



Helping Architecture Firms Scale with On-Demand,
US-Trained Remote Architects (Level I, II & III)

Acoustic Material Selection Guide - Quick Reference Checklist

Project Information

- Project type: ☐ Commercial ☐ Residential ☐ Industrial ☐ Institutional
- Primary acoustic goal: ☐ Sound absorption ☐ Sound blocking ☐ Both
- Budget range: \$ _____
- Installation timeline: _____
- Local building codes reviewed: ☐ IBC ☐ State codes ☐ Local ordinances

Performance Requirements

Noise Reduction Criteria

- ☐ Target NRC (Noise Reduction Coefficient): _____ (0.0-1.0 scale)
- ☐ Target STC (Sound Transmission Class): _____ (typically 25-65+)
- ☐ Target CAC (Ceiling Attenuation Class): _____ (if applicable)
- ☐ Frequency range of concern: ☐ Low (125-250 Hz) ☐ Mid (500-2000 Hz) ☐ High (4000+ Hz)

Environmental Conditions

Humidity exposure: ☐ Low (<30%) ☐ Normal (30-60%) ☐ High (>60%)

Temperature range: _____ °F to _____ °F

Fire rating required: ☐ Class A ☐ Class B ☐ Class C (ASTM E84)

Moisture resistance needed: ☐ Yes ☐ No

Outdoor/weather exposure: ☐ Yes ☐ No

Material Categories & Performance Data

1. ABSORPTIVE MATERIALS (Reduce Reverberation)

Fiberglass Panels

- ☐ Standard density (3-6 pcf)
 - NRC: 0.75-0.95
 - Thickness: 1"-4"
 - Cost: \$2-\$8/sq ft
 - Applications: Walls, ceilings, HVAC ducts
 - Fire rating: Class A available

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☐ High density (6-12 pcf)

- NRC: 0.85-1.10
- Thickness: 2"-4"
- Cost: \$5-\$12/sq ft
- Applications: Recording studios, theaters
- Better low-frequency absorption

Mineral Wool (Rockwool/Stone Wool)

☐ Acoustic batts

- NRC: 0.80-1.05
- Density: 4-8 pcf
- Thickness: 2"-6"
- Cost: \$3-\$10/sq ft
- Fire rating: Non-combustible, Class A
- Applications: Wall/ceiling cavities, soundproofing

Acoustic Foam

☐ Polyurethane foam

- NRC: 0.30-0.80 (varies greatly)
- Thickness: 1"-4"
- Cost: \$1-\$5/sq ft
- Applications: Studios, home theaters
- ⚠ Fire rating: Often Class C (verify treatment)
- Note: Less effective at low frequencies

☐ Melamine foam

- NRC: 0.85-1.00
- Thickness: 1"-2"
- Cost: \$2-\$6/sq ft
- Fire rating: Class A/B
- Lighter weight than fiberglass

Fabric-Wrapped Panels

☐ Wall-mounted panels

- NRC: 0.60-1.00 (depends on core)
- Core options: Fiberglass, mineral wool, foam
- Thickness: 1"-2"
- Cost: \$8-\$25/sq ft (installed)
- Aesthetically pleasing, customizable
- Applications: Offices, restaurants, auditoriums

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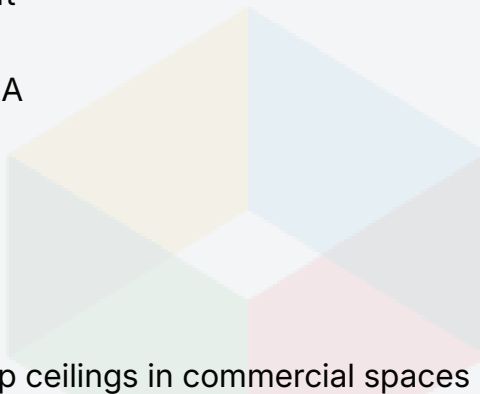
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Acoustic Ceiling Tiles

- ☐ **Standard tiles**
 - NRC: 0.50-0.70
 - Size: 2'x2', 2'x4'
 - Cost: \$1-\$4/sq ft
 - Applications: Drop ceilings in commercial spaces
- ☐ **High-performance tiles**
 - NRC: 0.75-0.95
 - Cost: \$4-\$10/sq ft
 - CAC: 35-40+
 - Fire rating: Class A

Acoustic Baffles & Clouds

- ☐ **Hanging baffles**
 - NRC: 0.50-0.70
 - Size: 2'x2', 2'x4'
 - Cost: \$1-\$4/sq ft
 - Applications: Drop ceilings in commercial spaces



