ADDITIONAL INSULATION CHARACTERISTICS

High fire resistance (EI30 – EI60 min)
The new insulation core includes rock mineral wool, which with its non-combustibility (class A1) and high melting point (above 1,000°C) contributes to the improved fire resistance of doors (Class EI30 – EI60 min). This means that DRS Sound Supreme Board is suitable for fire resistant doors.

Good thermal conductivity (0.077 W/mK)
The usage of the newly developed insulation core in door systems, due to the excellent thermal performance of rock mineral wool (prevents convection, stops radiation and limits the conduction of heat through insulation material), helps reduce energy consumption and creates a desirable indoor climate, therefore making a valuable contribution to combating climate change.

Advanced mechanical properties and surface hardness of insulation core
The new insulation core guarantees excellent stability as it has high compression strength, maintains its integrity and does not change shape or fluctuate in dimensions (length or width), regardless of changes in humidity or temperature. Due to the hardness of the insulation core surface it has a solid adhesion power with other materials.

Environmental solution
The newly developed core is non-hazardous for both personal health and for the environment. It is based on a composition of highly recyclable materials, which makes it in line with future technology trends preferring ecologically oriented materials, reducing the consumption of thermal energy sources and at the same time reducing environmental pollution.

Quality without compromise
Knauf Insulation DRS Sound Supreme Board meets all standard requirements (VOC, TOC) for the insulation of wooden door systems. Superior characteristics like excellent sound insulation, good fire protection, high thermal conductivity, advanced mechanical properties and ecological orientation define it as a premium quality solution. RAL and EUCEB certificates for rock mineral wool as a main component of the board have also been acquired.
Knauf Insulation is a leading European manufacturer of door insulation and supplier to some of the world’s largest door producers. We offer our clients a complete range of mineral wool insulation products. Our strategy and partnership with our customers is based on continuous, innovative product development, in order to deliver premium solutions with proven expertise.

As maintaining a high quality of life requires increasingly strict standards and as European requirements for sound insulation to protect people and the environment (standard SIST EN ISO 717-1) are becoming more and more exacting, sound insulation and preventing sound pollution are becoming more and more important.

This fact and our awareness that rock mineral wool, due to its structure, provides a highly effective barrier to noise and significantly dampens sound, led Knauf Insulation to develop a new, state of the art patented product: a high-performance insulation core, made of various ecologically oriented materials (so-called “composite board”), delivering our customers superb sound absorption for wooden door systems. We call it KNAUF INSULATION DRS SOUND SUPREME BOARD.

**PERFORMANCE**

- **SOUND PERFORMANCE**
  - Insulation properties, properties up to 43 dB
  - **SIST EN ISO 10140**
  - **MECHANICAL PERFORMANCE**
    - Advanced mechanical properties, dimensional stability and surface hardness of insulation core

**ADVANTAGES FOR DOOR PRODUCERS**

- Easy to process – well suited to machinery for sawing and routing
- Suitable for veneering and laminating – all types of surface finishes are possible (foils, veneers, melamine, painting, staining).
- Easy profiling and edging – almost all edge designs and profiles are possible.
- Mechanical fastenings possible – the composite core accepts screws, staples and rock nails.
- Composite cores are also suitable for use with dowels.

**BENEFITS**

- **Thermal insulation properties**: composite boards have excellent thermal conductivity.
- **Excellent fire resistance**: composite boards boast a high European fire resistant rating of EI 30 – EI 60.
- **Superb acoustic performance**: due to its structure, composite boards are able to significantly reduce sound.
- **Energy saving material**: lower energy consumption and reduced CO2 emissions.
- **Vapour permeability**: owing to their structure, composite boards are vapour permeable.

**Water repellent**: composite boards are permanently water repellent.

- **Permanently stable dimensions**: composite products maintain their integrity, and do not change shape or in thickness (length or width), regardless of changes in humidity or temperature.
- **Resistant to microorganisms**: composite boards remain clean and hygienically sound, are non-toxic, non-hygrosopic, resistant and will out sustain worms or insects.
- **Ecologically oriented**: composite boards are harmless for both personal health and for the environment.

