ABOUT ACOUSTIC RATINGS

Acoustic ratings provide a means to rank a floor’s ability to isolate sound. A higher acoustic rating indicates a floor is better able to stop the transmission of sound through it. Helpful planning and construction points on preventing acoustical problems are given in a publication by the National Association of Home Builders Research Foundation titled Acoustical Manual—Apartment and Home Construction. Another reference is Sound, Noise, and Vibration Control by Lyle Yerges, 1969, Van Nostrand-Reinhold. Sound transmission class (STC) ratings describe a floor’s ability to isolate airborne sounds such as speech. The significance of STC numbers is illustrated in the following chart from the Acoustical and Insulation Materials Association.

STC RATINGS

<table>
<thead>
<tr>
<th>STC</th>
<th>Description of Potential Sound Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Normal Speech can be understood quite clearly.</td>
</tr>
<tr>
<td>30</td>
<td>Loud speech can be understood fairly well.</td>
</tr>
<tr>
<td>35</td>
<td>Loud speech audible but not intelligible.</td>
</tr>
<tr>
<td>42</td>
<td>Loud speech audible as a murmur.</td>
</tr>
<tr>
<td>45</td>
<td>Must strain to hear loud speech.</td>
</tr>
<tr>
<td>48</td>
<td>Some loud speech barely audible.</td>
</tr>
<tr>
<td>50</td>
<td>Loud speech not audible.</td>
</tr>
</tbody>
</table>

In addition to being rated for airborne sound transmission, floors are also rated by IIC (Impact Insulation Class). IIC values rate the capacity of floor assemblies to control impact noise such as a person’s heel hitting the floor. Use of light-frame construction systems challenges designers to insulate against noise rather than simply relying on the massiveness of heavy walls and floors.

NOTES

Fire Resistance Ratings are based on CAN/ULC S101 tests (in Canada) or UL263 (in the US). Full scale floors are built and tested by subjecting them to a standard fire up to a temperature of 1,260°C. The floor must withstand this sustained fire for the duration of the test. Acoustic test are based on ASTM E90 (STC) and ASTM E492 (IIC). Sounds loss and sound transmission are measured by a series of instrument from which the ratings are calculated for design.
## BASE ASSEMBLIES

<table>
<thead>
<tr>
<th>Slab Depth</th>
<th>Assembly and Approval Designation</th>
<th>Assembly Breakdown</th>
<th>FRR</th>
<th>STC</th>
<th>IIC</th>
</tr>
</thead>
</table>
| 3"        | Unrestrained/Restrained          | UL G555 / ULC I525 UL G589 / ULC I532 | Structure:  
• CompositeTotalJoist™  
• Total-Lewis-Deck™  
Topping:  
• Min. 3" Normal Weight Concrete, 3.0 ksi  
Finished Floor:  
• none  
Ceiling:  
• 7/8" Hat Channel  
• 5/8" Type C Gypsum Board | 50' | 25' |
| 3" Insulation | | Structure:  
• CompositeTotalJoist™  
• Total-Lewis-Deck™  
Topping:  
• Min. 3" Normal Weight Concrete, 3.0 ksi  
Finished Floor:  
• none  
Ceiling:  
• 3-1/2" Fiberglass Batts  
• 7/8" Hat Channel  
• 5/8" Type C Gypsum Board | 58'  
2 HR or 3 HR | 30' |
| 4"        | Unrestrained/Restrained          | UL G555 / ULC I525 UL G589 / ULC I532 | Structure:  
• CompositeTotalJoist™  
• Total-Lewis-Deck™  
Topping:  
• Min. 4" Normal Weight Concrete, 3.0 ksi  
Finished Floor:  
• none  
Ceiling:  
• 7/8" Hat Channel  
• 5/8" Type C Gypsum Board | 51' | 31' |

1. ‘FRR’ is the UL / ULC Approved Fire Resistance Rating tested as per CAN ULC S101
2. ‘STC’ is the Sound Transmission Class
3. ‘IIC’ is the Impact Insulation Class
4. See below for ratings specific to floor finishes
5. All topping thicknesses are measured from top of deck

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1 Denotes values based on lab tests
2 Denotes values based on field tests
3 Denotes values based on field tests
# Vinyl Floor Finish

