

#### **Document Name**

#### Acoustiblok® Sound Reduction Floor/Ceiling Assemblies – Assembly Details

- Acoustiblok Floor/Ceiling Test Overview
- Δ IIC14 Acoustiblok 32oz. Sound Isolation Material, Tile Floor
- Δ IIC12 Acoustiblok 16oz. Sound Isolation Material, Tile Floor
- Δ IIC23 / IIC50 Acoustiblok 16oz. & Acoustiwool WF 0.125, Wood Floor
- IIC 67 / STC 74 Acoustiblok 16oz. Sound Isolation Material, Tile Floor
- IIC 51 / STC 52 Acoustiblok 16oz. Sound Isolation Material, Wood Floor
- IIC 50 / STC 52 Acoustiblok 16oz. Sound Isolation Material, Tile Floor
- IIC 40 / STC 53 Acoustiblok 32oz. Sound Isolation Material, Tile Floor
- IIC 38 / STC 54 Acoustiblok 16oz. Sound Isolation Material, Tile Floor
- IIC 56 / STC 54 Acoustiblok 16oz. & Acoustiwool WF0.125, Wood Floor
- IIC 51 / STC 55 Acoustiblok 32oz. Sound Isolation Material, Wood Floor
- IIC 49 / STC 55 Acoustiblok 16oz. Sound Isolation Material, Wood Floor



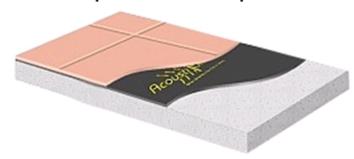
Acoustiblok <sup>®</sup> Sound Isolation Material: Floor/Ceiling Installation Test Index			
Test Report	Туре	Rating	Floor/Ceiling Assembly Description
Concrete Subfloor			
NGC 7006007	Delta Δ IIC / L <sub>nw</sub>	14	Tile, 32oz Acoustiblok, 6 in concrete slab - difference with/without Acoustiblok floor assembly No Ceiling Assembly Beneath The Slab, Ceiling Assemblies Typically Add 9-14 Points To The IIC Rating
NGC 7006008	Delta ∆ IIC / L <sub>nw</sub>	12	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
3102643-001a	Floor IIC / Lnw	50 / 60	Tile, 16 oz Acoustiblok, Acoustiwool-TF0.11, on 6 in concrete slab **  No Ceiling Assembly Beneath The Slab, Ceiling Assemblies Typically Add 9-14 Points To The IIC Rating  ** NOTE: Tile Council of North America rated this floor assembly "Residential" per the Robinson Floor Test (ASTM C627)  Refer to Report # TCNA-308-06 in the Acoustiblok® material test section.
3102643-001b	Delta ∆ IIC / L <sub>nw</sub>	23	
NGC 7006009	Floor IIC / Lnw	67 / 43	6 in concrete slab with quarry tile, 16oz Acoustiblok, suspended grid drywall ceiling
NGC 5006007	Floor STC	74	
NGC 7006083	Floor IIC / Lnw	51 / 59	Oak floor, Acoustiblok, Acoustiwool-WF0.125, on Hambro MD2000 Steel Floor Assembly
NGC 5006055	Floor STC	52	
NGC 7006081	Floor IIC / Lnw	50 / 60	Quarry tile, Acoustiblok, Acoustiwool-TF0.11, on Hambro MD2000 Steel Floor Assembly
NGC 5006053	Floor STC	52	
NGC 7006004	Floor IIC / Lnw	40 / 70	6 in concrete slab with quarry tile and 32oz Acoustiblok No Ceiling Assembly Beneath The Slab, Ceiling Assemblies Typically Add 9-14 Points To The IIC Rating
NGC 5006004	Floor STC	53	
NGC 7006006	Floor IIC / Lnw	38 / 72	6 in concrete slab with quarry tile and 16oz Acoustiblok No Ceiling Assembly Beneath The Slab, Ceiling Assemblies Typically Add 9-14 Points To The IIC Rating
NGC 5006006	Floor STC	54	
Wood Subfloor			
3107558-003	Floor IIC / Lnw	56 / 54	Wood Floor,16oz Acoustiblok, Acoustiwool-WF0.125, Wood Joist, channel ceiling
3107558-004	Floor STC	54	
NGC 7006002	Floor IIC / Lnw	51 / 59	Oak floor on plywood substrate, 32oz Acoustiblok, OSB subfloor, channel ceiling
NGC 5006002	Floor STC	55	
NGC 7006003	Floor IIC / Lnw	49 / 61	Oak floor on plywood substrate, 16oz Acoustiblok, OSB subfloor, channel ceiling
NGC 5006003	Floor STC	55	

Note:  $L_{nw}$  ratings from calculation:  $L_{nw} = 110 - (IIC)$ .  $R_w$  and STC ratings vary marginally using the equation  $R_w = .98(STC) + 1.1$ 



Impact Sound Improvement of Tile Floor with Acoustiblok® 32 oz. on 6" Concrete Slab: Impact Insulation  $\Delta$  +14dB Improvement Acoustical Test Overview

# Acoustiblok 32oz - 1/4" thick profile + 14dB Impact Insulation Improvement



Controlling noise from the impact of hard objects on tile floors is a very difficult problem in construction.

