

3D Printing Cost Estimator

How-to guide: what the workbook does, how to use it and what every number means.

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Cost every 3D print job from slicer estimates: material, machine time, labour and failed builds, then check each quoted price against your target margin.

For: Additive manufacturing service bureaus, in-house AM labs, print farm owners and estimators who quote FDM, SLA, SLS or metal parts.

Version 1.0.0 · updated 15 October 2026

Quick start

1. On Setup, type your currency, technician labour rate and target margin, and list your printers with their machine rates per print hour.
2. List your materials with their price per kg, per lb or per litre; the cost per gram is calculated.
3. On Print Jobs, add one row per job from the slicer: printer, material, quantity, parts per build, grams per part and build hours.
4. Add setup and post-processing minutes, a failure rate and the price; read cost per part, margin and status, and fix anything Check reports.
5. Open the Dashboard: margin against target and where each job's cost goes.

What is in the workbook

Start Here	Read this first: what the workbook does and how to use it.
Setup	Currency, technician rate, target margin, and the printers and materials the jobs use.
Print Jobs	One row per print job: slicer estimates, setup and finishing minutes, failure rate and price.
Dashboard	Margin against target, where each job's cost goes, and the load on every printer.
Method	How every number is calculated, with assumptions, limits and sources.
Verify	Self-check: the workbook's formulas recomputed on fixed inputs against an independent reference.

What each number means

Quantity	How it is calculated	Units
Cost per g (Setup)	Price / 1000 for a price per kg; price / 453.59237 per lb; price / (1000 x density) per L.	currency/g
Builds	ROUNDUP(quantity / parts per build): a part-full plate costs a whole build.	builds
Machine hours	Builds x build time.	h

Quantity	How it is calculated	Units
Material cost	Grams per part x (1 + waste and refresh) x cost per g (looked up by material).	currency/part
Machine cost	Machine hours x the printer's machine rate (looked up) / quantity.	currency/part
Labour cost	(Builds x setup minutes + quantity x post-processing minutes) / 60 x labour rate / quantity.	currency/part
Cost per part	(Material + machine + labour) / (1 - failure rate): good parts carry the reprints.	currency/part
Failure allowance	Cost per part - (material + machine + labour).	currency/part
Margin and status	(Price - cost per part) / price. On target at or above target, Near target within 5% of it, else Below target.	%
Job cost, value, margin	Cost per part, price and price - cost per part, each x quantity.	currency/job
Weighted margin	Sum of job margin / sum of job value over priced jobs (not an average of percentages).	%
Failure allowance (tile)	Sum over jobs of failure allowance x quantity.	currency
By printer	COUNTIF and SUMIFS of jobs, builds, machine hours, job cost and value by printer; margin = margin sum / value sum.	mixed

Assumptions, limitations, sources and the self-check (the Verify sheet, which recomputes the workbook's formulas on fixed test inputs) are in the workbook. The last page shows the Dashboard with the example data for Northgate Additive, a fictional business.

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Engineering estimates for planning and improvement work. Verify the results against your own process, data and standards before you rely on them.

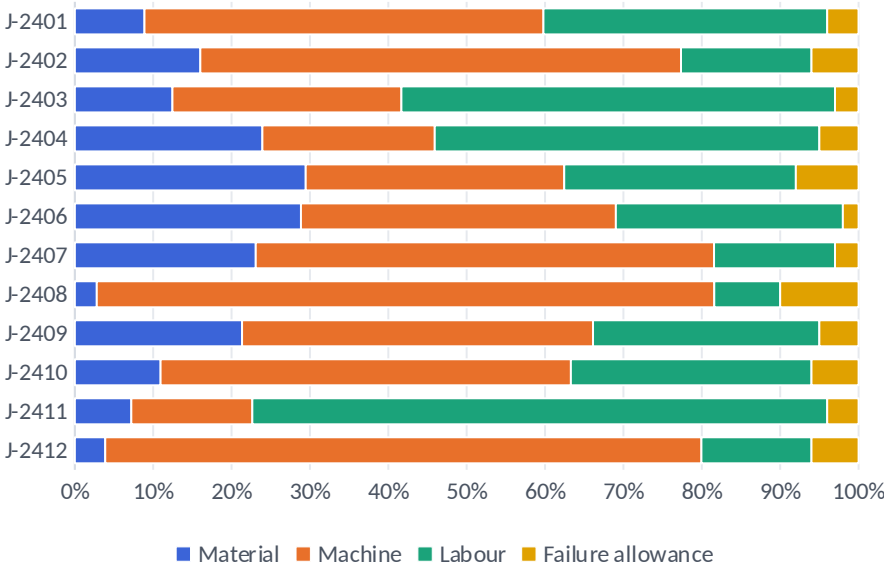
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WEIGHTED MARGIN ON PRICE	JOB'S BELOW TARGET MARGIN	MACHINE HOURS BOOKED	FAILURE ALLOWANCE (USD, EST.)
29.5%	2	462.0	816
Target 35.0%	Margin status on Print Jobs	Builds x build time, all jobs	Cost of reprints carried by the jobs
Below target			

Where the cost of each part goes



Margin on price by job

