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**天戈实业集团有限公司
广东天戈声学科技有限公司**

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Guangdong TianGe Acoustic Technology Co. Ltd.**

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Service hotline :+86 17322789466
Web:www.acousticcn.com

天戈声学

文体

之

厅堂声学装饰专家

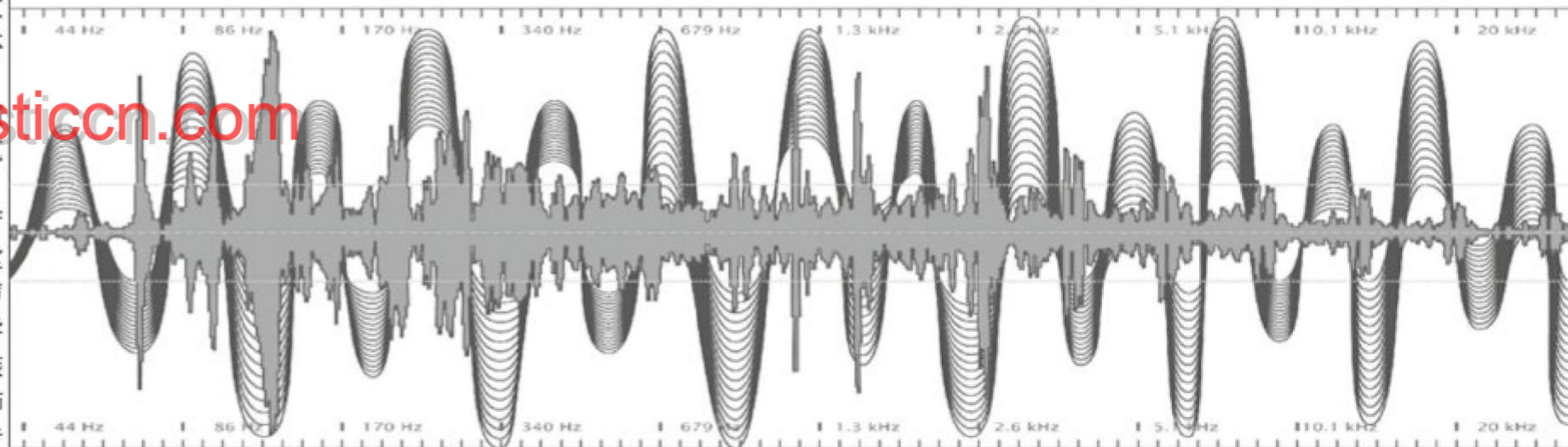
2023版

天戈声学



TIANGE ACOUSTICS

www.acousticcn.com



一流声学装饰 整体解决 方案服务商
The first-rate acoustic decoration integrated solution service provider

2023版
第十七期
17th edition



【天戈声学集团简介】

天戈声学成立于2008年，是中国一流的声学装饰整体解决方案服务商，旗下拥有自己的声学装饰设计公司、音响科技公司、营销公司以及自主1.8万多平方米的声学材料生产工厂，在职正式员工150多人，天戈材料工厂和声学科技两家公司均被评为广东省高新技术企业，同时也是国家《民用建筑隔声设计规范》、《超大公共空间建筑声学设计规范》、《学校声环境设计规范》和《旅馆声环境设计规范》参编单位，中国舞台与美术学会专家委员会单位，天戈拥有自主知识产权的专利产品50多种。天戈企业获得ISO9001, ISO14001, ISO45001认证，天戈产品获得欧盟CE认证、同时我司还具有建筑声学设计一级、建筑装饰施工二级和建筑装饰工程专项设计乙级资质。

我们专注于提供包括剧院、体育馆、多功能厅、演艺中心、文化中心、音乐厅、礼堂、博物馆、高端展厅、家庭影院、学校等室内装饰设计、灯光音响设计施工的整体声学装饰解决方案服务。我们致力于为客户省钱、省时、省心的服务理念，让饰界拥有天籁之音，让声与美完美呈现是天戈声学人孜孜追求的崇高目标！

TianGe Group Profile

TianGe Group was founded in 2008, is the first-rate acoustics decoration integrated solution service provider in China. It has its own acoustics decoration design company, audio technology company, marketing company and production base of 18,000 square meters, 150 regular employees. Both of our factory TianGe Acoustic & Decor Material Manufacturer and TianGe Acoustic Technology Company have been rated as a high-tech enterprise in Guangdong Province.

