APPLY INSULATION

User Guide

Apply insulation across entire Revit MEP systems in minutes. This guide walks through installation, the standard workflow, and the Excel specification format.

Inside this guide

Compatibility

Apply Insulation runs on Autodesk Revit 2024, 2025, 2026, and 2027 on Windows. A single installer ships binaries for all four versions — Revit loads the matching build automatically.

01

Installation

The Productivity Pack installs to your user profile — no admin password required. Close Revit before running the installer.

1. Download the installer

After signing up at cadenceaec.com/productivity-pack, you'll receive an email with a download link. The installer is a single `.msi` file, roughly 5 MB.

2. Run the installer

Double-click `Cadence.Installer.msi`. Windows will show a **SmartScreen** warning during early access because the installer is not yet code-signed.

> Click **More info**, then **Run anyway**. We're working on code-signing for the public release.

3. Complete the setup wizard

Accept the licence and click Install. The installer copies binaries to:

```
%AppData%\Autodesk\ApplicationPlugins\Cadence.bundle\
```

This is Autodesk's standard plugin location, so Revit picks it up automatically.

4. Launch Revit

Open Revit. You'll see a new **Cadence** tab on the ribbon. Inside it, the **Productivity** panel contains the **Apply Insulation** button. That's all the setup — you're ready to run.

02

Running Apply Insulation

The dialog flows top to bottom: point at a specification, map insulation types the first time, choose what to process, preview, then Apply. Everything runs in a single Revit transaction — one `Ctrl+Z` rolls back the entire pass.

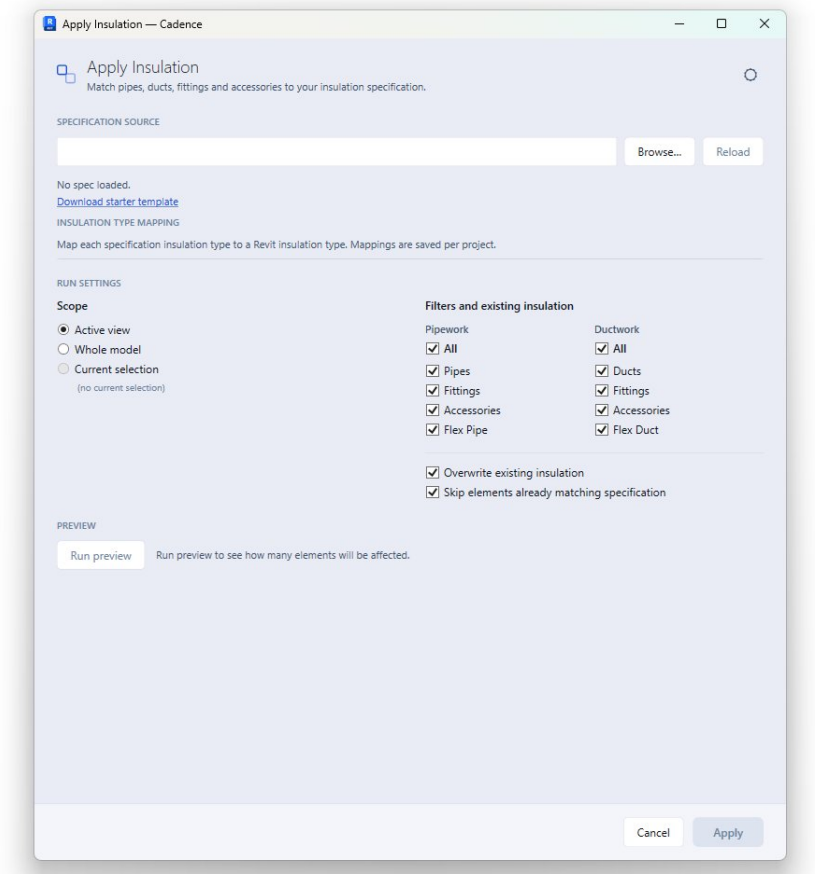


Figure 1 — The Apply Insulation dialog before a spec is loaded.

Step 1 — Open the dialog

Click **Cadence** on the ribbon, then **Apply Insulation**. The dialog opens with your last-used settings if you've run it before.

Step 2 — Load your specification

Under **Specification source**, click **Browse…** and select your project's insulation Excel file. The file path appears in the text box and the plugin reports how many rules were loaded — for example *“Loaded 17 pipe rule(s) and 6 duct rule(s).”*

First time? Click **Download starter template** under the spec field to save a ready-made `.xlsx` with the right columns and example rows. Edit it for your project, save alongside your Revit model, then Browse to it. Section 3 covers the format in detail.