<table>
<thead>
<tr>
<th>Slab Depth</th>
<th>Assembly and Approval Designation</th>
<th>Assembly Breakdown</th>
<th>FRR</th>
<th>STC</th>
<th>IIC</th>
</tr>
</thead>
</table>
| 3"        | Unrestrained/Restrained          | UL G555 / ULC I525 UL G589 / ULC I532 | Structure:  
  • CompositeTotalJoist™  
  • Total-Lewis-Deck™  
  Topping:  
  • Min. 3" Normal Weight Concrete, 3.0 ksi  
  Finished Floor:  
  • Vinyl  
  Ceiling:  
  • 7/8" Hat Channel  
  • 5/8" Type C Gypsum Board | 50⁺ | 35⁺ |
| 3" + Insulation | Unrestrained/Restrained | UL G555 / ULC I525 UL G589 / ULC I532 | Structure:  
  • CompositeTotalJoist™  
  • Total-Lewis-Deck™  
  Topping:  
  • Min. 3" Normal Weight Concrete, 3.0 ksi  
  Finished Floor:  
  • Vinyl  
  Ceiling:  
  • 3-1/2" Fiberglass Batts  
  • 7/8" Hat Channel  
  • 5/8" Type C Gypsum Board | 58⁺ | 40⁺ |
| 4"        | Unrestrained/Restrained          | UL G555 / ULC I525 UL G589 / ULC I532 | Structure:  
  • CompositeTotalJoist™  
  • Total-Lewis-Deck™  
  Topping:  
  • Min. 4" Normal Weight Concrete, 3.0 ksi  
  Finished Floor:  
  • Vinyl  
  Ceiling:  
  • 7/8" Hat Channel  
  • 5/8" Type C Gypsum Board | 51⁺ | 41⁺ |

1 Denotes values based on lab tests  
2 Denotes values based on field tests  
3 Denotes values based on field tests
# LAMINATE FLOOR FINISH

<table>
<thead>
<tr>
<th>Slab Depth</th>
<th>Assembly and Approval Designation</th>
<th>Assembly Breakdown</th>
<th>FRR</th>
<th>STC</th>
<th>IIC</th>
</tr>
</thead>
</table>
| 3”        | Unrestrained/Restrained          | UL G555 / ULC I525 UL G589 / ULC I532 | Structure:  
• CompositeTotalJoist™  
• Total-Lewis-Deck™  
Topping:  
• Min. 3” Normal Weight Concrete, 3.0 ksi  
Finished Floor:  
• Laminate Flooring  
Ceiling:  
• 7/8” Hat Channel  
• 5/8” Type C Gypsum Board | 50¹ | 40³ |
| 3” + Insulation | Unrestrained/Restrained | UL G555 / ULC I525 UL G589 / ULC I532 | Structure:  
• CompositeTotalJoist™  
• Total-Lewis-Deck™  
Topping:  
• Min. 3” Normal Weight Concrete, 3.0 ksi  
Finished Floor:  
• Laminate Flooring  
Ceiling:  
• 3-1/2” Fiberglass Batts  
• 7/8” Hat Channel  
• 5/8” Type C Gypsum Board | 58¹  | 45³  | 2 HR or 3 HR |
| 4”        | Unrestrained/Restrained          | UL G555 / ULC I525 UL G589 / ULC I532 | Structure:  
• CompositeTotalJoist™  
• Total-Lewis-Deck™  
Topping:  
• Min. 4” Normal Weight Concrete, 3.0 ksi  
Finished Floor:  
• Laminate Flooring  
Ceiling:  
• 7/8” Hat Channel  
• 5/8” Type C Gypsum Board | 51¹ | 46³ |

¹ Denotes values based on lab tests  
² Denotes values based on field tests  
³ Denotes values based on field tests
## CERAMIC TILE FLOOR FINISH