2. BARRIER MATERIALS (Block Sound Transmission)

Mass-Loaded Vinyl (MLV)

- ☐ **Standard MLV**
 - STC improvement: 20-30
 - Weight: 1-2 lb/sq ft
 - Thickness: 1/8"-1/4"
 - Cost: \$2-\$4/sq ft
 - Applications: Walls, floors, ceilings, wraps
 - Limp mass principle

Drywall & Gypsum Board

- ☐ **Standard drywall (1/2")**
 - STC: 33-35 (single layer)
 - Cost: \$0.40-\$0.60/sq ft
 - Weight: 2 lb/sq ft
- ☐ **5/8" Type X (fire-rated)**
 - STC: 37-39
 - Cost: \$0.50-\$0.80/sq ft
 - Weight: 2.5 lb/sq ft

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- ☐ **Sound-damped drywall (QuietRock, etc.)**
 - STC: 48-55 (single layer)
 - Thickness: 1/2"-5/8"
 - Cost: \$3-\$5/sq ft
 - Viscoelastic layer reduces vibration
- ☐ **Double-layer drywall**
 - STC: 40-50+ (with insulation)
 - Use green glue or damping compound between layers
 - Cost: \$2-\$4/sq ft (materials + labor)

Acoustic Plaster

- ☐ **Sound-absorbing plaster**
 - NRC: 0.50-0.75
 - Thickness: 3/4"-1"
 - Cost: \$5-\$15/sq ft (installed)
 - Applications: Seamless ceilings, curved surfaces

Soundproofing Membranes

- ☐ **Vinyl/rubber composite**
 - STC improvement: 5-10
 - Thickness: 3/16"
 - Cost: \$1.50-\$3/sq ft
 - Apply between drywall layers

Acoustic Door Seals & Sweeps

- ☐ **Solid core doors**
 - STC: 28-32 (standard)
 - STC: 45-55 (acoustic-rated)
 - Cost: \$200-\$1,500 per door
- ☐ **Seals and gaskets**
 - Cost: \$20-\$100 per door
 - Essential for maintaining STC ratings

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3. FLOOR TREATMENTS

Carpet & Padding

- ☐ **Commercial carpet with pad**
 - NRC: 0.20-0.50
 - IIC improvement: 15-25
 - Cost: \$3-\$12/sq ft (installed)
 - Applications: Offices, hotels, residential

Underlayment Systems

- ☐ **Rubber/vinyl underlayment**
 - IIC improvement: 20-30
 - STC improvement: 15-25
 - Thickness: 1/8"-1/2"
 - Cost: \$1-\$5/sq ft
 - Applications: Under hardwood, laminate, tile
- ☐ **Cork underlayment**
 - IIC improvement: 15-20
 - Thickness: 3mm-12mm
 - Cost: \$1-\$3/sq ft
 - Sustainable option

Floating Floor Systems

- ☐ **Isolated subfloor**
 - IIC: 50-70+
 - STC: 50-65+
 - Cost: \$5-\$15/sq ft
 - Applications: Multi-family, condos, studios

4. SPECIALTY MATERIALS

Acoustic Curtains

- ☐ **Heavy-duty curtains**
 - NRC: 0.40-0.70
 - STC improvement: 5-15
 - Cost: \$10-\$30/sq ft
 - Applications: Temporary barriers, studios, windows

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Diffusers

☐ Wood/polymer diffusers

- Purpose: Scatter sound, reduce echoes
- Not rated by NRC/STC
- Cost: \$15-\$100/sq ft
- Applications: Critical listening rooms, studios

Bass Traps

☐ Corner bass traps

- Target: 80-300 Hz
- Material: Dense fiberglass/mineral wool
- Size: 24"×24"×48" typical
- Cost: \$50-\$200 per trap
- Applications: Studios, home theaters

Resilient Channels & Clips

☐ Hat channels

- STC improvement: 5-8
- Cost: \$0.30-\$0.50/linear ft
- Decouples drywall from studs

☐ Isolation clips (RSIC, Whisper Clips)

- STC improvement: 10-20
- Cost: \$2-\$5 per clip
- Higher performance than channels

Installation Considerations

General

- ☐ Surface preparation completed
- ☐ Adhesive/fastener type selected (appropriate for material)
- ☐ Seams and joints sealed properly
- ☐ Manufacturer installation guidelines reviewed

