|  |  |
| --- | --- |
| Requirement | Durability |
| Metric | Lifetime of design to be 5 to 6 years [1] |
| Criteria | A longer lifetime is preferred  Can work against water and dust |
| Constraint | Past waterproof and dustproof test from IP5 to IP6[2] Past drop test for ANSI/ISEA 121-2018 [3] Working at least two weeks without charging [4] |

[1] <https://www.iconcox.com/blog/how-long-does-the-gps-tracker-last.html>

This is the lifetime that costumers want for a tracker

This depends on the chip and circuit

[2] <https://atslab.com/environmental-testing/waterproof-testing/>

Waterproofing test

[3] <https://www.element.com/product-qualification-testing-services/dropped-objects-testing>

Drop test from 6 meter for each corner and all surface to check whether it is broken or not

[4] <https://www.brickhousesecurity.com/gps-trackers/device-guide/>

How people will select tracker, the stakeholders will use 150 trackers together, so may be necessary to make it as solar-powered, therefore, this can solve the problem of charging

# Polyoxymethylene

This is a material with high strength and shear force that can be used as the cover of the tracker

<https://www.ensingerplastics.com/en-us/shapes/engineering-plastics/pom-acetal>

Criteria: Must be usable for a long period (electrical?)

* + Metric: lifetime of design/equipment (yrs)

Battery life,

Criteria: Must be usable in different conditions (metric: hydrophobicity of materials, find a constraint, criteria, etc.)

Constraint: Must past drop test and pressure test (find the tests that are applicable to our designs and prototypes)

Constraint: Past waterproof test since there will be rain outside (likewise)

Constraint: Rustproofing (if there are metal) since conditions are generally wet (find a metric to measure how rustproof the materials are)