The Technology company is the edit unit for national standard book of "Code for Design of Sound insulation for civil buildings" and the book of "Code for Design of Acoustic for Shared Spaces in Large Buildings", the book of "Code for Design of School Acoustic Environment" and "Code for Design of Hotel Acoustic Environment". It is also the expert committee unit of China Institute of Stage Design.

TianGe owns more than 50 kinds of patented products and TianGe factory has obtained ISO9001, ISO14001, ISO45001 certification. TianGe products have obtained CE certification from the European Union, meanwhile, our company also has first-class architectural acoustics design qualification and second-class architectural construction qualification and Grade B qualification for special design of architectural decoration engineering.

We focus on providing integrated acoustic decoration solution services for the spaces that including theaters, stadiums, multi-function halls, performing arts centers, cultural centers, concert halls, auditoriums, museums, high-end exhibition halls, home theaters, schools and other interior decoration design, lighting and audio design and construction. We are committed to the service concept of saving money, saving time and free of worry for our customers. Let the decoration industry have the sound of nature, and let the sound and beauty perfectly present are the lofty goals pursued by the people of TianGe Acoustics!

双高新技术企业
专精特新企业
New High-tech Enterprise
Professional High-tech
Enterprise

挂牌企业
股权代码: 220089
Listed-company
Stock Code: 220089

100+
声学专业人员
100+ Acoustic
Professionals

50+ 项
声学专利技术
50+ Acoustic
Patented Technology

150+
国际检验报告
150+ International
Test Report

40%
产品出口各国
40% Product
Export

【天戈声学新材料产业园效果图】

TianGe Acoustic 3D rendering of New Material Industrial Park



产业园建筑面积 43000 平方米，在建中，2023 年 12 月竣工
Industrial Park area: 43000SQM, under construction, will be completed in Oct.,2023.

【天戈声学企业文化】

TianGe Acoustic Company Culture

【司训】：生于忧患，死于安逸

Company Warning: Born of sorrow, died of ease

【使命】：造中国声学优品，传饰界天籁之音，给人们听觉的无限关怀！

Mission: Produce China quality acoustic product, transmit sounds of nature in decoration world,
and give endless concern to human's hearing.

【愿景】：成为一流声学环境整体解决方案服务商，为家人创造幸福生活。

Vision: Become first-rate acoustic environment integrated solution service provider, create happy
life for the family.

【价值观】：自强、感恩、合作、没有不可能

Values: self-improvement, gratitude, cooperation, no impossibility

www.acousticcn.com

【发展理念】：坚持做难而正确的事情

Development Concept: Insist on doing the difficult but right thing!

【团队合影】 Team Group Photo



【黄小刚】

董事长 / 创始人 / 党支部书记
注册建造师 / 高级工程师
工程总承包 (EPC) 高级经理

Jacky Huang
Chairman/Founder/Party Branch Secretary
Registered Constructor/Senior Engineer
Senior EPC Manager

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国外营销中心
Foreign Trade Marketing Center