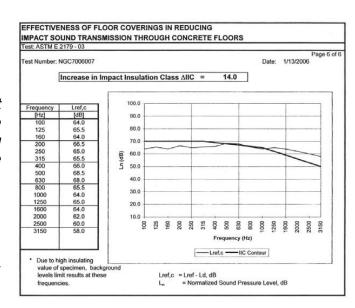
IIC ratings on many products are from the addition of sound rated ceiling assemblies that used during testing. Sound rated ceiling assemblies will generally add a minimum of 9-14 point to the IIC rating of the floor assembly.

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

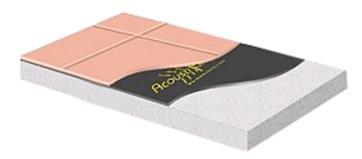
Measurements of reduction in impact sound due to a floor covering treatment. Measurements of the effectiveness of floor coverings are made in accordance with ASTM E2179, Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through 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.





# Impact Sound Improvement of Tile Floor with Acoustiblok® 16 oz. on 6" Concrete Slab: Impact Insulation $\Delta$ +12dB Improvement Acoustical Test Overview

# Acoustiblok 16oz - 1/8" thick profile + 12dB Impact Insulation Improvement



Controlling noise from the impact of hard objects on tile floors is a very difficult problem in construction.

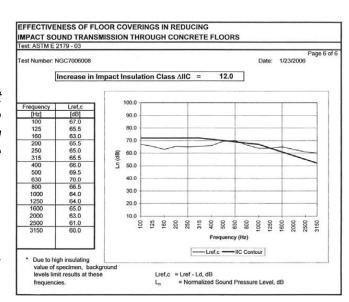
IIC ratings on many products are from the addition of sound rated ceiling assemblies that used during testing. Sound rated ceiling assemblies will generally add a minimum of 9-14 point to the IIC rating of the floor assembly.

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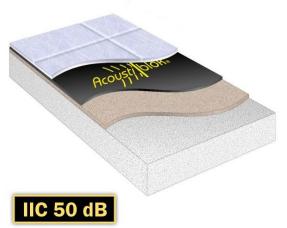
#### Acoustiblok 16 oz. Tested to: ASTM E2179

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.





# Tile Floor Acoustic Improvement with Acoustiblok® 16 oz. and Acoustiwool™-TF0.11 on Concrete Slab: IIC50 and Delta +23dB Ratings Acoustical Test Overview



Controlling noise from the impact of hard objects on tile floors is a very difficult problem in construction.

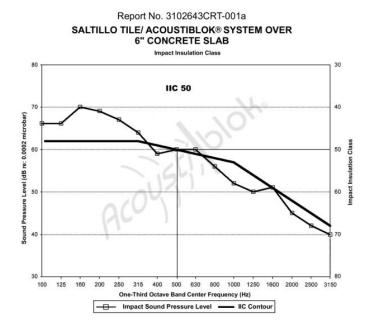
IIC ratings on many products are from the addition of sound rated ceiling assemblies that used during testing. Sound rated ceiling assemblies will generally add a minimum of 9-14 point to the IIC rating of the floor assembly.

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, 16 oz. Acoustiblok Sound Isolation Material achieved a +12dB improvement in the Impact Insulation Class (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





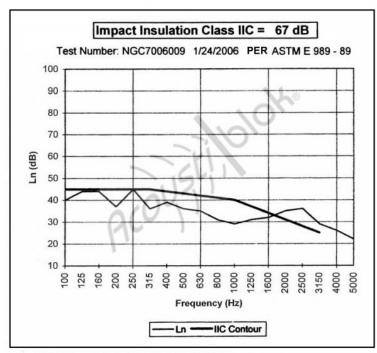
# Acoustiblok® 16 oz., Tile Floor, Concrete Slab and Suspended Ceiling: IIC67 and STC74 Rated Acoustical Test Overview



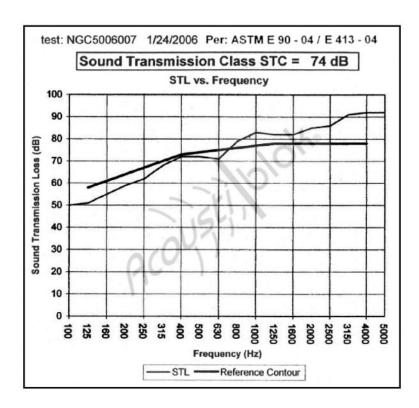
NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 67dB, and an STC (sound transmission class) of 74. See report graphs below, showing the performance of this configuration relative to noise source frequencies.