**Description**

**KNAUF INSULATION DRS SOUND SUPREME BOARD (DRS SSB)** is a new insulation board, produced with a unique and patented technological process, especially developed for wooden doors’ insulation core. It is based on a combination of rock mineral wool and other ecologically oriented materials, which enable superb sound insulation up to 43 dB depending on the core layers and density of the mineral wool fire resistance (EI 30 – EI 60) and thermal insulation. The stone of the insulation core can be prepared as a single-, double- or multilayer board with a full core thickness of only 8 – 50 mm and is custom designed according to customers’ specifications and requirements.

**Applications**

- Insulation core for wooden door systems in the leisure, hospitality, education, health, housing and media/broadcasting markets and in all other places where high sound performance factors are required, providing maximum comfort, good working conditions and a pleasant environment.
- Insulation core for entrance wooden door systems, where high sound performance factors in combination with excellent thermal conductivity and high fire resistance are required, providing sound, thermal and fire insulation of different facilities for maximum comfort, good working conditions and a pleasant environment.

**Technical properties**

| Property | DRS Sound Supreme Board
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>43 kg/m³</td>
</tr>
<tr>
<td>Thermal conductivity</td>
<td>0.034 W/mK</td>
</tr>
<tr>
<td>Fire resistance</td>
<td>EI 30 – EI 60</td>
</tr>
<tr>
<td>Compressive strength</td>
<td>150 N/mm²</td>
</tr>
</tbody>
</table>

**DRS Sound Supreme Board**

- **FIRE PERFORMANCE**
  - **sound insulation of wooden doors**
  - High-tech product for superb sound insulation of wooden doors

**KNAUF INSULATION DRS SOUND SUPREME BOARD**

Excellent sound insulation for wooden doors

The structure of the rock mineral wool and other materials in a precisely defined composition of the insulation core makes doors particularly good at reducing sound (superb sound insulation up to 43 dB). It fulfills the sound insulation requirements of SIST EN ISO 717-1 in several sound insulation classes, therefore outstanding sound performance characteristics of doors can be achieved.

Different sound insulation classes can be achieved, depending on the thickness (10 – 45 mm), density and number of layers.

**Sound insulation tests**

- **TEST 1**: DRS Sound Supreme Board 65/65 (2-layer core)
  - Dimensions of the specimen: width 1,000 mm × length 2,150 mm × thickness 42 mm
  - Declared density: 500 kg/m³
  - Rating according to SIST EN ISO 717-1 (2013) for (DRS SSB) x 23 (1:14): 48 dB

- **TEST 2**: DRS Sound Supreme Board 65/65 (2-layer core)
  - Dimensions of the specimen: width 1,000 mm × length 2,150 mm × thickness 42 mm
  - Declared density: 500 kg/m³
  - Rating according to SIST EN ISO 717-1 (2013) for (DRS SSB) x 23 (1:14): 48 dB

- **TEST 3**: DRS Sound Supreme Board 90/90 (2-layer core)
  - Dimensions of the specimen: width 1,000 mm × length 2,150 mm × thickness 42 mm
  - Declared density: 500 kg/m³
  - Rating according to SIST EN ISO 717-1 (2013) for (DRS SSB) x 23 (1:14): 60 dB

**Laboratory measurements of airborne sound-insulat- ing properties according to standard test EN ISO 715-5:2010**
Knauf Insulation is a leading European manufacturer of door insulation and supply to some of the world’s largest door producers. We offer our clients a complete range of mineral wool insulation products. Our strategy and partnership with our customers is based on continuous, innovative product development, in order to deliver premium solutions with proven expertise.

As maintaining a high quality of life requires increasingly strict standards and as European requirements for sound insulation to protect people and the environment (standard SIST EN ISO 1716-1) are becoming more and more strict, sound insulation and preventing sound pollution are becoming more and more important.