国内营销中心
Domestic Marketing Center



工程管理部
Engineering Management Center



设计部
Design Department



运营管理中心
Operation Management Center



好声音事业部
Good Sound Department



研发技术部
Research & Development Technology Department



生产管理中心
Production Management Center





2008 年至今
Since 2008

共做过 **12500** 个项目
服务超过 **11500** 个客户

Total Complete more than 12500 Projects
Serve over 11500 Clients

www.acousticcn.com

阿尔及利亚康斯坦丁 3000 座大剧院项目
The 3,000-seat Grand Theatre, Constantine, Algeria

佛山国际体育文化演艺中心
Foshan GBA International Sports
Culture Center in Shenzhen

深圳华为清澜山学校
Huawei's Tsinglan School
in Shenzhen

第七届世界军人运动会赛场
The Stadium of the 7th CISM
Military World Game

敦煌丝绸之路会展中心
Dunhuang Silk Road Convention
And Exhibition Center

厦门地铁 1 号线第五标段
The 5th Section of Xiamen
Metro Line

广州从化生态设计小镇
Ecological Design Town
in Conghua, Guangzhou

澳门浸信中学体育馆
Macau Baptist Middle
School Gymnasium

贵州省福泉大剧院
Fuquan Grand Theater,
Guizhou Province

澳门塔石体育馆
Macau Tower Stone
Stadium

湛江奥体中心
Zhanjiang Olympic
Sports Center

珠海长隆海洋科学馆
Chimelong Ocean
Science Hall in Zhuhai

澳门文华东方大酒店
Mandarin Oriental
Hotel Macau

国家知识产权局专利审查协作方电中心
National Intellectual Property Patent
Examination Collaboration Center

香港中文大学
Hong Kong Chinese and
English University

澳门特别行政区金沙赌场
Macau Special Administrative
Region Sands Casino

佛山保利新城商务中心
Foshan Poly New City
Business Center

广东河源水母剧院
Guangdong Heyuan
Jellyfish Theater

福建省晋江市第二体育中心
The Second Sports Center of
Jinjiang, Fujian Province

遵义奥体中心
Zunyi Olympic Sports
Center Theater

福建省晋江市第二体育中心
The Second Sports Center of
Jinjiang, Fujian Province

柳州文化中心
Liuzhou Culture
Center

南宁国际会展中心
Nanning International
Convention Center

香港大学
Hong Kong
university

天津华夏未来·天人世界剧场
TSY Universe Theater of Tianjin
Cathay Future

廊坊大剧院
Langfang Grand Theater

广州圣丰索菲特大酒店（五星级）/ 中国人民解放军驻澳门部队
Sofitel Guangzhou Shengfeng Hotel (five star)/Chinese People's Liberation
Army troops in Macao

埃塞俄比亚的斯国家外事大楼大礼堂及会议室
The Auditorium and Conference Room of the Foreign Affairs
Building of Addis, Ethiopia

福建省运会莆田射击馆 / 中国人民解放军第 41 军大礼堂及作战指挥厅
Fujian Provincial Games Putian Shooting Hall/Chinese People's Liberation
Army 41th Army Auditorium and Operations Command

玻利维亚政府礼堂
Bolivia Government
Auditorium

中央电视台 / 人民大会堂 / 美的总部大厦 / 中国酒泉卫星发射中心 / 浙江省金华市文化中心
CCTV/Great Hall of the People/Midea headquarters building/China Jiuquan Satellite Launch
Center/Jinhua City, Zhejiang Province Cultural Center

海南省政府海府路办公大楼 / 湘潭体育中心 / 青海省电力公司
Hainan Provincial Government Haifu Road office building/
Xiangtan Sports Center/Qinghai Electric Power Company

15 周年
Years

十五年专注·声学装饰
15 Years Focused On The
Acoustic Decoration

马来西亚新山和丽轩宴会厅
Helixuan Banquet Hall, Johor
Bahru, Malaysian

哈萨克斯坦剧院
Kazakhstan Theatre

坦桑尼亚社保大楼
Tanzania Social Security
Building

肯尼亚内罗毕博览会大厅
Nairobi Expo Hall, Kenya Bahru,
Malaysian

老挝电影院
Laos Cinema

埃塞俄比亚的斯世纪商场电影
Century Mall Cinema in Addis ,Ethiopia

重庆永川体育馆
Yongchuan Gymnasium
in Chongqing

印度班加罗尔大学
University of
Bangalore, India

越南河内友谊宫
Friendship Palace,
Hanoi, Vietnam

吉布提多功能厅
Multifunction Hall in
Djibouti

三大核心业务 Three core business

文体 演艺 厅堂声学装饰专家

涵盖声学装饰材料生产、声学装饰设计、声学装饰施工三项核心业务，天戈致力于成为声学装饰整体解决方案的一流服务商。

Acoustic Decoration Expert in Cultural Sports, Performing Centers & Halls
Covering the production of acoustic decorative materials, acoustic decoration design, acoustic decoration construction three core business, TianGe is committed to become the first class service provider of acoustic decoration overall solution.

