, battery pack or accumulator that
(a) is sealed; and
(b) can be hand-carried; and
(c) comes from a hand-held appliance intended for maintenance, construction or gardening activities.
(d) does not weigh more than 2 kg

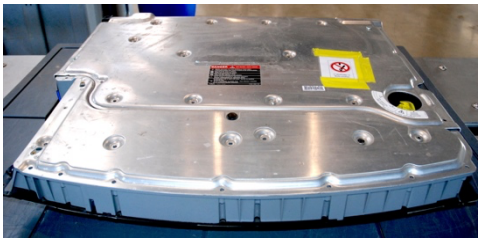
e.g.
cordless drill
vacuum cleaner
gardening tools

3 E-bike / individual mobility

means any rechargeable battery, battery pack or accumulator that
(a) comes from an electric driven small vehicle which can be used for propulsion
(b) has a protective casing

e.g.
e-bike
pedelec
monodrive
hoverboard
electric scooter, etc.

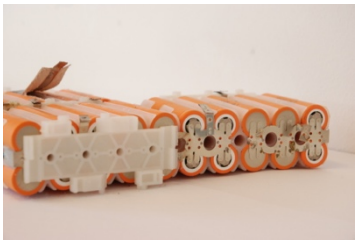
4 Automotive Mobility



5 Others

means any other type rechargeable battery, battery pack or accumulator that
(a) does not meet categories above
(b) is a single battery or battery cluster with connectors
(c) pouch or polymer cells or modules

e.g.
robots, any other application



CATEGORIES OF LI-PRIMARY BATTERIES

6 Consumer Li-primary battery — e.g.

means any non-rechargeable Lithium single cell or battery pack that
(a) has a maximum diagonal length of 25 cm; and
(b) is used by consumers, professionals or in military electronics; and
(c) has either a manganese dioxide (MnO_2, 3 V), sulfur dioxide (SO_2, 3.6 V) or lithium iron disulfide ($LiFeS_2$, 1.5 V) battery chemistry

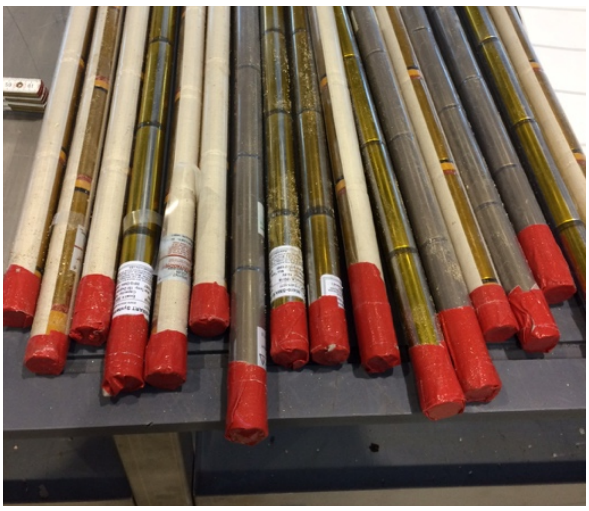
PCB storage
older models of digital cameras, button cells, etc.

7 Thionyl Chloride TCl — e.g.

means any non-rechargeable Lithium primary single cell or battery pack that
(a) has a maximum diagonal length of 25 cm; and
(b) is used for long-term applications and those with a low consumption of electricity; and
(c) has a lithium thionyl chloride chemistry ($LiSOCl_2$, 3.6 V)

meter
smoke detector, life jackets, etc.

8 Packs and rods for disassembly	e.g.
means any non-rechargeable Li-primary battery pack that (a) is assembled from single cells; and (b) has a diagonal length of more than 25 cm	oil drilling rods military applications in-pipe inspection robots



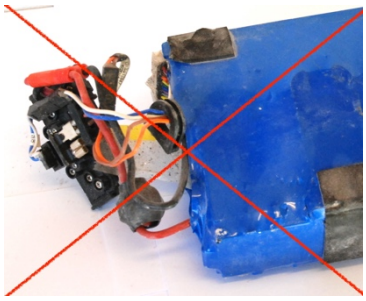
ADDITIONAL SAFETY INSTRUCTIONS

General instructions to avoid risk of short circuit / fire

loose cables

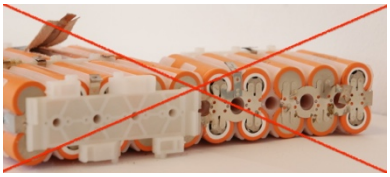
Make sure that cables are safe and cannot be damaged during transportation.