This fact and our awareness that rock mineral wool, due to its structure, provides a high-effective barrier to noise and significantly dampens sound, led Knauf Insulation to develop a new, state of the art patented product: a high-performance insulation core made of various ecologically oriented materials (so-called “composite board”), delivering our customers superb sound absorption for wooden door systems. We call it KNAUF INSULATION DRS SOUND SUPREME BOARD.

**ADVANTAGES FOR DOOR PRODUCERS**

- Easy to process – well suited to machinery for sawing and routing
- Suitable for veneering and laminating – all types of surface finishes are possible (foils, veneers, melamine, painting, staining).
- Easy profiling and edging – almost all edge designs and profiles are possible.
- Mechanical fastenings possible – the composite core accepts screws, staples and rock nails. Composite cores are also suitable for use with dowels.

## BENEFITS

- **Thermal insulation properties:** composite boards have excellent thermal conductivity.
- **Excellent fire resistance:** composite boards boast a high European fire resistant rating of EI 30 – EI 60.
- **Superb acoustic performance:** due to its structure, composite boards are able to significantly reduce sound.
- **Energy saving material:** lower energy consumption and reduced CO2 emissions.
- **Vapour permeability:** owing to their structure, composite boards are vapour permeable.

**Water repellent:** composite boards are permanently water repellent.

**Permanently stable dimensions:** composite products maintain their integrity and do not change shape or fluctuates in dimensions (length or width), regardless of changes in humidity or temperature.

**Resistant to microorganisms:** composite boards remain clean and hygiene sound. These hygroscopic, re-softed, and will out sustain wear for encourage the growth of fungi, mould or bacteria.

**Ecologically oriented:** composite boards are environmentally friendly for both personal health and the environment.

**Description**

KNAUF INSULATION DRS SOUND SUPREME BOARD (DRS SSB) is a new insulation board, produced with a unique and patented technological process, specially developed for wooden door’s insulation core. It is based on a composition of rock mineral wool and other ecologically oriented materials, which enable superb sound insulation (up to 43 dB) depending on the core layers and density.

The structure of the rock mineral fibres and other materials in a precisely defined composition of the insulation core makes doors particularly good at reducing sound (except sound insulation up to 43 dB). It satisfies the sound insulation requirements of SIST EN ISO 717-1. In several sound insulation classes, therefore outstanding sound performance characteristics of doors can be achieved.

Different sound insulation classes can be achieved, depending on the thickness (10 – 45 mm), density and number of layers.

## Sound insulation tests

<table>
<thead>
<tr>
<th>Test specimen</th>
<th>Sound reduction index – R [dB]</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRS Sound Supreme Board 65/90 (2-layer core)</td>
<td>Rw (C;Ctr) = 43 (-1;-4) dB</td>
</tr>
<tr>
<td>DRS Sound Supreme Board 75/90 (2-layer core)</td>
<td>Rw (C;Ctr) = 43 (-1;-4) dB</td>
</tr>
<tr>
<td>DRS Sound Supreme Board 85/90 (2-layer core)</td>
<td>Rw (C;Ctr) = 42 (-1;-4) dB</td>
</tr>
<tr>
<td>DRS Sound Supreme Board 90/90 (2-layer core)</td>
<td>Rw (C;Ctr) = 42 (-1;-4) dB</td>
</tr>
</tbody>
</table>

**Samples, sizes and densities**

<table>
<thead>
<tr>
<th>Description</th>
<th>Dimensions of the specimen: width 1,000 mm × length 2,150 mm × thickness 42 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>500 kg/m³</td>
</tr>
<tr>
<td>Sound insulation</td>
<td>Rw (C;Ctr) = 43 (-1;-4) dB</td>
</tr>
<tr>
<td>Thermal conductivity – d.c.</td>
<td>0.25 W/mK</td>
</tr>
<tr>
<td>Fire resistance</td>
<td>EI 60</td>
</tr>
</tbody>
</table>

**Technical properties / DRS Sound Supreme Board**

<table>
<thead>
<tr>
<th>Density</th>
<th>Sound insulation</th>
<th>Thermal conductivity – d.c.</th>
<th>Fire resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 kg/m³</td>
<td>Rw (C;Ctr) = 43 (-1;-4) dB</td>
<td>0.25 W/mK</td>
<td>EI 60</td>
</tr>
</tbody>
</table>