The buttons next to the spec field control the file:

- **Open** — opens the spec file in Excel for editing.
- **Browse…** — pick a different spec file.
- **Reload** — re-read the current spec after editing it. Use this after saving changes in Excel without leaving the dialog.

Step 3 — Map insulation types

Once a spec is loaded, the **Insulation type mapping** table appears. For each insulation type named in your spec (e.g. *Mineral Wool*, *Phenolic Foam*, *Fire Rated Duct Slab*), pick the Revit insulation type it should resolve to in your model. Each row shows whether the type applies to pipework or ductwork.

Mappings are **saved per project**. Do this once per Revit model — subsequent runs remember your choices, even after closing and reopening Revit.

If your spec names an insulation type that doesn't exist in Revit yet, click **+ Add new type…** in the dropdown. A small dialog opens asking for a name and a ‘Based on’ template (an existing Revit insulation type to copy properties from). Click **Create** — the new type is added to your Revit project and selected as the mapping target automatically.

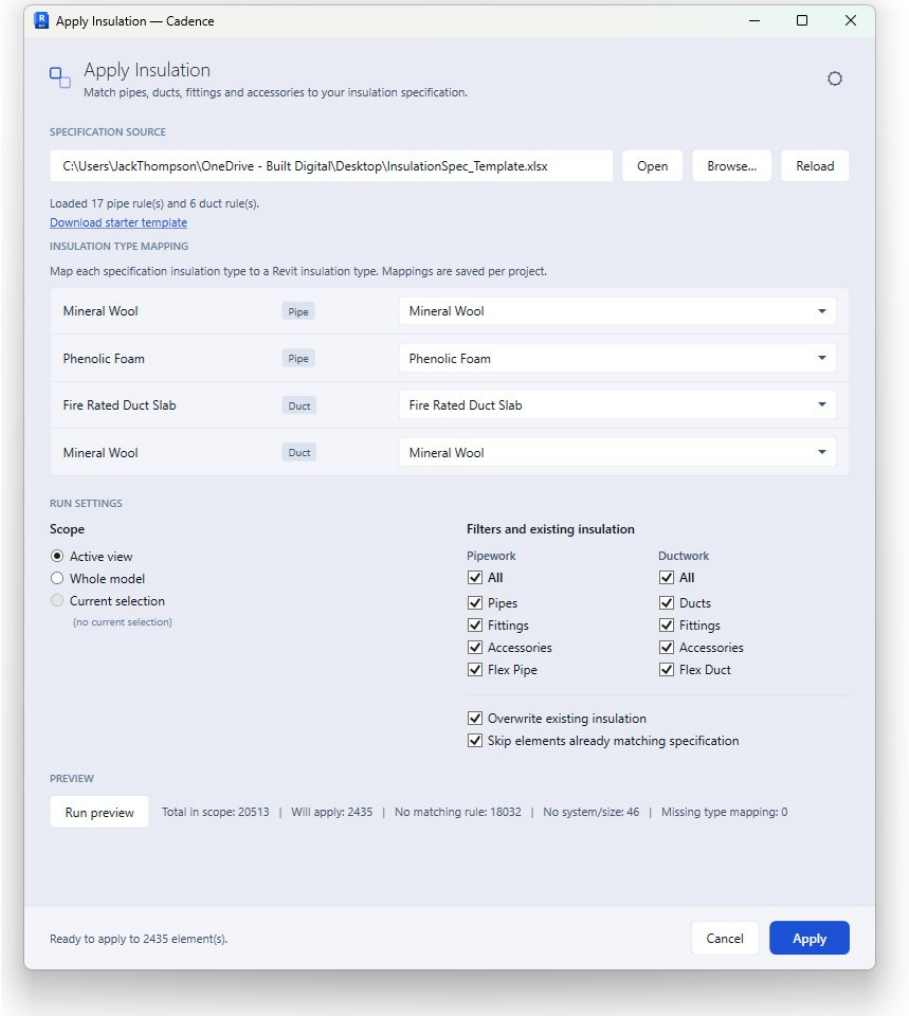


Figure 2 — The dialog with spec loaded, types mapped, and preview run.

Step 4 — Configure scope

Under **Run settings > Scope**, choose which elements the pass will consider:

- **Active view** — only elements visible in the view you're currently looking at. Useful for spot-checks and partial passes.
- **Whole model** — every matching element in the project. Most common for end-of-stage insulation passes.
- **Current selection** — only what you've selected before opening the dialog. The option is disabled if nothing is selected.

