Acoustiblok® Sound Reduction Floor/Ceiling Assemblies – Assembly Details

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## Acoustiblok® Sound Isolation Material: Floor/Ceiling Installation Test Index

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<td><strong>Concrete Subfloor</strong></td>
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<tr>
<td>NGC 7006007</td>
<td>Delta IIC / Lnw</td>
<td>14</td>
<td>Tile, 32oz Acoustiblok, 6 in concrete slab - difference with/without Acoustiblok floor assembly. No Ceiling Assembly Beneath The Slab, Ceiling Assemblies Typically Add 9-14 Points To The IIC Rating</td>
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<tr>
<td>NGC 7006008</td>
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<td>Tile, 16oz Acoustiblok, 6 in concrete slab - difference with/without Acoustiblok floor assembly. No Ceiling Assembly Beneath The Slab, Ceiling Assemblies Typically Add 9-14 Points To The IIC Rating</td>
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<tr>
<td>3102643-001a</td>
<td>Floor IIC / Lnw</td>
<td>50 / 60</td>
<td>Tile, 16 oz Acoustiblok, Acoustiwool-TF0.11, on 6 in concrete slab <strong>No Ceiling Assembly Beneath The Slab, Ceiling Assemblies Typically Add 9-14 Points To The IIC Rating</strong> <strong>NOTE: Tile Council of North America rated this floor assembly &quot;Residential&quot; per the Robinson Floor Test (ASTM C627) Refer to Report # TCNA-308-06 in the Acoustiblok® material test section.</strong></td>
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<tr>
<td>3102643-001b</td>
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<td><strong>Wood Subfloor</strong></td>
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<td>Floor IIC / Lnw</td>
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<tr>
<td>NGC 7006003</td>
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<td>49 / 61</td>
<td>Oak floor on plywood substrate, 16oz Acoustiblok, OSB subfloor, channel ceiling</td>
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<tr>
<td>NGC 5006003</td>
<td>Floor STC</td>
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**Note:** Lnw ratings from calculation: $L_{nw} = 110 - (IIC)$. Rw and STC ratings vary marginally using the equation $R_w = .98(STC) + 1.1$
Controlling noise from the impact of hard objects on tile floors is a very difficult problem in construction.

IIC ratings on many products are from the addition of sound rated ceiling assemblies that used during testing. Sound rated ceiling assemblies will generally add a minimum of 9-14 point to the IIC rating of the floor assembly.

A new test protocol for concrete subfloors has been introduced under ASTM E2179.

This test is conducted on 6” concrete slabs without a sound rated ceiling assembly installed. The only accurate method in comparing acoustic underlayment products is with independent ASTM E2179 test results. This Acoustiblok IIC floor test conducted by NGC Testing Services on a 6” concrete slab floor consisted of: quarry tile, polymer modified mortar and grout, 32 oz. Acoustiblok Sound Isolation Material achieved a +14dB improvement in the Impact Insulation Class (IIC) rating.

**Acoustiblok 32 oz. Tested to: ASTM E2179**

Measurements of reduction in impact sound due to a floor covering treatment. Measurements of the effectiveness of floor coverings are made in accordance with ASTM E2179, Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors. This test is similar to ISO 140-8. Both measure the reduction in sound pressure level in the room below a concrete slab due to the installation of a floor covering of some kind. The reduction is used to calculate an improvement rating, DIIC, that can be used to compare floor covering products directly.
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**Acoustiblok 16 oz. Tested to: ASTM E2179**

Measurements of reduction in impact sound due to a floor covering treatment. Measurements of the effectiveness of floor coverings are made in accordance with ASTM E2179, Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors. This test is similar to ISO 140-8. Both measure the reduction in sound pressure level in the room below a concrete slab due to the installation of a floor covering of some kind. The reduction is used to calculate an improvement rating, DIIC, that can be used to compare floor covering products directly.
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**Impact Insulation Class** (IIC) is a single number rating used to compare the performance of floor/ceiling assemblies in blocking impact noise, such as footsteps and dropped objects. The higher the IIC rating number, the better the performance. An IIC of 50 is the required minimum rating for preventing noise complaints in residential building. IIC ratings are calculated by a method similar to STC ratings.

The IIC of a particular floor assembly is derived using a standard tapping machine, as stipulated in ASTM method E492.3 This machine incorporates five steel-faced hammers that strike the test floor and generate noise in a room below. The noise levels are measured and used to calculate the impact insulation class (IIC), following ASTM method E989.
NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 67dB, and an STC (sound transmission class) of 74. See report graphs below, showing the performance of this configuration relative to noise source frequencies.

The tested assembly: ½” unglazed quarry tile with polymer modified mortar & grout & 16oz. Acoustiblok on 6” reinforced concrete slab with 5/8” type X gypsum board drop ceiling and 3” fiberglass insulation.