**Laboratory measurements of airborne sound insulation**

**Test 2** DRS Sound Supreme Board 65/90 (2-layer core)

- Dimensions of the specimen: width 1,050 mm × length 2,110 mm × thickness 42 mm
- Declared density: 500 kg/m³
- Rating according to SIST EN ISO 717-1 (2013): 3.5 (D/C/D) x 2.19 (14) dB

**Test 3** DRS Sound Supreme Board 75/90 (2-layer core)

- Dimensions of the specimen: width 1,050 mm × length 2,110 mm × thickness 42 mm
- Declared density: 500 kg/m³
- Rating according to SIST EN ISO 717-1 (2013): 4 (D/D/D) x 2.12 (10) dB
High-tech product for superb sound insulation of wooden doors

Knauf Insulation is a leading European manufacturer of door insulation and supplies to some of the world’s largest door producers. We offer our clients a complete range of mineral wool insulation products. Our strategy and partnership with our customers is based on continuous, innovative product development, in order to deliver premium solutions with proven expertise.

As maintaining a high quality of life requires increasingly strict standards and as European requirements for sound insulation to protect people and/or the environment (standard SIST EN ISO 717-1) are becoming more and more strict, sound insulation and preventing sound pollution are becoming more and more important.

This fact and our awareness that rock mineral wool, due to its structure, provides a high effective barrier to noise and significantly dampens sound, led Knauf Insulation to develop a new, state of the art patented product: a high-performance insulation core, made of various ecologically oriented materials (so-called “composite board”), delivering our customers superb sound absorption for wooden door systems. We call it KNAUF INSULATION DRS SOUND SUPREME BOARD.

ADVANTAGES FOR DOOR PRODUCERS

Easy to process – well suited to machinery for sawing and routing

Suitable for veneering and laminating – all types of surface foams are possible (fish, venner, rainstrokes, post-treatment, staining)

Easy profiling and edging – almost all edge designs and profiles are possible.

Mechanical Fastenings possible – the composite core accepts screws, staples and nails well.

Composite cores are also suitable for use with dowels.

Thermal insulation properties: composite boards have excellent thermal conductivity:

- Excellent fire resistance: composite boards boast a high European fire resistance rating of EI30 – EI60.
- Superb acoustic performance: due to its structure, composite boards are able to significantly reduce sound.
- Energy saving material, lower energy consumption and reduced co2 emissions.
- Vapor permeability: owing to their structure, composite boards are vapor permeable.

Benefits of the core structure of the rock mineral fibres and other materials in a precisely defined composition of the insulation core makes doors particularly good at reducing sound (staples sound insulation up to 43 dB). It fulfills the sound insulation requirements of SIST EN ISO 717-1 in several sound insulation classes, therefore outstanding sound proof characteristics of doors can be achieved.

The structure of the rock mineral fibres and other materials in a precisely defined composition of the insulation core makes doors particularly good at reducing sound (staples sound insulation up to 43 dB). It fulfills the sound insulation requirements of SIST EN ISO 717-1 in several sound insulation classes, therefore outstanding sound proof characteristics of doors can be achieved.

Different sound insulation classes can be achieved, depending on the thickness (10 – 45 mm), density and number of layers.

Sound insulation tests

| Test 1: DRS Sound Supreme Board 55/90 (2-layer core) | Dimensions of the specimen: width 1,000 mm × length 2,150 mm × thickness 42 mm
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Declared density: 500 kg/m³</td>
<td>Rating according to SIST EN ISO 717-1 (2013): Rw(C;Ctr) = 43 (-1;-4) dB</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>50</td>
<td>60</td>
</tr>
</tbody>
</table>

