

Battery Charging Time Calculation Guide

Standard 150mA Constant Current Chargers (NiMH & NiCd Cells)

THE STANDARD CHARGING FORMULA

Charging Time (hours) = (Battery Capacity (mAh) / Charger Current (mA)) × Efficiency Factor

- **Battery Capacity (mAh):** The total rated energy capacity printed on your battery cell (e.g., 800 mAh, 2000 mAh).
- **Charger Current (mA):** The rate of electric current delivered per slot by your charger (e.g., 150 mA).
- **Efficiency Factor (1.2 – 1.4):** Accounts for energy loss converted into heat during the charging cycle. Standard NiMH/NiCd charging typically operates at 80% efficiency ([1.2](#) multiplier).

Step-by-Step Calculation Example

Scenario: Charging a standard [2000 mAh](#) AA battery (e.g., Panasonic Eneloop) using a [150 mA](#) charger.

- Step 1: Calculate raw charge time

[2000 mAh / 150 mA = 13.33 hours](#)
- Step 2: Apply the efficiency loss factor (1.2)

[13.33 hours × 1.2 = 16.0 hours](#)

Result: A 2000 mAh battery requires approximately **16 hours** of continuous charging.

Quick Reference Table (150mA Output)

Battery Type	Capacity (mAh)	Theoretical Time	Recommended Time (1.2 Factor)
AAA Standard	800 mAh	5.33 hrs	6 Hours 25 Mins (6.4 hrs)
AAA High Capacity	1000 mAh	6.67 hrs	8 Hours 00 Mins (8.0 hrs)
AA Standard (Eneloop)	1900 mAh	12.67 hrs	15 Hours 10 Mins (15.2 hrs)

Battery Type	Capacity (mAh)	Theoretical Time	Recommended Time (1.2 Factor)
AA Capacity (Eneloop)	2000 mAh	13.33 hrs	16 Hours 00 Mins (16.0 hrs)
AA High Capacity	2500 mAh	16.67 hrs	20 Hours 00 Mins (20.0 hrs)

IMPORTANT SAFETY NOTICE

Manual 150mA chargers do not feature auto-cutoff or smart termination technology. Always set a manual timer based on these calculations to disconnect the charger after the designated timeframe. Overcharging can lead to excessive cell heat, reduced battery lifespan, or potential leakage.