**Impact Insulation Class** (IIC) is a single number rating used to compare the performance of floor/ceiling assemblies in blocking impact noise, such as footsteps and dropped objects. The higher the IIC rating number, the better the performance. An IIC of 50 is the required minimum rating for preventing noise complaints in residential building. IIC ratings are calculated by a method similar to STC ratings.

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**SOUND TRANSMISSION CLASS** is a single number that represents the sound blocking capacity of a partition such as a wall or ceiling.

STC numbers are often called out in architectural specifications, to assure that partitions will reduce noise levels. For performance similar to laboratory test numbers, it is necessary to adhere closely to the construction materials and techniques used in the tested partition.

STC calculations emphasize sound frequencies that match the human voice. A high STC partition will block the sound of human speech, and block noise that interferes with human speech. A high STC number may not indicate a partition that is effective in blocking very low or very high pitched sound. STC measures sound blocking for airborne noise source only; it does not indicate how well a partition can block impact noise (objects striking the far side of the partition), or directly transmitted noise such as machinery mounted on the far side of the wall.

STC is calculated by comparing the actual sound loss measured when 18 test frequencies pass through a partition, with fixed values for each STC level. The highest STC curve that the measured sound loss numbers fit under, determines the STC rating of the tested partition.
NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 51dB, and an STC (sound transmission class) of 52. See report graphs below, showing the performance of this configuration relative to noise source frequencies.

The tested assembly: MD 2000 concrete/steel deck floor-ceiling with Acoustiwool-WF0.125 and Acoustiblok 16oz. under oak flooring with ½” drywall ceiling.

**Impact Insulation Class (IIC)** is a single number rating used to compare the performance of floor/ceiling assemblies in blocking impact noise, such as footsteps and dropped objects. The higher the IIC rating number, the better the performance. An IIC of 50 is the required minimum rating for preventing noise complaints in residential building. IIC ratings are calculated by a method similar to STC ratings.

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NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 50dB, and an STC (sound transmission class) of 52. See report graphs below, showing the performance of this configuration relative to noise source frequencies.

The tested assembly: MD 2000 concrete/steel deck floor-ceiling with Acoustiwool-WF0.11 and Acoustiblok 16oz. under quarry tile flooring with ½” drywall ceiling.

### Impact Insulation Class (IIC)

(IIC) is a single number rating used to compare the performance of floor/ceiling assemblies in blocking impact noise, such as footsteps and dropped objects. The higher the IIC rating number, the better the performance. An IIC of 50 is the required minimum rating for preventing noise complaints in residential buildings. IIC ratings are calculated by a method similar to STC ratings.

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<th>250</th>
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<th>3150</th>
<th>4000</th>
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<tr>
<td>Ln (dB)</td>
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**Impact Insulation Class IIC = 50 dB**

**Normalized Sound Pressure Level, dB**

<table>
<thead>
<tr>
<th>L_n = Normalized Sound Pressure Level, dB</th>
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</thead>
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Acoustiblok, Inc. | 6900 Interbay Blvd. Tampa, FL 33616 | (813) 980-1400
**SOUND TRANSMISSION CLASS** is a single number that represents the sound blocking capacity of a partition such as a wall or ceiling.

STC numbers are often called out in architectural specifications, to assure that partitions will reduce noise levels. For performance similar to laboratory test numbers, it is necessary to adhere closely to the construction materials and techniques used in the tested partition.

STC calculations emphasize sound frequencies that match the human voice. A high STC partition will block the sound of human speech, and block noise that interferes with human speech. A high STC number may not indicate a partition that is effective in blocking very low or very high pitched sound. STC measures sound blocking for airborne noise source only; it does not indicate how well a partition can block impact noise (objects striking the far side of the partition), or directly transmitted noise such as machinery mounted on the far side of the wall.

STC is calculated by comparing the actual sound loss measured when 18 test frequencies pass through a partition, with fixed values for each STC level. The highest STC curve that the measured sound loss numbers fit under, determines the STC rating of the tested partition.
NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 40dB, and an STC (sound transmission class) of 53. See report graphs below, showing the performance of this configuration relative to noise source frequencies.

The tested assembly: Unglazed quarry tile installed with modified polymer grout & mortar, 32oz. Acoustiblok on a 6” reinforced concrete slab floor/ceiling. To increase impact insulation class and sound transmission class, add Acousticwool-TF0.11 underlayment.

No ceiling assembly was installed for this test. Ceiling assemblies usually add 9-14 points to the IIC rating.

**Impact Insulation Class** (IIC) is a single number rating used to compare the performance of floor/ceiling assemblies in blocking impact noise, such as footsteps and dropped objects. The higher the IIC rating number, the better the performance. An IIC of 50 is the required minimum rating for preventing noise complaints in residential building. IIC ratings are calculated by a method similar to STC ratings.