文体

包括了文化馆、体育馆、篮球馆、游泳馆、博物馆、美术馆、图书馆等。

Cultural Sports

Including cultural center, gymnasium, basketball hall, swimming hall, museum, art gallery, library, etc.

演艺

包括了剧院、演艺馆、表演馆、演播厅、音乐厅、排练厅、多功能礼堂、影院、录音棚、KTV等。

Performing Centers

Including the theater, performing arts hall, performance hall, studio, concert hall, rehearsal hall, multi-function auditorium, cinema, recording studio, KTV, etc.

厅堂

包括了会议厅、宴会厅、多功能厅、候车（机）厅、会展中心、企业展厅、酒店、学校、医院、办公及商业空间声学装饰工程。

Halls

Including conference hall, banquet hall, multi-function hall, waiting (machine) hall, exhibition center, enterprise exhibition hall, hotel, school, hospital, office and commercial space acoustic decoration projects.

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六大场所 Six Places



1 体育场馆 Gymnasium



2 剧院 / 音乐厅 Theatre / Concert Hall



3 会议厅堂 Conference Hall



4 电影院 Cinema



5 录播室 Studio



6 娱乐空间 Music place (space)



1、体育馆场所 Sports venues

- 1 佛山国际体育文化演艺中心
Foshan GBA International Sports Culture Center
- 2 福建晋江职业中专学校体育馆
Gymnasium of Fujian Jinjiang Vocational Technical College



3 黑龙江北安区冰球馆
Hockey Hall in Bei'an District, Heilongjiang

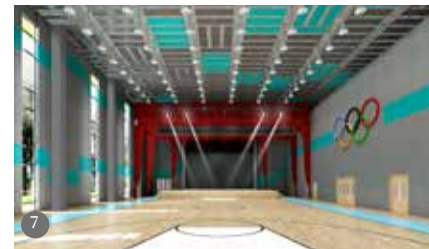
4 东莞松山湖小学体育馆
Gymnasium of Dongguan Songshan Lake Primary School,

5 罗山新区体育中心
Luoshan New District Sports Center

6 温州中学体育馆
Wenzhou Middle School's gymnasium

7 株洲第一中学学生多功能活动中心体育馆
Multifunctional Activity Center Gym of Zhuzhou No.1 Senior High School

8 遵义播州体育馆
Bozhou Stadium in Zunyi



2、剧院 / 音乐厅场所 Theatre / Concert Hall

- 1 沙特 CIVIC CENTER 多功能剧院
Civic Center Multi-functional Theatre in Saudi Arabia
- 2 华商外国语学校音乐厅
Huashang Foreign Language School Concert Hall
- 3 河南正阳大剧院
Zhengyang Grand Theater in Henan
- 4 深圳国际交流学院剧院
Theatre of Shenzhen International Exchange College

- 5 横沥模具文化中心
Hengli Mould Culture Center
- 6 照金干部学院礼堂
Auditorium of Zhaojin Executive Leadership Academy
- 7 山西龙门村影剧院
Shanxi Longmen Village Movie Theater

3、会议室场所 Meeting Hall

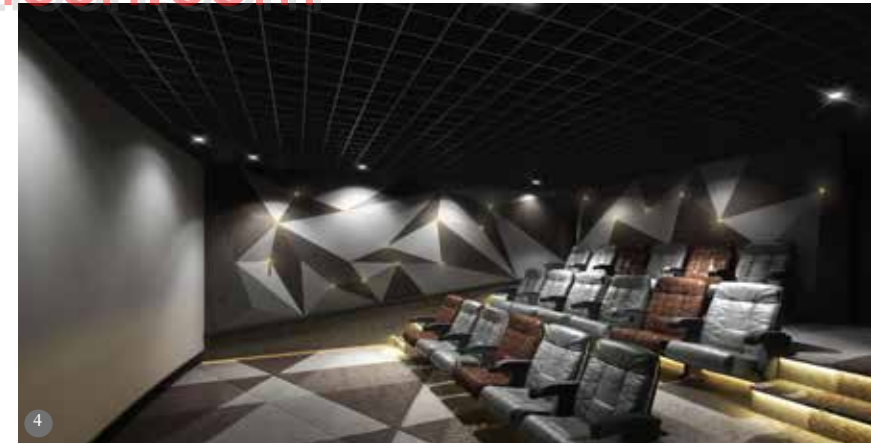
- 1 江苏海滨培训会议室
Seaside Training Conference Room in Jiangsu
- 2 中山江波龙科技园 报告厅
Jiangbolong Science Park's Conference Room in Zhongshan
- 3 冈比亚国际会议中心会议厅
International onvention Center's conference hall in Gambia



