

Design for Durability Quick Reference Guide

Stayin' Alive: Five steps to Design for Durability

1. Before You Design, Understand Your Product's Lifetime

- Not everything should last a long time. Choose a target lifetime appropriate to your product type.
- Balance durability with other Design for Product Lifetime strategies, such as repair and recycling.

2. Be Tough: Make Parts & Connections Physically Robust

- Follow lines of force and avoiding stress concentrations to make robust parts and assemblies.
- Choose materials that are strong and tough (fracture-resistant).
- Reinforce the parts most likely to fail (see *Lightweighting Strategies*).
- Predict and optimize performance with finite element analysis software.

3. Wear Well: Attractive Finishes and Smooth Works

- Choose hard materials that resist wear.
- Choose textures that hide scuffs.
- Choose materials that gain character with wear and weather.
- Use wear-resistant joints and connections (sealed bearings, self-lubricating bushings).

4. Encourage Maintenance: Enroll the User in Longevity

- Make care instructions available, clear, and inviting.
- Build maintenance instructions into the product interface.
- Provide maintenance tools and supplies.
- Provide easy and affordable maintenance service.

5. Stay Relevant: Survive Fashion and Lifestyle Changes

- Choose timeless, classic aesthetics.
- Make products useful across a range of scenarios.
- Allow the product to grow and evolve with changing user demands.

