USG BORAL SILENZ™
Ultra-Micro Perforated Acoustic Metal Ceiling
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**SILENZ™ BAFFLES**

Mosque
**HISTORY AND TECHNOLOGY**

**USG Boral Silenz™** range of metal ceilings is developed from patented acoustical perforation technology and comes in a monolithic plain surface. With an ultra-micro perforation of less than 0.04mm (H) x 0.4mm (L) and its tortuous surface, it creates a short tunnel phenomenon, effectively achieving high sound absorption. USG Boral Silenz™ is also extremely durable yet maintenance free, making it ideal for a large range of applications.

The patented technology is developed based on the renowned Micro-Perforated Panel Absorbers (MPA) theory by acoustician Prof. Maa Dah-You, through the classical treatment of sound propagation in short tubes. The technology allows sound energy reduction by converting friction caused by airborne sound waves travelling through the USG Boral Silenz™ ultra-micro perforation panel’s tortuous surface into heat energy and dissipating it into the atmosphere.

The result of this cutting edge product is its ability to provide stable acoustic performance without the requirement of a glass fibre insulation, which may also present as a health hazard due to possible improper ceiling maintenance caused by condensation or water leakage over time. USG Boral Silenz™ enables a lightweight system for acoustical coating method that impose minimum load to buildings and increases the safety factor of suspended elements.

USG Boral Silenz™ range of acoustical metal ceiling is water and dust resistant, thanks to its ultra-fine properties, making it ideal for applications such as Hospitals, Pharmaceuticals, Public Transportation, Electronic and Food Production. It can also be used in hostile interior and exterior environments as its material is finished in PVDF (Polyvinylidene Fluoride), suited for outdoor environments regularly exposed to UV rays.
Over at USG Boral, we believe in creating products that are safe and environmentally friendly. Made from recycled material — aluminium — this ensures that USG Boral Silenz™ is non-combustible, corrosion proof, non-asbestos, non-radioactive and contains no heavy metal.

USG Boral Silenz™ complete suite of products specialises in low to mid-frequency range noise control. It does not sacrifice aesthetics due to the absence of an acoustic felt, resulting in a plain surface that provides equal or higher noise absorption than conventional perforated panels with an insulation blanket. All USG Boral Silenz™ products are water and dust-resistant, and come with a 15-year limited warranty. For more information on USG Boral Silenz™ warranty coverage, please visit USGBoral.com.

**FEATURES AND BENEFITS**

**BENEFITS AT A GLANCE**

- HIGH SOUN**D**D ABSORPTION
- NON-COMBUSTIBLE
- NRC: 0.70 AND ABOVE
- NON-ASBESTOS
- CLEAN SURFACE
- ENVIRONMENTALLY FRIENDLY
- MONOLITHIC FLAT PLANE
- LIGHT-WEIGHT
- WATER-RESISTANT
- DURABLE
- MOULD-RESISTANT
- VERSATILE
- DUST PROOF
- PROLONGED PERFORMANCE
Invisible to the naked eye, USG Boral Silenz™ acoustical coating method has an ultra-micro perforation of less than 0.04mm (H) x 0.4mm (L) with a tortuous surface which creates a short tunnel phenomenon for effective noise control.

### Material Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specifics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Appearance</td>
<td>Plain, flat monolithic</td>
</tr>
<tr>
<td>Application</td>
<td>Public transport, HVAC units, engineering rooms, lobbies, museums, healthcare facilities, cleanrooms and preparation areas.</td>
</tr>
<tr>
<td>Size</td>
<td>Varies with different applications</td>
</tr>
<tr>
<td>Thickness</td>
<td>1.0mm</td>
</tr>
<tr>
<td>Perforation Diameter</td>
<td>Ultra-Micro less than 0.04mm (H) x 0.4mm (L) = 0.016mm²</td>
</tr>
<tr>
<td>NRC/SAA</td>
<td>NRC of 0.70 and above, SAA of 0.68 and above</td>
</tr>
<tr>
<td>Finish</td>
<td>PVDF to standard white or powder coating (Other colours are available upon request)</td>
</tr>
<tr>
<td>Coating</td>
<td>30mic thick of waterproofing paint without clogging.</td>
</tr>
<tr>
<td></td>
<td>Ultra-micro perforations composition: asbestos-free, non-radioactive &amp; contains no heavy-metal materials</td>
</tr>
<tr>
<td>Durability</td>
<td>Cleanable surface &amp; easy maintenance. Water &amp; dust-resistant</td>
</tr>
</tbody>
</table>

### Typical NRC Range of Different Products

<table>
<thead>
<tr>
<th>Category</th>
<th>Material</th>
<th>NRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Felted Panel</td>
<td>Mineral wool, rockwool sponge, mineral wool linen fabrics and cotton</td>
<td>0.40–0.90</td>
</tr>
<tr>
<td>Perforated Panel</td>
<td>Perforated gypsum panel, perforated plywood, perforated aluminium panel, perforated steel panel</td>
<td>0.50–0.70</td>
</tr>
<tr>
<td>Non-Perforated Panel</td>
<td>Plywood, gypsum panel, plastic panel steel panel</td>
<td>0.10–0.40</td>
</tr>
<tr>
<td>USG Boral Silenz™</td>
<td>High acoustical absorptive material, no additional soft fibre insulation material required</td>
<td>≥0.70</td>
</tr>
</tbody>
</table>
USG Boral Silenz™ Metal Ceiling Panel comes in modular pieces: rectangular 600mm (W) x 1200mm (L) or square 600mm (W) x 600mm (L). All systems including the clip-in, lay-on or the hook-on systems are made from patented Silenz™ acoustical metal fabric. Each metal fabric or panel is engineered with more than 250,000 ultra-micro perforation size of 0.04mm (H) x 0.4mm (L) = 0.016mm².