Technical properties / DRS Sound Supreme Board

<table>
<thead>
<tr>
<th>Density</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sound insulation</td>
<td>35</td>
<td>37</td>
<td>39</td>
<td>41</td>
<td>43</td>
<td>45</td>
<td>47</td>
</tr>
<tr>
<td>Thermal conductivity, declared</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>Fire resistance</td>
<td>EI30</td>
<td>EI30</td>
<td>EI30</td>
<td>EI30</td>
<td>EI30</td>
<td>EI30</td>
<td>EI30</td>
</tr>
<tr>
<td>Compression strength</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Laboratory measurements of airborne sound insulation according to standard test. EN ISO 140-1:2005

| Test 2: DRS Sound Supreme Board 65/65 (2-layer core) | Dimensions of the specimen: width 1,000 mm × length 2,150 mm × thickness 42 mm
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Declared density: 650 kg/m³</td>
<td>Rating according to SIST EN ISO 717-1 (2013): Rw(C;Ctr) = 40 (-1;-3) dB</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>50</td>
<td>60</td>
</tr>
</tbody>
</table>

| Test 3: DRS Sound Supreme Board 70/90 (2-layer core) | Dimensions of the specimen: width 1,000 mm × length 2,150 mm × thickness 42 mm
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Declared density: 700 kg/m³</td>
<td>Rating according to SIST EN ISO 717-1 (2013): Rw(C;Ctr) = 39 (-1;-2) dB</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>50</td>
<td>60</td>
</tr>
</tbody>
</table>

| Test 4: DRS Sound Supreme Board 80/90 (2-layer core) | Dimensions of the specimen: width 1,000 mm × length 2,150 mm × thickness 42 mm
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Declared density: 800 kg/m³</td>
<td>Rating according to SIST EN ISO 717-1 (2013): Rw(C;Ctr) = 38 (-1;0) dB</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>50</td>
<td>60</td>
</tr>
</tbody>
</table>

Evolution based on laboratory measurements made, showing linear trend between the two spectrums and the lines of the two opening are aligned. The maximum values of the measurement are used for comparison, since the measurement applied only in one sound broad width.
HEALTH AND ENVIRONMENT

Our mission is to challenge conventional thinking and create innovative insulation solutions that shape the way we live and build in the future, with care for the people who make them, the people who use them and the world we all depend on. The incorporation of our insulation solutions from mineral wool makes it possible to build healthy and comfortable living spaces as its properties improve the microclimate in a room and, at the same time ensure excellent thermal, sound and fire protection. Knauf Insulation products are also ecologically oriented, as they reduce the consumption of thermal energy sources, thereby reducing environmental pollution.

ADDITIONAL INSULATION CHARACTERISTICS

High fire resistance (EI30 – EI60 min)
The new insulation core includes rock mineral wool, which with its non-combustibility (class A1) and high melting point (above 1,000°C) contributes to the improved fire resistance of doors (Class EI30 – EI60 min). This means that DRS Sound Supreme Board is suitable for fire resistant doors.

Good thermal conductivity (0,077 W/mK)
The usage of the newly developed insulation core in door systems, due to the excellent thermal performance of rock mineral wool (prevents convection, stops radiation and limits the conduction of heat through insulation material), helps reduce energy consumption and creates a desirable indoor climate, therefore making a valuable contribution to combating climate change.

Advanced mechanical properties and surface hardness of insulation core
The new insulation core guarantees excellent stability as it has high compression strength, maintains its integrity and does not change shape or fluctuate in dimensions (length or width), regardless of changes in humidity or temperature. Due to the hardness of the insulation core surface it has a solid adhesion power with other materials.

Environmental solution
The newly developed core is non-hazardous for both personal health and for the environment. It is based on a composition of highly recyclable materials, which makes it in line with future technology trends preferring ecologically oriented materials, reducing the consumption of thermal energy sources and at the same time reducing environmental pollution.

Quality without compromise
Knauf Insulation DRS Sound Supreme Board meets all standard requirements (VOC, TOC) for the insulation of wooden door systems. Superior characteristics like excellent sound insulation, good fire protection, high thermal conductivity, advanced mechanical properties and ecological orientation define it as a premium quality solution. RAL and EUCEB certificates for rock mineral wool as a main component of the board have also been acquired.
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