- 4 中国软件 CBD 总部国际会议室
International conference room at China software CBD headquarters
- 5 非洲吉布提报告厅
Conference Room in Djibouti, Africa
- 6 从化世界生态设计大会会议室
World Eco Design Conference Hall in Conghua

4、影院场所 Cinema

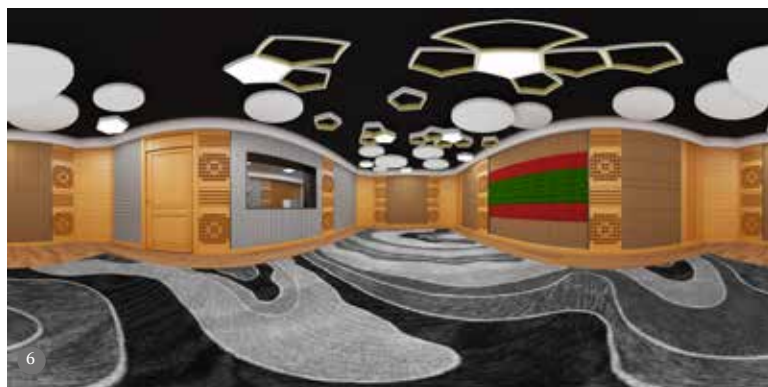
- 1 番禺影音室
Video Room in Panyu Guangzhou
- 2 梅州一五大楼科技影音室
Yiwu Building Sci-tech Video Room in Meizhou
- 3 安塞尔电影院
Ansaier Cinema



- 4 越界思哲国际影城电影院
Yuejiesizhe International Cinema
- 5 安徽工程大学新图书馆多媒体视听室
Anhui Engineering University's Library multimedia audio-visual room
- 6 金沙洲家庭影院
Home Theatre at Jinshazhou
- 7 菲律宾家庭影院
Home Theatre in Phillipine



5、录播室场所 Rechording studio



- 1 花都录播室
Huadu Studio
- 2 阳春碧桂园小学教室
Biguiyuan Primary School in Yangchun
- 3 北方产业园直播间
Broadcast Room in North Industrial Park
- 4 花巷教堂录音棚
The Church Recording Studio in Huaxiang
- 5 工业经济演播室
Industrial Economy Studio
- 6 龙之梦东苑录音棚
Dragon' Dream East Park Studio

6、娱乐空间 Music place (space)

- 1 金城湾 KTV
Jinyuwan KTV
- 2 深圳家庭 KTV
Shenzhen Family KTV
- 3 江西省永丰县宝丽金 KTV
Baojinli KTV in Yongfeng Jiangxi
- 4 四川达州 BOSS 酒吧
Boss Bar in Dazhou Sichuan
- 5 浙江嵊州嵊尚汇酒吧
Shengshanghui Bar in Shengzhou Zhejiang