USG Boral Silenz™ Metal Ceiling Panel is ultra versatile with its water and dust-resistant properties and does not require any rockwool or glass fibre insulation. Hence they can be installed in wet areas without losing its NRC performance throughout its product life cycle.
**PRODUCT DATA**

<table>
<thead>
<tr>
<th>Material</th>
<th>Aluminium “Silenz™” metal fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Appearance</td>
<td>Plain, flat monolithic</td>
</tr>
<tr>
<td>System</td>
<td>Clip-In/ Lay-On/ Flat sheet/ Hook-On</td>
</tr>
<tr>
<td>Panel Size</td>
<td>600 (W) x 600mm L (Nominal)</td>
</tr>
<tr>
<td></td>
<td>600 (W) x 1200mm L (Nominal)</td>
</tr>
<tr>
<td></td>
<td>(Other custom shapes &amp; sizes available upon request)</td>
</tr>
<tr>
<td>Thickness</td>
<td>1.0mm</td>
</tr>
<tr>
<td>NRC/SAA</td>
<td>0.70/ 0.69 - System tested based on Type E250 Mounting (PSB Tested - ASTM C423)</td>
</tr>
<tr>
<td>NRC Enhancement</td>
<td>Can be enhanced with adjustment to cavity space</td>
</tr>
<tr>
<td>Finish</td>
<td>PVDF to standard white or powder coating</td>
</tr>
<tr>
<td></td>
<td>(Other colours are available upon request)</td>
</tr>
</tbody>
</table>

*TÜV SÜD PSB Test Report No: 7191174841-MEC17-EMK*

**SOUND ABSORPTION PROFILE**

The graph above reflects exceptional sound absorption performance within the low-mid frequency range that can be applied to MRT, Airports, HVAC units and Engine Rooms.

*Graph exacted from TÜV SÜD PSB Test Report No: 7191174841-MEC17-EMK*
USG Boral Silenz™ Baffles are unique linear baffles ceilings with plain surfaces that come in an unparalleled NRC of 0.70. The Linear Baffle Unit (LBU) has more than 250,000 ultra-micro perforation size of 0.04mm (H) x 0.4mm (L) = 0.016mm². With its homogeneous product properties, USG Boral Silenz™ ensures consistent product performance and durability.

The system layout is flexible and can be combined with luminaire and lighting fixtures to create an integrated ceiling system that is maintenance free with high acoustical performance. The product can be coated with PVDF to ensure colour durability, and the specially textured surface offers a visual experience at various viewing angles.

USG Boral Silenz™ Baffles are water and dust-resistant and do not require any rockwool or glass fibre insulation. Thus, it can be installed in wet areas with prolonged exposure to moisture without losing its NRC performance throughout its life cycle.

**BENEFITS AT A GLANCE**

- **HIGH SOUND ABSORPTION**
- **NON-COMBUSTIBLE**
- **NRC: 0.70**
- **NON-ASBESTOS**
- **CLEAN SURFACE**
- **ENVIRONMENTALLY FRIENDLY**
- **MONOLITHIC FLAT PLANE**

- **LIGHT-WEIGHT**
- **WATER-RESISTANT**
- **DURABLE**
- **MOULD-RESISTANT**
- **VERSATILE**
- **DUST PROOF**
- **PROLONGED PERFORMANCE**
INSTALLATION GUIDE

The suspension components consist of 30 x 30 x 3050 x 1.0mm thick GI Steel Primary Rail, with pre-punched holes at 100mm intervals, and accepts M6 threaded rods. The Primary Rail is spaced at 1500mm O.C. maximum, and suspended to soffit at 1000mm O.C. maximum. Each junction of linear baffles is connected by 30 x 30 x 280H x 1.5mm thick aluminium connecting post, which is suspended through the M6 threaded rod to the Primary Rail.