blank cables



Cables with open ports or bare parts have to be cut so that no bare wires are visible. Cut the wire as close as possible to the battery.

exposed electrical contacts and ports



Exposed ports and contacts are to be taped or packed with foils/bags.

moisture

Keep batteries and isolation material away from water and strong moisture. Especially batteries above 10 V. Batteries in liquids or strong moisture can generate micro current, and thus heat up the battery slowly up to TR (thermal runaway = thermal self-destruction).

Transportation regulations

The sender is responsible for the packaging according to the dangerous goods regulations (ADR for road / IMDG for sea). The material is to be prepared according to the batteries' condition and specific risks.

If a shipment contains battery household mix with less than 2 % lithium batteries, it may be transported as non-dangerous goods without the dangerous goods label, but has to comply with ADR special packaging regulation SP 636. In all other cases batteries shall be transported under ADR SP 377 as dangerous goods und shall be packed according to packaging instruction P 909.

Use only UN-approved containers. These may be recognized by the embossing, which contains an *x* or *y* in the UN approval code. The maximum service life of plastic drums is five years (date of manufacture is stamped). Metal drums must contain a plastic liner of minimum 0,1mm thickness. Make sure that drums are not damaged (wholes/dents may loose certification).

Additionally, lithium batteries are to be protected against short circuits. This may be done by:

Taping
Tape the poles or cables. Avoid cluster of batteries taped together.

Bagging
Bag each battery separately in a plastic bag.

Insulation with inert, non-conductive material
Alternatively, batteries can be isolated with dry sand or dry vermiculite.
Alternate batteries and layer of insulation material (sand or vermiculite). Batteries must not touch each other. Last layer is one of 10 cm sand or vermiculite.
The more the safer.

Sand
Use preferable dry sand for all lithium batteries (maximum humidity 10%).

Vermiculite
You may use vermiculite for regular consumer packs, power tools, and e-bike batteries (Li-Ion), which are not damaged or leaking and for primary packs without cables.

Nonetheless, we recommend the use of sand for safety reasons.

Damaged cells
Packaging for leaking or damaged cells will be provided on request depending on and according to regulations and technical advice.

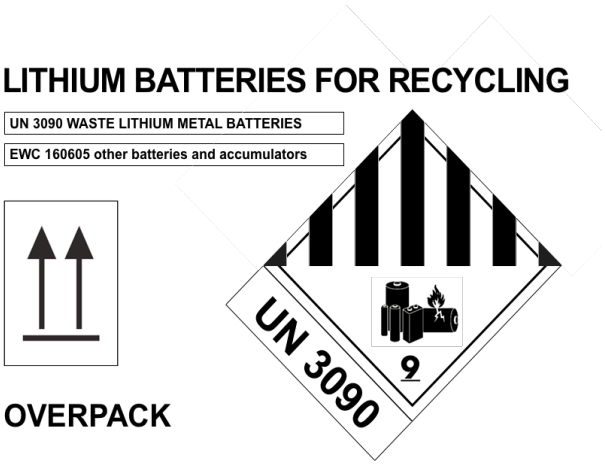
Transport preparation

UN-drums are to be secured on pallets to prevent movement during transport.
Make sure that the drums do not stick out and that the carrier has rubber mates under pallets or other means to prevent additional movement on the truck.
Fix pallets on truck with tie down straps as well.

Transportation regulations

Each drum is to be labelled with the appropriate dangerous good label:
UN 3090 – Lithium-metal batteries
UN 3480 – Lithium-Ion batteries

In case of overpacking do not forget the label OVERPACK.
When using transparent stretch wrap only OVERPACK, by nontransparent wrap also UN labelling.



Label template can be received on request info@accurec.de
Do not forget the correct name in the transportation documents:
UN 3090 WASTE LITHIUM-METAL-BATTERIES, 9, (E)
UN 3480 WASTE LITHIUM-ION-BATTERIES, 9, (E)