天戈声学产品介绍篇 >>>

Introduction To Tiange Acoustic Products>>>



一、【吸声系列】：

Sound Absorption Series

- 23 / 微粒吸声板
Particle Acoustic Panel
- 24 / 微粒吸声板（平面系列）
Particle Acoustic Panel (Flat Series)
- 25 / 轻质微粒吸声素板
Lightweight Particle Acoustic Panel
- 26 / 轻质微粒吸声喷涂 / 批刮板
Lightweight Particulate Sound Absorbing Spray/Batch Scraper
- 27 / 微粒吸声板 FDA 异型
Particle Acoustic Panel (FDA Special-shaped Series)
- 28 / 微粒吸声板户外
Particle Acoustic Panel (Outdoor Series)
- 29 / 吸声岩板
Acoustic Marble Slate
- 30 / 吸声岩板大理石纹
Acoustic Marble Slate - The Marbling Series
- 31 / 吸声岩板吸声画
Acoustic Marble Slate - Acoustic Painting Series
- 32 / 吸声岩板木纹
Acoustic Marble Slate - Wood Grain Series
- 33 / 吸声岩板单色
Acoustic Marble Slate - Pure Color Series
- 39 / 槽孔类吸声板
Grooved Acoustic Panel

- 40 / 红玻镁槽孔吸声板
Red MgO Grooved Acoustic Panel

- 41 / 碳塑（素）槽孔吸声板
Carbon Plastic (plain) Slot Hole Acoustic Panel

- 43 / 槽孔吸声板的基材
Base Material of Grooved Acoustic Panel

- 46 / 常规穿孔吸声板
Standard Perforated Acoustic Panel

- 47 / 微穿孔吸声板
Micro-perforated Acoustic Panel

- 49 / 槽铝吸声板
Aluminum Grooved Acoustic Panel

- 51 / 条形吸声板
Salt Acoustic Panel

- 53 / 吸声软包
Fabric Acoustic Panel

- 57 / 吸声棉包
Sound Absorbing Cotton Bag

- 58 / 吸声泡棉
Melamine Foam

- 59 / 空间吸声体类
Suspended Sound Absorber Series

- 61 / 艺术天花吸声体
Art Ceiling Decoration Absorber

- 62 / 大小孔空间吸声体
Irregular Perforated Suspended Sound Absorber

- 63 / 网状空间吸声体
Mesh facing Suspended Sound Absorber

- 64 / 聚酯纤维吸声板
Polyester Fiber Acoustic Panel

- 65 / 艺术 3D 聚酯纤维
3D Art Polyester Fiber Acoustic Panel

- 67 / 新型吸音硬包类
Newly Acoustic Hard Fiber Panel Series

- 68 / 彩纤吸声板
Color Fabric Acoustic Decor Panel

- 69 / 声学吸音画
Acoustic Painting Panel

- 70 / 木丝吸声板
Wood Wool Acoustic Board

二、【非标定制产品系列】：

Non-standard custom product series

71-74

三、【扩散反射系列】：

Diffuse & Reflection Series

- 76 / MLS 扩散体
MLS Diffuser

- 77 / 声学墙挂板
Acoustic Decor Wall Panel

- 78 / QRD-N1\N2 扩散体
QRD-N1\N2 Diffuser

- 79 / QRD-D1\D2 扩散体
QRD-D1\D2 Diffuser

- 80 / QRD-N3\N4 扩散体
QRD-N3\N4 Diffuser

- 81 / QRD-DW5 扩散体
QRD-DW5 Diffuser

- 82 / 浮云扩散体
Cloud Shape Diffuser

四、【隔音减震系列】：

Sound Insulation & Vibration Series

- 83 / 隔音板
Sound Insulation Board

- 85 / 隔音毡
Deadening Felt

- 86 / 天花 / 墙身减振器
Ceiling/ Wall Shock Absorber

- 87 / 地面隔音减震垫
Sound And Vibration Absorption Mat

- 88 / T8 无机纤维喷涂
T8 Inorganic Fiber Spray Coating

- 89 / 钢质木纹隔音门
Soundproof Metal Door

五、【新风隔声窗】：

Fresh Air Sound Insulation Window

91-92

93-100 / 国标
National Standard

一、【吸声系列】

Sound Absorption Series



微粒吸声板（平面系列）

Particle Acoustic Panel (Flat Series)