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







**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.



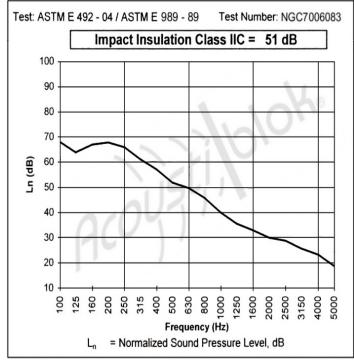
# Acoustiblok® 16 oz. and Acoustiwool™-WF0.125 with Oak Flooring on Hambro Floor Assembly: IIC51 and STC52 Rated Acoustical Test Overview



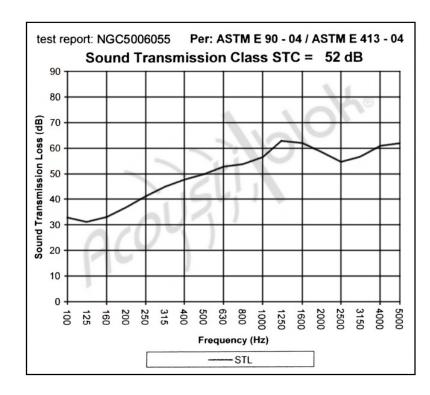
NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 51dB, and an STC (sound transmission class) of 52. See report graphs below, showing the performance of this configuration relative to noise source frequencies.

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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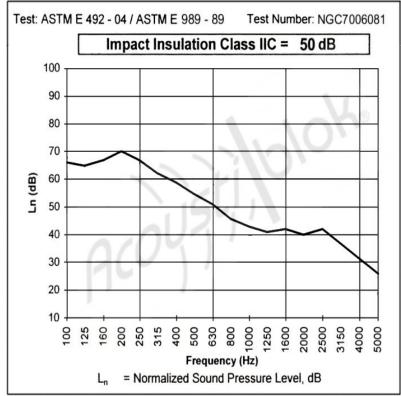
# Acoustiblok® 16 oz. and Acoustiwool™-WF0.11 with Tile Floor on Hambro Floor Assembly: IIC50 and STC52 Rated Acoustical Test Overview



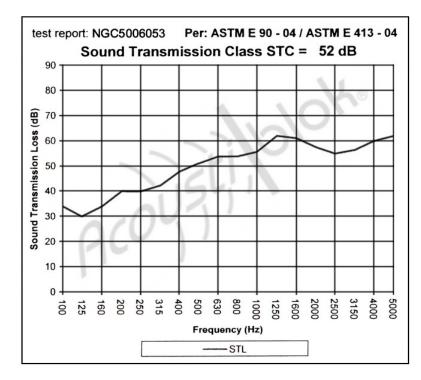
NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 50dB, and an STC (sound transmission class) of 52. See report graphs below, showing the performance of this configuration relative to noise source frequencies.

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) 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







**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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# Acoustiblok® 32 oz. and Tile Floor on Concrete Slab – No Ceiling Assembly: IIC40 and STC53 Rated Acoustical Test Overview

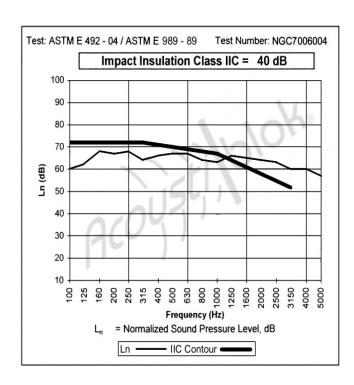


NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 40dB, and an STC (sound transmission class) of 53. See report graphs below, showing the performance of this configuration relative to noise source frequencies.

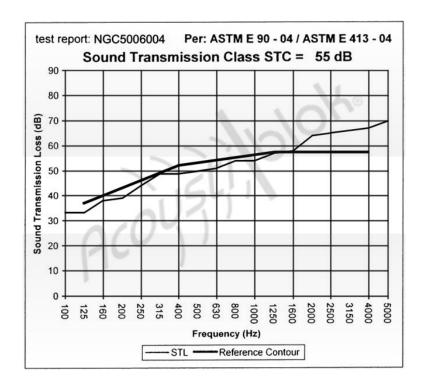
The tested assembly: Unglazed quarry tile installed with modified polymer grout & mortar, 32oz. Acoustiblok on a 6" reinforced concrete slab floor/ceiling. To increase impact insulation class and sound transmission class, add Acoustiwool-TF0.11 underlayment.