<table>
<thead>
<tr>
<th>Slab Depth</th>
<th>Assembly and Approval Designation</th>
<th>Assembly Breakdown</th>
<th>FRR</th>
<th>STC</th>
<th>IIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>3”</td>
<td>Unrestrained/Restrained - UL G555 / ULC I525, UL G589 / ULC I532</td>
<td>Structure: • CompositeTotalJoist™ • Total-Lewis-Deck™ Topping: • Min. 3” Normal Weight Concrete, 3.0 ksi Finished Floor: • Ceramic Tile Ceiling: • 7/8” Hat Channel • 5/8” Type C Gypsum Board</td>
<td>50¹</td>
<td>32²</td>
<td></td>
</tr>
<tr>
<td>3” + Insulation</td>
<td>Unrestrained/Restrained - UL G555 / ULC I525, UL G589 / ULC I532</td>
<td>Structure: • CompositeTotalJoist™ • Total-Lewis-Deck™ Topping: • Min. 3” Normal Weight Concrete, 3.0 ksi Finished Floor: • Ceramic Tile Ceiling: • 3-1/2” Fiberglass Batts • 7/8” Hat Channel • 5/8” Type C Gypsum Board</td>
<td>2 HR or 3 HR</td>
<td>58¹</td>
<td>32²</td>
</tr>
<tr>
<td>4”</td>
<td>Unrestrained/Restrained - UL G555 / ULC I525, UL G589 / ULC I532</td>
<td>Structure: • CompositeTotalJoist™ • Total-Lewis-Deck™ Topping: • Min. 4” Normal Weight Concrete, 3.0 ksi Finished Floor: • Ceramic Tile Ceiling: • 7/8” Hat Channel • 5/8” Type C Gypsum Board</td>
<td>51¹</td>
<td>34³</td>
<td></td>
</tr>
</tbody>
</table>

¹ Denotes values based on lab tests ² Denotes values based on field tests ³ Denotes values based on field tests
## CARPET FLOOR FINISH

<table>
<thead>
<tr>
<th>Slab Depth</th>
<th>Assembly and Approval Designation</th>
<th>Assembly Breakdown</th>
<th>FFR</th>
<th>STC</th>
<th>IIC</th>
</tr>
</thead>
</table>
| 3”         | Unrestrained/Restrained          | UL G555 / ULC I525 UL G589 / ULC I532 | Structure:  
• CompositeTotalJoist™  
• Total-Lewis-Deck™  
Topping:  
• Min. 3" Normal Weight Concrete, 3.0 ksi  
Finished Floor:  
• 5/16" Underpad  
• Carpet  
Ceiling:  
• 7/8" Hat Channel  
• 5/8" Type C Gypsum Board | 50¹ 55³ |
| 3” + Insulation | Unrestrained/Restrained | UL G555 / ULC I525 UL G589 / ULC I532 | Structure:  
• CompositeTotalJoist™  
• Total-Lewis-Deck™  
Topping:  
• Min. 3" Normal Weight Concrete, 3.0 ksi  
Finished Floor:  
• 5/16" Underpad  
• Carpet  
Ceiling:  
• 3-1/2" Fiberglass Batts  
• 7/8" Hat Channel  
• 5/8" Type C Gypsum Board | 58¹ 60³ 2 HR or 3 HR |
| 4”         | Unrestrained/Restrained          | UL G555 / ULC I525 UL G589 / ULC I532 | Structure:  
• CompositeTotalJoist™  
• Total-Lewis-Deck™  
Topping:  
• Min. 4" Normal Weight Concrete, 3.0 ksi  
Finished Floor:  
• 5/16" Underpad  
• Carpet  
Ceiling:  
• 7/8" Hat Channel  
• 5/8" Type C Gypsum Board | 51¹ 61¹ |

¹ Denotes values based on lab tests  
² Denotes values based on field tests  
³ Denotes values based on field tests
NOTES

The acoustic ratings are based on various finished floors. Finished floors can be applied to Composite TotalJoist Floor Systems in the same way that they are applied in traditional floors.

There are several methods to install wood flooring products over the Composite TotalJoist Floor Systems:

- For installation over concrete slabs, refer to the instructions published by The Wood Flooring Manufacturers Association at www.nofma.org.

There are also several methods to install ceramic tile on Composite TotalJoist Floor Systems. For guidance, refer to the 2009 TCA Handbook for Ceramic Tile Installation published by The Tile Council of North America, Inc. Visit their website at www.tileusa.com. Inside you will find many approved installation systems suitable for the Composite TotalJoist Floor Systems.