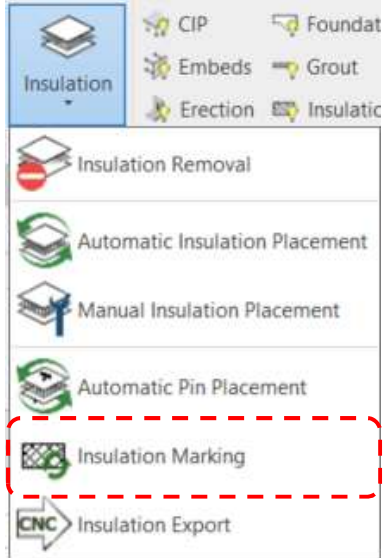


# Insulation Tools: Insulation Marking



## **Programmed Result of Tool:**

This tool will compare all insulation in the model and identify pieces which are considered identical. These pieces will then be automatically assigned a numerical mark.

## **Steps to Perform tool Operation:**

- 1) Under the Insulation panel, user clicks the Insulation Marking icon.
- 2) The tool will identify which pieces of insulation are alike and assign matching marks to each. This mark will be assigned to the INSULATION\_MARK parameter.

Note: For every piece of insulation that is processed, it will also assign a value to its INSULATION\_HOST\_GUID parameter and set its INSULATION\_LOCK parameter value to true.

## **Expected Interactions:**

- The tool will only process Specialty Equipment or Generic Model elements that have a MANUFACTURE\_COMPONENT containing "INSULATION".
- If INSULATION\_LOCK is checked for a piece of insulation, then that will indicate that the insulation marking tool should not remark that piece the next time the tool is run.
- If the same INSULATION\_MARK value is assigned to pieces that are different than one another and their INSULATION\_LOCK parameter is checked then a warning will be displayed when insulation marking is run. The user must uncheck the INSULATION\_LOCK parameter on the pieces of insulation that they wish to be re-marked before the tool can be run successfully.
- The value assigned to INSULATION\_HOST\_GUID will be that element's Revit unique ID. Its purpose is to allow the tool to easily identify insulation that has been copied from an already processed piece so that it can be marked appropriately the next time the insulation marking tool is run.

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## Comparison Guide:

- The following attributes will be used during comparison to determine the likeness of insulation pieces:
  - Family Name
  - Family Type
  - Material
  - Volume
  - Centroid location
  - Overall geometry
- The INSULATION\_VOLUME\_TOLERANCE\_PERCENTAGE and INSULATION\_GEOMETRY\_TOLERANCE parameter values specified in Project Information will be utilized during the volume and centroid location comparisons. If no tolerances are set for these then a default tolerance will be used in their place. The default volume tolerance is 1.25%, and the default tolerance for geometry is 1/16".
  - If the INSULATION\_VOLUME\_TOLERANCE\_PERCENTAGE and INSULATION\_GEOMETRY\_TOLERANCE parameters do not exist in the project, run the Project Shared Parameters tool to add them.
- The volume tolerance will be calculated a percentage of the larger volume between the two pieces of insulation being compared. The percentage is determined by the INSULATION\_VOLUME\_TOLERANCE\_PERCENTAGE parameter.

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## Known Limitations:

- The following three parameters must exist in the project prior to running the insulation marking tool: INSULATION\_MARK, INSULATION\_HOST\_GUID, and INSULATION\_LOCK. Run Project Shared Parameters to add them to the project.
- The tool only bucketizes if the INSULATION\_LOCK is unlocked. If user wants to bucketize an insulation again, they must unselect the INSULATION\_LOCK.
- INSULATION\_MARK, INSULATION\_HOST\_GUID, and INSULATION\_LOCK must be set up as Instance parameters not Type
- INSULATION\_MARK, INSULATION\_HOST\_GUID, and INSULATION\_LOCK cannot be read-only therefore should not be built into families.
- For a workshared model, all insulation must be available for ownership by the user attempting to run the insulation marking tool. If any other users own insulation, then they must relinquish their ownership before the other user can successfully run the tool.
- Due to Revit's inherent worksharing process, it is possible for dissimilar pieces of insulation that were placed in different user's sessions to be marked the same if both users run the insulation marking tool. For this fallacy to occur, there would need to be no pieces of insulation present in the central model and insulation would only exist in those user's local files. If this does occur, the discrepancy would be caught the next time the insulation marking tool is run on all pieces of insulation.