Step 5 — Filters and existing insulation

The **Filters and existing insulation** grid lets you include or exclude specific element categories. Pipework and ductwork are split into separate columns:

- **Pipework** — Pipes, Fittings, Accessories, Flex Pipe.
- **Ductwork** — Ducts, Fittings, Accessories, Flex Duct.

Untick anything you don't want processed in this pass. The **All** checkbox at the top of each column toggles everything in that side.

Two more checkboxes control how the pass treats elements that already have insulation:

- **Overwrite existing insulation** — if ticked, elements with insulation already applied will be updated to match your spec. If unticked, the pass leaves them alone.
- **Skip elements already matching specification** — if ticked, the pass doesn't waste cycles on elements whose existing insulation type and thickness already match the spec. Faster reruns.

Step 6 — Run preview

Click **Run preview**. The plugin reads your spec and walks every element in scope without making changes. Five counts appear next to the button:

- **Total in scope** — how many elements match your scope and filter choices.
- **Will apply** — how many will actually get insulation. This number anchors the Apply button label below: *“Ready to apply to N element(s)”*.
- **No matching rule** — elements whose System Abbreviation doesn't appear in your spec. Usually expected (these are systems you don't insulate); occasionally it flags a gap in your spec.
- **No system/size** — elements with no System Abbreviation set, or a size that doesn't match any band in the matching rule.
- **Missing type mapping** — your spec references an insulation type that hasn't been mapped to a Revit type. Should be 0 before you click Apply — if it isn't, revisit step 3.

Preview is iterative. Tweak scope or filters, run preview, watch the counts change. When they look right, click Apply.

Step 7 — Apply

Click **Apply**. A small progress dialog shows *“Processing N of M…”* as the pass runs. On a dense MEP model with ~20,000 elements in scope, this typically completes in a few minutes.

When the pass finishes, the results dialog opens (see section 4).

03

Authoring your Excel specification

The Excel file is the source of truth for what gets insulated, how. Apply Insulation reads it when you Browse to it, or when you click Reload.

Start from the starter template

Don't build the spec from scratch. The Apply Insulation dialog has a **Download starter template** link directly under the Specification source field. Click it to save a ready-made `.xlsx` with the correct columns and example rows. Save the file alongside your Revit model, edit it for your project, and load that copy via **Browse…**.

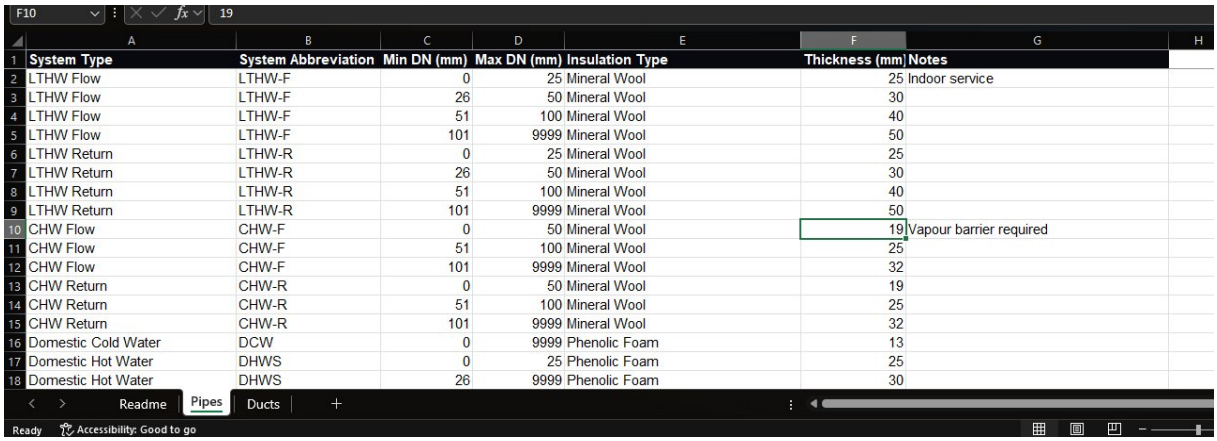
> Keeping one spec per project, stored next to the Revit model, means your rules follow the project — not your machine. Edits are visible to the next person to open the model, and the spec becomes part of the project audit trail.

