

What Is Material Specification and Selection?

Worksheet

Material specification and selection is choosing the right building materials by weighing structural performance, durability, cost, sustainability, and appearance, then documenting them precisely in specifications so contractors install exactly what was designed.

Questions

1. What formatting system do most US construction specifications follow?

- A) ASTM E119
- B) CSI MasterFormat
- C) LEED v4
- D) ADA Standards

2. 1,000 sq ft of flooring at \$4.25/sq ft costs how much?

- A) \$425
- B) \$4,250
- C) \$42,500
- D) \$40.25

3. What is a 'submittal' in construction?

- A) A change order
- B) Product data or samples submitted for approval
- C) A punch list
- D) A lien waiver

4. Which is NOT typically a factor in material selection?

- A) Durability
- B) Cost
- C) Employee vacation schedule
- D) Sustainability

5. A contractor needs 1,200 sq ft of porcelain tile at \$6.50/sq ft. What is the total material cost?

6. A wall assembly requires R-21 insulation. If batt insulation provides R-3.5 per inch, how thick must the batt be?

7. A specification calls for structural steel with a minimum yield strength of 50 ksi (ASTM A992). If a beam is designed with a 1.67 safety factor, what is the allowable stress?

8. Define: What is a material specification?

9. Define: What format do most US specs follow?

10. Define: Name three factors in material selection.

Answer Key

1. B) CSI MasterFormat - CSI MasterFormat organizes specs into 50 numbered divisions.
2. B) $\$4,250 - 1,000 \cdot 4.25 = \$4,250$.
3. B) Product data or samples submitted for approval - Submittals let the architect verify the specified product before installation.
4. C) Employee vacation schedule - Vacation schedules don't affect material performance or specification.
5. Total = Quantity Unit Cost Total = $1,200 \cdot 6.50 = \$7,800$
6. Required R-value = 21 R per inch = 3.5 Thickness = $21 \cdot 3.5 = 6$ inches
7. Allowable stress = Yield strength Safety factor Allowable stress = $50 \cdot 1.67 = 29.9$ ksi
8. A written document describing the exact products, standards, and installation methods required for a building material.
9. CSI MasterFormat, organized into 50 numbered divisions (e.g., Division 09 = Finishes).
10. Cost, durability/performance, and sustainability (also aesthetics and code compliance).

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