Air Sealing

- ☐ Acoustical caulk at perimeters: ☐ Ordered ☐ Applied
- ☐ Electrical boxes sealed
- ☐ HVAC penetrations addressed
- ☐ Gap under doors <1/4"

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Structural

- ☐ Weight load calculated and approved
- ☐ Attachment points identified
- ☐ Studs/joists located
- ☐ Fire blocking maintained per code

Code Compliance Checklist

- ☐ **Fire codes:** Materials meet ASTM E84 (Class A/B/C as required)
- ☐ **ADA compliance:** Protruding objects, surface textures
- ☐ **LEED/Green building:** VOC content, recycled content documented
- ☐ **STC ratings:** Meet minimum for occupancy type (IBC Table 1206.2)
- ☐ **IIC ratings:** Meet minimum for floor/ceiling assemblies (typically IIC 50+)
- ☐ **Local amendments:** Verified with AHJ (Authority Having Jurisdiction)

Testing & Verification

- ☐ Pre-installation baseline measurements taken
- ☐ Post-installation testing scheduled
- ☐ Testing method: ☐ Field STC/IIC ☐ Reverberation time ☐ Background noise
- ☐ Third-party acoustician: ☐ Required ☐ Retained
- ☐ Manufacturer warranties documented
- ☐ Maintenance plan established

Material Selection Matrix

Application	Primary Goal	Recommended Material(s)	NRC/STC Target
Open office	Absorption	Ceiling tiles, baffles, panels	NRC 0.70+
Conference room	Both	Fabric panels, carpet, 5/8" drywall	NRC 0.60+, STC 45+
Recording studio	Both	Mineral wool, double drywall, bass traps	NRC 0.90+, STC 55+
Restaurant	Absorption	Ceiling clouds, wall panels, carpet	NRC 0.65+
Multi-family wall	Blocking	Double drywall, MLV, insulation, RSIC	STC 50-60
Home theater	Both	Acoustic panels, MLV, thick carpet	NRC 0.80+, STC 50+
Gymnasium	Absorption	High-NRC baffles, wall panels	NRC 0.80+
Classroom	Absorption	Ceiling tiles, wall panels	NRC 0.70+

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Quick Reference: Key Metrics

NRC (Noise Reduction Coefficient)

- Scale: 0.0 (reflective) to 1.0+ (highly absorptive)
- 0.00-0.20: Poor absorption (concrete, glass)
- 0.20-0.50: Moderate absorption (carpet, drapes)
- 0.50-0.80: Good absorption (acoustic tiles)
- 0.80-1.10: Excellent absorption (thick fiberglass, mineral wool)

STC (Sound Transmission Class)

- Scale: Higher is better (typical range 25-65)
- 25-30: Normal speech easily understood through partition
- 35-40: Loud speech audible but not intelligible
- 45-50: Loud speech barely audible
- 50+: Loud speech not audible (required for many multi-family)

IIC (Impact Insulation Class)

- Scale: Higher is better (typical range 25-75)
- <50: Footsteps clearly audible below
- 50-60: Footsteps audible, acceptable for most applications
- 60+: Excellent impact isolation

CAC (Ceiling Attenuation Class)

- Scale: Higher is better (typical range 20-45)
- 25+: Acceptable for open offices
- 35+: Good for private offices
- 40+: Excellent for confidential spaces

Vendor Contact & Documentation

- ☐ Material data sheets collected
- ☐ Test reports (ASTM C423, E90, E492) obtained
- ☐ Installation instructions received
- ☐ Warranty information filed
- ☐ Supplier contact: _____
- ☐ Lead time confirmed: _____

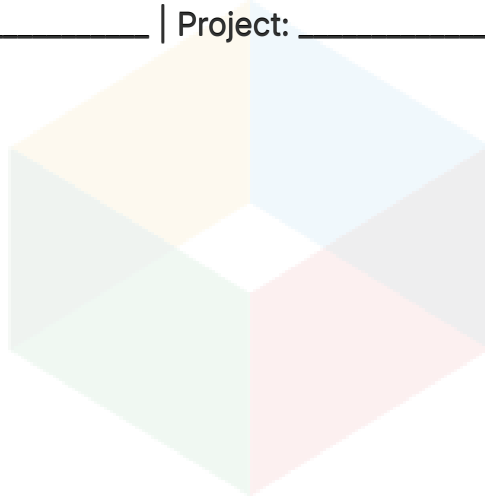


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Notes & Special Requirements

Document Version: 1.0 | Date: _____ | Project: _____



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