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







**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.



# Acoustiblok® 16 oz. and Tile Floor on Concrete Slab – No Ceiling Assembly: IIC38 and STC54 Rated Acoustical Test Overview

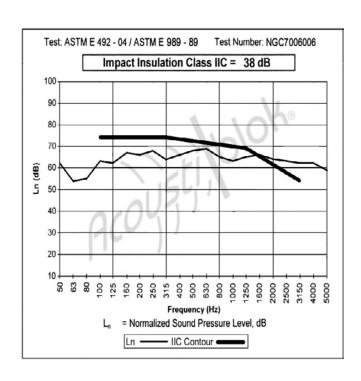


NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 38dB, and an STC (sound transmission class) of 54. See report graphs below, showing the performance of this configuration relative to noise source frequencies.

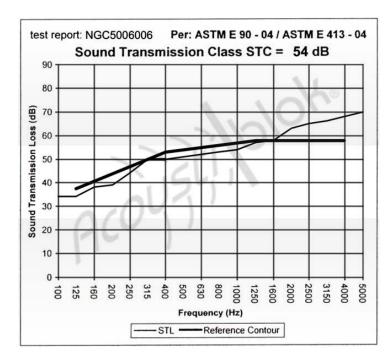
The tested assembly: Unglazed quarry tile installed with modified polymer grout & mortar, 16oz. Acoustiblok on a 6" reinforced concrete slab floor/ceiling. To increase impact insulation class and sound transmission class, add Acoustiwool-TF0.11 underlayment.

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







**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.



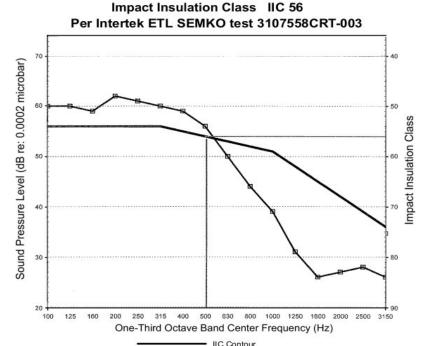
# Acoustiblok® 16 oz. and Acoustiwool™\_WF0.125 with Wood Floor on a Wood Joist Subfloor: IIC56 and STC54 Rated Acoustical Test Overview



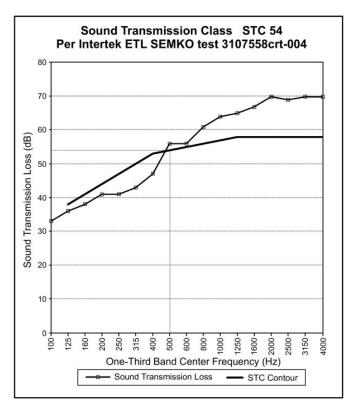
Intertek ETL SEMCO rates this floor configuration with an IIC (impact insulation class) of 56 dB, and an STC (sound transmission class) of 54. See report graphs below, which show the performance of this configuration relative to noise source frequencies.

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







**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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# Acoustiblok® 32 oz. with Wood Floor on a Wood Joist Subfloor: IIC51 and STC55 Rated Acoustical Test Overview

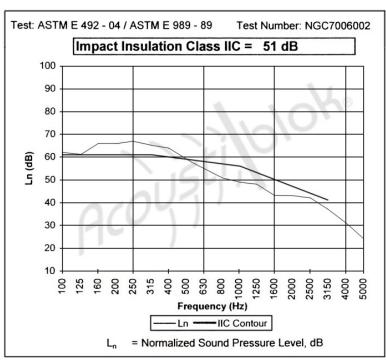


Impact Insulation Class (IIC) is a single number rating used to compare the performance of floor/ceiling assemblies in blocking impact noise, such as footsteps and dropped objects. The higher the IIC rating number, the better the performance. An IIC of 50 is the required minimum rating for preventing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

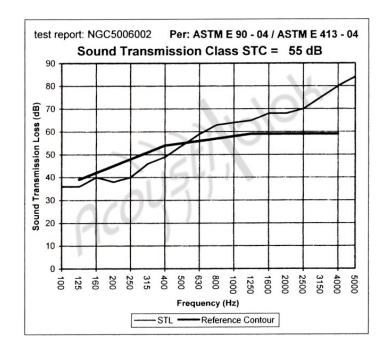
The IIC of a particular floor assembly is derived using a standard tapping machine, as stipulated in ASTM method E492.3 This machine incorporates five steel-faced hammers that strike the test floor and generate noise in a room below. The noise levels are measured and used to calculate the impact insulation class (IIC), following ASTM method E989.

NGC Testing Services rates this floor configuration with an IIC (impact insulation class) of 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).







**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.



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