PRODUCT DATA

<table>
<thead>
<tr>
<th>Material</th>
<th>Aluminium “Silenz™” metal fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>280mm D x 30mm T x L</td>
</tr>
<tr>
<td>Thickness</td>
<td>1.0mm</td>
</tr>
<tr>
<td>Pitch</td>
<td>300mm O.C.</td>
</tr>
<tr>
<td>Thickness</td>
<td>1.0mm</td>
</tr>
<tr>
<td>NRC/SAA</td>
<td>0.70/0.68 - System tested with baffles at 300mm centres on a Type E400 Mounting (PSB Tested – ASTM C423)</td>
</tr>
<tr>
<td>NRC Enchancement</td>
<td>Can be enhanced with closer hanging pitch</td>
</tr>
<tr>
<td>Finish</td>
<td>PVDF to standard white or powder coating (Other colours are available upon request)</td>
</tr>
</tbody>
</table>

*SÜV SÜD PSB Test Report No: 71966181-MEC-01A-EMK

SOUND ABSORPTION PROFILE

*Silenz™ Key Performance*

When designed accordingly, USG Boral Silenz™ Baffles can significantly reduce background noise levels and reverberation times within a space to enhance speech intelligibility. Hence it is well suited for commercial office applications.

*Graph extracted from TÜV SÜD PSB Test Report No: 71966181-MEC-01A-EMK*
USG Boral Silenz™ Supercell is a unique oversized plain surface cell ceiling with an unparalleled NRC of 0.75. The open cell ceiling system comes in 600 x 600mm with Linear Baffle Unit of more than 250,000 ultra-micro perforation size of 0.04mm (H) x 0.4mm (L) = 0.016mm². With its homogeneous product properties, USG Boral Silenz™ ensures consistent product performance and durability, which could be absent in common composite panels.

USG Boral Silenz™ Supercell has a high NRC performance of 0.75 and is suitable for commercial applications such as airports and train stations, where a combination of aesthetic and acoustics are commonly required. An integrated ceiling system is achieved easily by combining the system and lighting fixtures to ensure ease of maintenance. The product can be coated with PVDF to ensure colour durability, and the specially textured surface offers a visual experience at various viewing angles.

USG Boral Silenz™ Supercell is water and dust-resistant and does not require any rockwool or glass fibre insulation. Thus, it can be installed in wet areas with prolonged exposure to moisture without losing its NRC performance throughout the product life cycle.

BENEFITS AT A GLANCE

- HIGH SOUND ABSORPTION
- NON-COMBUSTIBLE
- NRC: 0.75
- NON-ASBESTOS
- CLEAN SURFACE
- ENVIRONMENTALLY FRIENDLY
- MONOLITHIC FLAT PLANE
- LIGHT-WEIGHT
- WATER-RESISTANT
- DURABLE
- MOULD-RESISTANT
- VERSATILE
- DUST PROOF
- PROLONGED PERFORMANCE
PRODUCT DATA

**Material** | **Aluminium “Silenz™” metal fabric**
---|---
**Size** | 280mm D x 30mm T x 600mm L (Nominal)
**Thickness** | 1.0mm
**Cell Size** | 600 x 600mm
**NRC/SAA** | 0.75/0.72 - System tested based on Type E400 Mounting (PSB Tested-ASTM C423)
**NRC Enhancement** | Can be enhanced with smaller cell size
**Finish** | PVDF to standard white or powder coating (Other colours are available upon request)

*SÜD PSB Test Report No: 719661B1-02A-EMK

SOUND ABSORPTION PROFILE

When designed accordingly, USG Boral Silenz™ Supercell can significantly reduce background noise levels and reverberation times within large crowded spaces such as public transport stations, shopping malls, airports and commercial offices.

*Graph extracted from TÜV SÜD PSB Test Report No: 719661B1-02A-EMK*
USG Boral’s Silenz™ versatility lies in its aluminium metal fabric that is highly flexible to form into various shapes and sizes to suit most applications. It is also tested to resist dust build up, corrosion, and withstand most hostile conditions without compromising its acoustical performance, making it an ideal product for exterior use.

POSSIBLE SPECIAL APPLICATIONS ARE (BUT NOT LIMITED TO):

- Freeway Sound Barriers
- HVAC Silencer/ Acoustical Baffles
- Sound barrier for Engine Room walls and ceilings
- Soundproof/ Acoustic Louvre System
SILENZ™ PROJECT REFERENCES
( FOR PUBLIC TRANSPORT APPLICATIONS )

Jingmei Station
Longshan Temple Station
Linguang Station
Xianse Temple Station
Xinzhuan Fuduxin Station
Xinzhuan Fuduxin Station
WanLong Station
Zhongshan Station
Zhongxiao Xinsheng Station
USG Boral Silenz™ Colour Guide

- Polished White (W01)
- Beige White (W07)
- Ivory White (W04)
- Pearl Yellow (Y02)
- Black (B01)
- Cloud Grey (B05)
- Aqua Green (G03)
- Sky Blue (C05)

USG Boral Silenz™ Wood Look

- W07+01
- W07+08
- W07+24
- W01+01
- W01+08
- W01+24
- 2815+01
- 2815+08
- 2815+24
- 2816+01
- 2816+08
- 2816+24

Notes:
1. The colours depicted above are for reference only.
2. Colour codes as shown above must be included during the placement of orders.
3. The USG Boral Silenz™ range is available for a variety of applications.
Australia
China
India
Indonesia
Malaysia
New Zealand
Oman
Philippines
Saudi Arabia
**Singapore**
South Korea
Thailand
Vietnam

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