File structure

Your spec is a standard `.xlsx` file organised across three sheets:

- **Readme** — built-in documentation of the format. Update with any project-specific notes you want to leave for the next person.
- **Pipes** — one row per pipework rule.
- **Ducts** — one row per ductwork rule.

When you load the spec, the plugin reports counts for each side — for example, *“Loaded 17 pipe rule(s) and 6 duct rule(s)”*.



	System Type	System Abbreviation	Min DN (mm)	Max DN (mm)	Insulation Type	Thickness (mm)	Notes
2	LTHW Flow	LTHW-F	0	25	Mineral Wool	25	Indoor service
3	LTHW Flow	LTHW-F	26	50	Mineral Wool	30	
4	LTHW Flow	LTHW-F	51	100	Mineral Wool	40	
5	LTHW Flow	LTHW-F	101	9999	Mineral Wool	50	
6	LTHW Return	LTHW-R	0	25	Mineral Wool	25	
7	LTHW Return	LTHW-R	26	50	Mineral Wool	30	
8	LTHW Return	LTHW-R	51	100	Mineral Wool	40	
9	LTHW Return	LTHW-R	101	9999	Mineral Wool	50	
10	CHW Flow	CHW-F	0	50	Mineral Wool	19	Vapour barrier required
11	CHW Flow	CHW-F	51	100	Mineral Wool	25	
12	CHW Flow	CHW-F	101	9999	Mineral Wool	32	
13	CHW Return	CHW-R	0	50	Mineral Wool	19	
14	CHW Return	CHW-R	51	100	Mineral Wool	25	
15	CHW Return	CHW-R	101	9999	Mineral Wool	32	
16	Domestic Cold Water	DCW	0	9999	Phenolic Foam	13	
17	Domestic Hot Water	DHWS	0	25	Phenolic Foam	25	
18	Domestic Hot Water	DHWS	26	9999	Phenolic Foam	30	

Readme | Pipes | Ducts

Figure 3 — The starter template, Pipes sheet shown.

Column reference

Each rule answers: *for elements with this System Abbreviation at this DN size band, apply this insulation type at this thickness.*

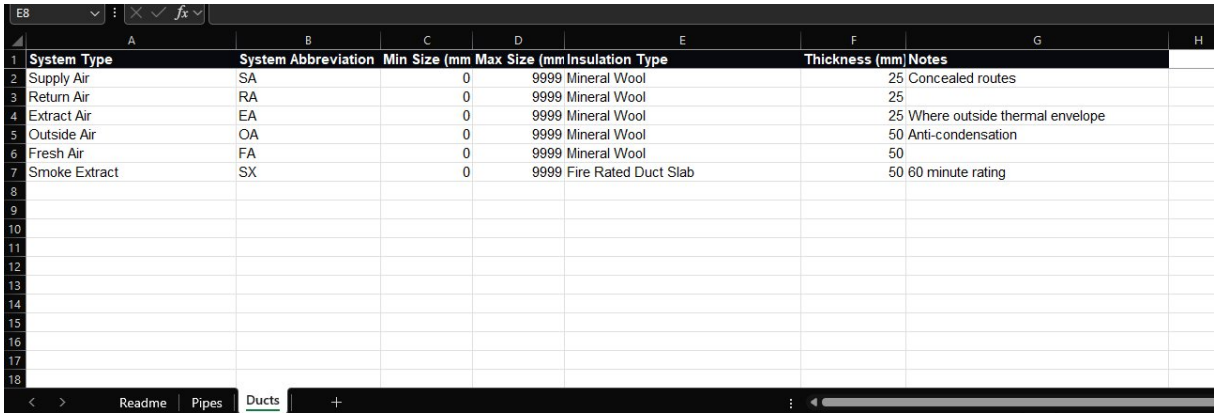
Column	Purpose	Examples

System Type	Human-readable system name. Used for documentation — not for matching.	`LTHW Flow`
		`CHW Return`
		`Domestic Hot Water`

System Abbreviation	The join key. Must match the Revit System Abbreviation parameter exactly.	`LTHW-F`
		`CHW-R`
		`DCW, DHWS`

Min DN (mm)	Minimum nominal diameter (inclusive) for this rule to apply.	`0, 26, 51, 101`
Max DN (mm)	Maximum nominal diameter (inclusive). Use a high value like 9999 for ‘no upper limit’.	`25, 50, 100, 9999`
Insulation Type	Insulation type name. Mapped to a Revit insulation type via the dialog.	`Mineral Wool` `Phenolic Foam`
Thickness (mm)	Insulation thickness in millimetres.	`19, 25, 30, 32, 40, 50`
Notes	Optional. Free-text reference for your QA records.	`Indoor service` `Vapour barrier required`

The **Ducts** sheet follows the same structure, with two small differences: the size columns are labelled **Min Size (mm)** and **Max Size (mm)** (rather than DN), and duct insulation often doesn't band by size — so a single rule per system with `0`–`9999` Min/Max is a common pattern.



