

## UNIT 33: Modeling Considerations by Process

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Special considerations for the specific casting processes can be summarized as follows:

### Sand Casting

- Turn off Internal Heat Transfer Coefficients
- Use a low External Heat Transfer Coefficient: Around 1.5 BTU/Hr-sqft-F
- Only use as much sand as is necessary to absorb the heat (1" for small castings, 4-5" for large castings)
- Generally make a rectangular mold when meshing

### Investment Casting

- Turn off Internal Heat Transfer Coefficients
- Use an External Heat Transfer Coefficient: Around 10-20 BTU/Hr-sqft-F
- Use "Shell" option when creating the mold
- Use Void Material is necessary to remove material from shapes
- Use View Factor Calculations to take radiation into account

### Permanent Mold Casting

- Turn on Internal Heat Transfer Coefficients
- Use an External Heat Transfer Coefficient: Around 5-7 BTU/Hr-sqft-F
- Use Internal Heat Transfer Coefficient recommendations as given in Unit 8
- Use "None" option when meshing if the mold is part of the model
- Use View Factor Calculations to take radiation into account
- Use Permanent Mold Cycling when running simulations
- Use the "Coarse"/"Fine" mesh option for warm-up cycles.