The IIC of a particular floor assembly is derived using a standard tapping machine, as stipulated in ASTM method E492.3 This machine incorporates five steel-faced hammers that strike the test floor and generate noise in a room below. The noise levels are measured and used to calculate the impact insulation class (IIC), following ASTM method E989.
**SOUND TRANSMISSION CLASS** is a single number that represents the sound blocking capacity of a partition such as a wall or ceiling.

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STC is calculated by comparing the actual sound loss measured when 18 test frequencies pass through a partition, with fixed values for each STC level. The highest STC curve that the measured sound loss numbers fit under, determines the STC rating of the tested partition.
NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 38dB, and an STC (sound transmission class) of 54. See report graphs below, showing the performance of this configuration relative to noise source frequencies.

The tested assembly: Unglazed quarry tile installed with modified polymer grout & mortar, 16oz. Acoustiblok on a 6” reinforced concrete slab floor/ceiling. To increase impact insulation class and sound transmission class, add Acoustiwool-TF0.11 underlayment.

No ceiling assembly was installed for this test. Ceiling assemblies usually add 9-14 points to the IIC rating.

**Impact Insulation Class** (IIC) is a single number rating used to compare the performance of floor/ceiling assemblies in blocking impact noise, such as footsteps and dropped objects. The higher the IIC rating number, the better the performance. An IIC of 50 is the required minimum rating for preventing noise complaints in residential building. IIC ratings are calculated by a method similar to STC ratings.

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STC is calculated by comparing the actual sound loss measured when 18 test frequencies pass through a partition, with fixed values for each STC level. The highest STC curve that the measured sound loss numbers fit under, determines the STC rating of the tested partition.
Intertek ETL SEMCO rates this floor configuration with an IIC (impact insulation class) of 56 dB, and an STC (sound transmission class) of 54. See report graphs below, which show the performance of this configuration relative to noise source frequencies.

The tested assembly: A wooden floor-ceiling with 16” truss members spaced 24” o/c, 5/8” plywood subfloor with 1-1/2” cellulose insulation and the 5/8” gypsum board ceiling is mounted to resilient channel. All material seams are sealed.

**Impact Insulation Class (IIC)** is a single number rating used to compare the performance of floor/ceiling assemblies in blocking impact noise, such as footsteps and dropped objects. The higher the IIC rating number, the better the performance. An IIC of 50 is the required minimum rating for preventing noise complaints in residential building. IIC ratings are calculated by a method similar to STC ratings.

The IIC of a particular floor assembly is derived using a standard tapping machine, as stipulated in ASTM method E492. This machine incorporates five steel-faced hammers that strike the test floor and generate noise in a room below. The noise levels are measured and used to calculate the impact insulation class (IIC), following ASTM method E989.
SOUND TRANSMISSION CLASS is a single number that represents the sound blocking capacity of a partition such as a wall or ceiling.

STC numbers are often called out in architectural specifications, to assure that partitions will reduce noise levels. For performance similar to laboratory test numbers, it is necessary to adhere closely to the construction materials and techniques used in the tested partition.

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STC is calculated by comparing the actual sound loss measured when 18 test frequencies pass through a partition, with fixed values for each STC level. The highest STC curve that the measured sound loss numbers fit under, determines the STC rating of the tested partition.
Acoustiblok® 32 oz. with Wood Floor on a Wood Joist Subfloor: IIC51 and STC55 Rated
Acoustical Test Overview

NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 51 dB, and an STC (sound transmission class) of 55. See report graphs below, which show the performance of this configuration relative to noise source frequencies.

The tested assembly: ¾” Red Oak tongue & groove flooring, ¾” plywood, 1 layer 32oz. Acoustiblok®, ¾” OSB sub-floor attached to joists, 2x10” wood floor joists spaced 16" with 1x4” cross bracing, 3-1/2” fiberglass insulation between joists, RC resilient channel screwed to joists, 1 layer 5/8” drywall (joists taped).

Impact Insulation Class (IIC) is a single number rating used to compare the performance of floor/ceiling assemblies in blocking impact noise, such as footsteps and dropped objects. The higher the IIC rating number, the better the performance. An IIC of 50 is the required minimum rating for preventing noise complaints in residential building. IIC ratings are calculated by a method similar to STC ratings.

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![Impact Insulation Class IIC = 51 dB](image_url)
SOUND TRANSMISSION CLASS is a single number that represents the sound blocking capacity of a partition such as a wall or ceiling.

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STC is calculated by comparing the actual sound loss measured when 18 test frequencies pass through a partition, with fixed values for each STC level. The highest STC curve that the measured sound loss numbers fit under, determines the STC rating of the tested partition.

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