	System Type	System Abbreviation	Min Size (mm	Max Size (mm	Insulation Type	Thickness (mm)	Notes
2	Supply Air	SA	0	9999	Mineral Wool	25	Concealed routes
3	Return Air	RA	0	9999	Mineral Wool	25	
4	Extract Air	EA	0	9999	Mineral Wool	25	Where outside thermal envelope
5	Outside Air	OA	0	9999	Mineral Wool	50	Anti-condensation
6	Fresh Air	FA	0	9999	Mineral Wool	50	
7	Smoke Extract	SX	0	9999	Fire Rated Duct Slab	50	60 minute rating

Readme | Pipes | Ducts

Figure 4 — The starter template, Ducts sheet shown.

Rule ordering and bands

For each element, Apply Insulation walks the relevant sheet (Pipes or Ducts) top to bottom, looking for the first row where the System Abbreviation matches and the element's DN falls within Min DN and Max DN inclusive. The first match wins. Keep your rows ordered most-specific to most-general, and check that your size bands don't have gaps unless intentional — elements falling in a gap will be skipped as *No system / size*.

Best practices

- Keep the spec file under version control alongside your Revit model.
- Use consistent system abbreviations across projects — they become a project standard.
- Include the BSRIA / project insulation schedule reference in the Notes column for traceability.
- If your scope of work changes mid-project, edit the spec and re-run — the rollback safety net means you can iterate freely.

04

Reviewing results

Every Apply pass produces a results summary you can audit on screen and export to Excel for handover and QA records.

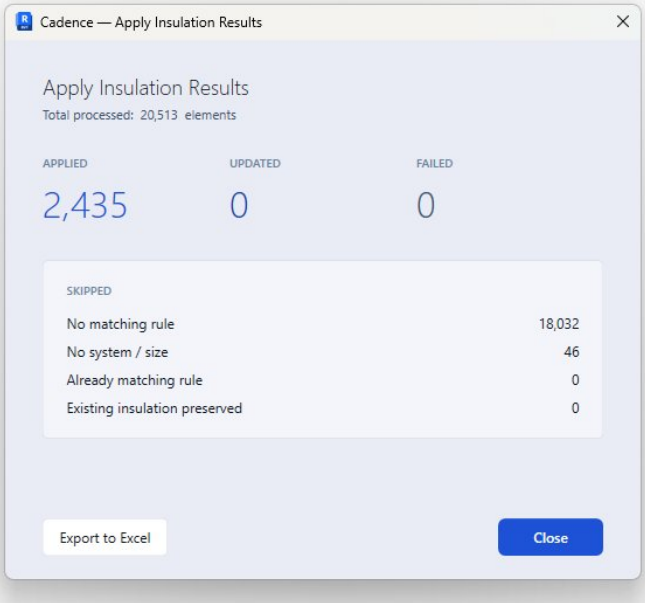


Figure 5 — The Apply Insulation Results dialog.

The results dialog

When the pass finishes, the results dialog opens with a total processed count and three primary stats:

- **Applied** — elements that received fresh insulation.
- **Updated** — elements whose existing insulation was changed (only when *Overwrite existing insulation* was ticked).
- **Failed** — elements where insulation couldn't be applied for a system reason (rare; investigate if non-zero).

Below the primary stats, the **Skipped** breakdown shows why elements didn't receive insulation:

- **No matching rule** — element's System Abbreviation isn't in the spec. Usually expected; sometimes a gap to address.
- **No system / size** — no System Abbreviation set on the element, or no size band matched.
- **Already matching rule** — existing insulation matches the spec exactly (only meaningful when *Skip elements already matching specification* was ticked).
- **Existing insulation preserved** — element had insulation and *Overwrite existing insulation* was unticked, so it was left alone.

