Adhesive Bead Volume

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

Adhesive Bead Volume

Work out every bonded part's adhesive bead volume and mass, the adhesive, packages and cost a run needs, and check the estimate against a weighed

For: Process and manufacturing engineers, bonding cell leads and buyers dispensing adhesives and sealants in assembly.

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Quick start

1. On Setup, type your plant and currency, the sample tolerance, and list your adhesives with their density, package size, price and purge allowance.
2. On Parts, give each bonded part a row: adhesive, bead diameter, bead length per part, parts per run and a weighed sample mass.
3. Fix anything the Check column names.
4. Open the Dashboard: estimated against weighed adhesive per part, and the packages each adhesive needs.

What is in the workbook

Start Here	Read this first: what the workbook does and how to use it.
Setup	Plant, currency, the sample tolerance, and the adhesives with their density, package, price and purge.
Parts	One row per bonded part: bead size, length, run size and a weighed sample in; volume, mass, packages and cost out.
Dashboard	Adhesive per part estimated against weighed, the packages each adhesive needs, and the cost of a run of every part.
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
Cross-section	Pi x bead diameter² / 4.	mm²
Volume per part	Cross-section x bead length (ft) x 304.8 / 1,000.	mL
Mass per part	Volume per part x density.	g
Sample against estimate	Sample mass / mass per part - 1.	%

Quantity	How it is calculated	Units
Sample status	Within limits when the sample is within the tolerance on Setup; Out of limits otherwise.	-
Adhesive per run	Volume per part x parts per run x (1 + purge).	mL
Packages per run	Adhesive per run / package size, rounded up.	packages
Cost per run and per part	Adhesive per run / package size x price per package; / parts per run.	currency

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 Pemberton Appliances, 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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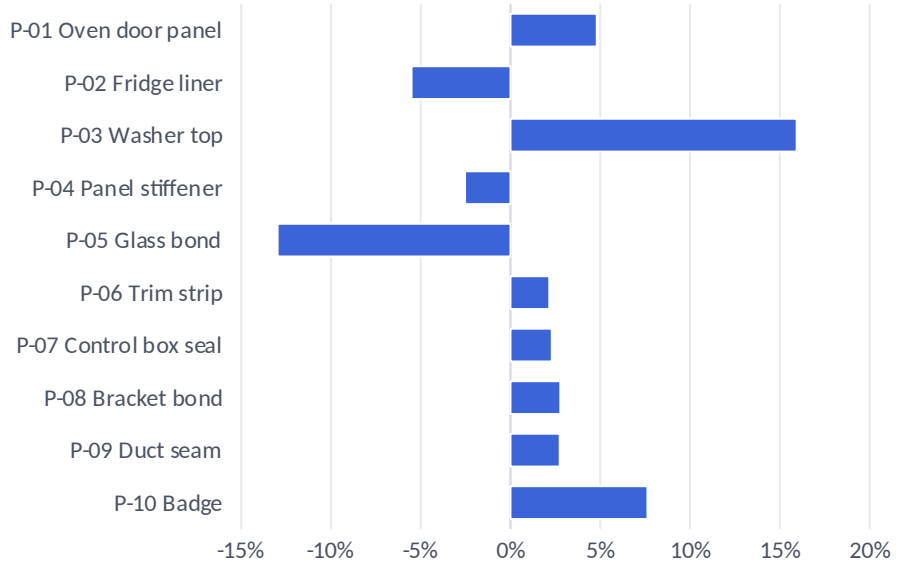
Adhesive per part estimated against weighed, the packages each adhesive needs, and the cost of a run of every part.

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Pemberton Appliances, bonding cell (example): 10 bonded parts with 4 adhesives. Bead diameter in mm, length in ft. Amounts in USD.

PARTS	ADHESIVE PER RUN (L)	ADHESIVE COST PER RUN (USD)	SAMPLES OUTSIDE TOLERANCE
10	**410.5**	**19,715**	**2**
Rows on Parts	One run of every part, with purge	At the package price	Weighed far from the estimate

Weighed sample against estimate



Packages per run by adhesive

