Toolkit documentation

A simple guide to help you evaluate your battery.

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Step 1: Identify your battery

Collect key information of battery

What is battery production country?

Where the battery is used?

What is the type of battery?

How many cycle life of the battery?

The mass of the battery?

Step 2: Evaluate battery based on metrics

Impact factor for these metrics will be marked form 1 to 5.

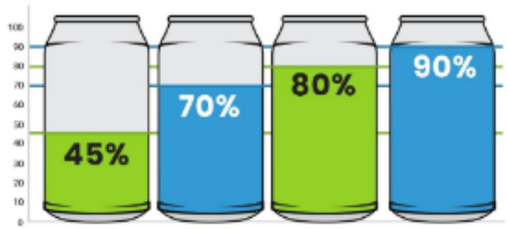
1. Transportation

2. Material consumption

3. Extraction pollution

4. Battery security

5. Battery Cycle life



6. Recycle rate

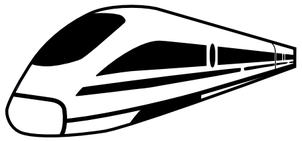
1: Negligible Impact; 2: Low Impact; 3: Moderate Impact; 4: High impact; 5: Significant Impact

Metric 1: Transportation

The distance from where the battery is produced to where the battery is used.

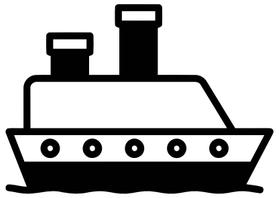
<1k miles

Score: 1



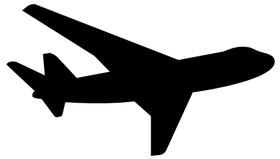
<3k miles

Score: 2



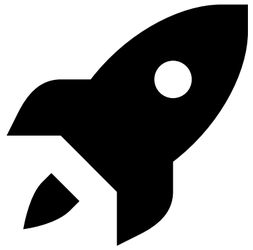
<7k miles

Score: 3



<9k miles

Score: 4

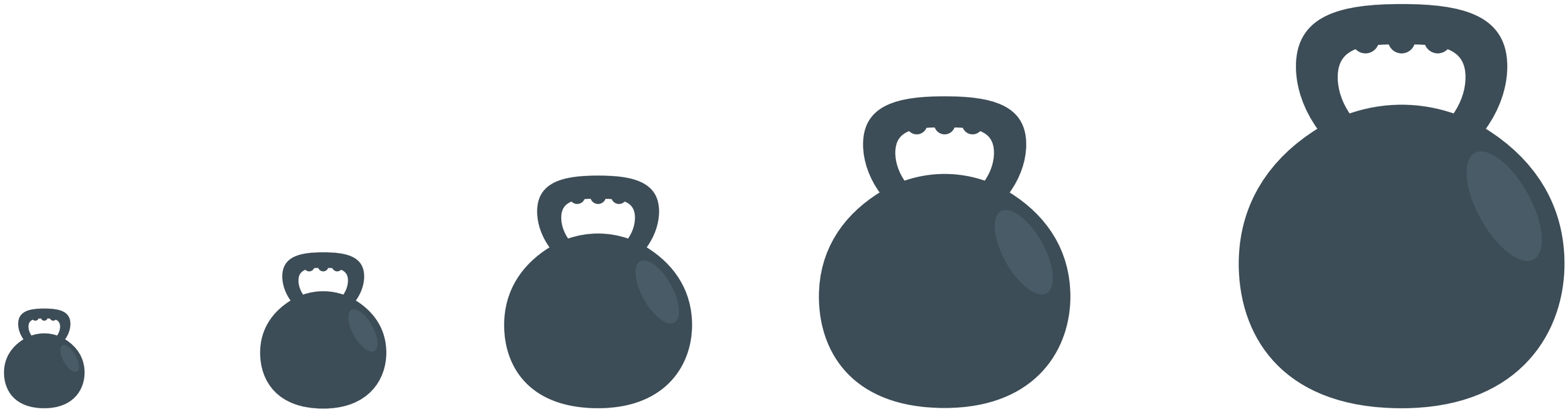


>9k miles

Score: 5

Metric 2: Material consumption

Material consumption is evaluated roughly by the total mass of battery.



<0.5 kg **<1 kg** **<5 kg** **<10 kg** **>10 kg**

Score: 1 **Score: 2** **Score: 3** **Score: 4** **Score: 5**

Metric 3: Extraction pollution

Extraction pollution is evaluated by the CO2 emission when producing the battery.
(*Approximately estimated by the mass of battery)

<0.5 kg **<1 kg** **<5 kg** **<10 kg** **>10 kg**

Score: 1 **Score: 2** **Score: 3** **Score: 4** **Score: 5**

Metric 4: Battery security

Battery security is evaluated by the type of battery.

Zinc-Air Batteries — **Score: 5**

Alkaline — **Score: 4**

Nickel-Cadmium (NiCd) — **Score: 3**

Nickel-Metal Hydride (NiMH) — **Score: 2**

Lithium Iron Phosphate (LiFePO4) — **Score: 1**

(Source 1: https://www.batterypowertips.com/what-are-the-top-five-li-ion-battery-safety-standards/)
(Source 2: https://batteryuniversity.com/article/battery-testing-and-safety)
(Source 3: https://www.cirbasolutions.com/learning-center/battery-types/)

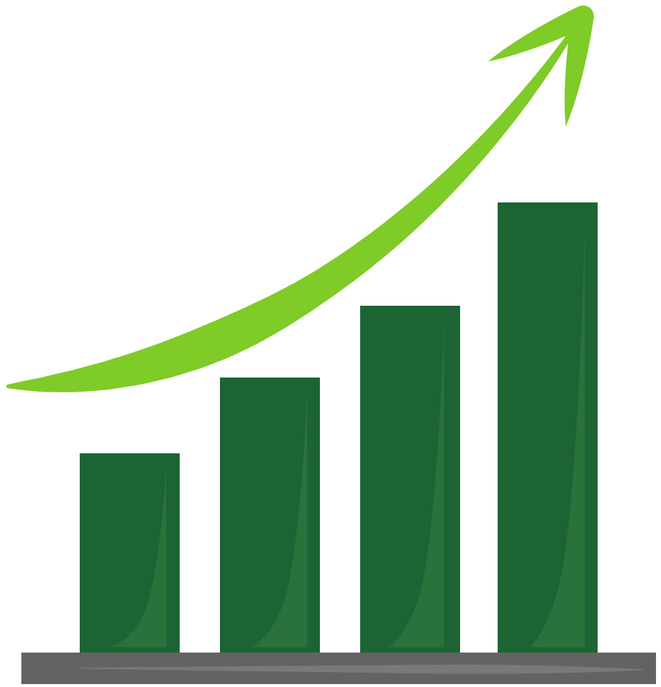
Metric 5: Battery cycle life

The cycle life of batteries is the number of charge and discharge cycles that a battery can complete before losing performance.

>3000	**Score: 1**
>2000	**Score: 2**
>1000	**Score: 3**
>500	**Score: 4**
<500	**Score: 5**

Metric 6: Recycle rate

The recycle rate of batteries refers to the percentage of batteries that are recycled.



>95%	**Score: 1**
>70%	**Score: 2**
>50%	**Score: 3**
>20%	**Score: 4**
>5%	**Score: 5**

Step 3: Assessment outcome

Now, a radar map is available for you to evaluate your battery usage!