Excel export

Click **Export to Excel** on the results dialog to save a full report. A confirmation appears with the option to open the file immediately. The export captures one row per processed element with these columns:

Column	Contents
Insulation Applied	`Yes` if insulation was applied or updated on this element; `No` if skipped.
Insulation Type Applied	Revit insulation type name actually applied (blank for skipped rows).
Thickness	Insulation thickness applied, e.g. `25mm`, `50mm`.
Element ID	Revit element ID — useful for jumping to the element via ‘Select by ID’.
Family Name	Revit family of the element (e.g. `Ducts`, `M_Rectangular Elbow`).
Type Name	Revit type within the family.
Size	Nominal size on the element, e.g. `500mm`, `1200mm`.
System Abbreviation	The element's System Abbreviation parameter — the value used to match against the spec.

	A	B	C	D	E	F	G	H
1	Insulation Applied	Insulation Type Applied	Thickness	Element ID	Family Name	Type Name	Size	System Abbreviation
2	Yes	Mineral Wool	50mm	3206521	Ducts	Radius Elbows / Shoe Takeoffs	1200mm	OA
3	Yes	Mineral Wool	25mm	3207340	M_Rectangular Elbow - Radius	0.75	500mm	EA
4	Yes	Mineral Wool	25mm	3207342	Ducts	Radius Elbows / Shoe Takeoffs	500mm	EA
5	Yes	Mineral Wool	25mm	3208189	Ducts	Radius Elbows / Shoe Takeoffs	500mm	EA
6	Yes	Mineral Wool	25mm	3209332	NDY_M_Square to Round Transition - Length	300mm Long	500mm	EA
7	Yes	Mineral Wool	25mm	3209345	NDY_M_Square to Round Transition - Length	300mm Long	500mm	EA
8	Yes	Mineral Wool	25mm	3209989	Ducts	Radius Elbows / Shoe Takeoffs	1120mm	EA
9	Yes	Mineral Wool	25mm	3210329	NDY_M_Square to Round Transition - Length	300mm Long	500mm	EA
10	Yes	Mineral Wool	25mm	3210331	NDY_M_Square to Round Transition - Length	300mm Long	500mm	EA
11	Yes	Mineral Wool	25mm	3221240	Ducts	Radius Elbows / Shoe Takeoffs	1120mm	EA
12	Yes	Mineral Wool	25mm	3221247	Ducts	Radius Elbows / Shoe Takeoffs	500mm	EA
13	Yes	Mineral Wool	25mm	3221248	NDY_M_Rectangular Transition - Length	300mm Long	1120mm	EA
14	Yes	Mineral Wool	25mm	3221249	NDY_M_Rectangular Transition - Length	150mm Long	700mm	EA
15	Yes	Mineral Wool	25mm	3221252	NDY_M_Silencer - Rectangular - With Flange	800	500mm	EA
16	Yes	Mineral Wool	25mm	3221254	Ducts	Radius Elbows / Shoe Takeoffs	500mm	EA
17	Yes	Mineral Wool	25mm	3221261	NDY_M_Rectangular Transition - Length	300mm Long	1120mm	EA
18	Yes	Mineral Wool	50mm	3221267	NDY_M_Silencer - Rectangular - With Flange	800	600mm	OA

Figure 6 — Sample of the exported Excel report.

Use the export for:

- **QA review** — filter Insulation Applied = No, then look at System Abbreviation to spot gaps in your spec.
- **Handover** — show your reviewer or client which elements were processed, with what insulation, and why anything was skipped.
- **Project audit trail** — archive alongside your Revit model for the project record.

05

Tips and customisation

Light or dark theme

Apply Insulation matches your Revit theme by default. To override, click the theme toggle (top-right of the dialog) to cycle through Auto, Light, and Dark. Your choice persists across plugin and Revit restarts.

Undoing a run

Every Apply Insulation run is a single Revit transaction. Press `Ctrl+Z` once after the dialog closes to roll back the entire pass — not element by element.

Re-running with an updated spec

Made changes to your spec file? Just run Apply Insulation again. Existing insulation will be updated where rules now point at a different type or thickness, and previously-skipped elements will be picked up if a new rule matches.

06

Getting help

Apply Insulation is in active development. We read every support email during early access — if something doesn't work, or you have a feature request, please get in touch.

Email support

support@cadenceaec.com

When reporting an issue, please include: your Revit version, a screenshot of the error or unexpected behaviour, and (if relevant) your Excel spec file. That makes diagnosis dramatically faster.

Updates

If you opted in to product emails when signing up, we'll let you know when new tools ship or when Apply Insulation has a significant update. You can unsubscribe any time.

Thanks for trying Cadence Productivity Pack.

— The Cadence AEC team