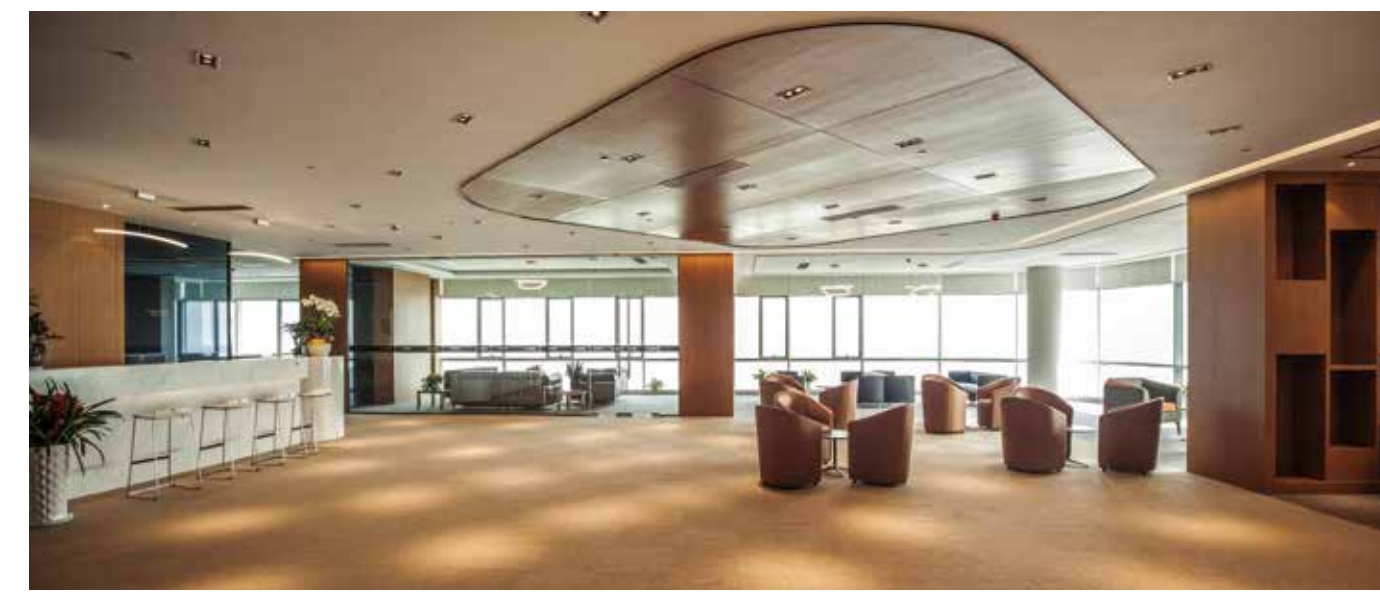
产品组成：微粒吸声板 + 喷涂 / 批刮 / 肌理
 安装方式：微粒吸声无缝安装
 产品质感：粗糙 / 平整颗粒质感（3-4mm 厚）
 产品规格：1200mm×600mm×8mm/15mm 等
 防火等级：A2 级
 环保等级：E0 级
 适用场所：艺术中心、音乐厅、学校、报告厅、博物馆等



Product composition: particle sound-absorbing board+spraying/batch scraping/texture
 Installation mode: particulate sound absorption seamless installation
 Product texture: rough/flat grain texture (3-4mm thick)
 Product specification: 1200mm × 600mm × 8mm/15mm, etc
 Fire rating: A2
 Environmental protection level: E0
 Applicable places: art center, concert hall, school, lecture hall, museum, etc



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微粒吸声板 Particle Acoustic Panel

微粒吸声板，精选特定目数的无机颗粒，如天然砂粒，矿渣颗粒等，将胶凝溶剂均匀且极薄的覆盖在全部颗粒表面，形成特定角形系数的覆膜微粒。在该微粒的作用下，覆膜层固化，使微小颗粒就像被焊接一样聚合在一起，微粒之间天然地形成了大量的、不规则的、相互联通的纳米级小孔洞。当声波撞击到材料表面时，一部反射回去，一部分穿过纳米级的小孔洞经摩擦，使声能产生热能逐步衰减消耗，从而达到吸声降噪的功能，一般情况下，吸声系数 NRC 可达 0.7-0.9。

在该工艺中，微粒粒径级配比与聚合方式均可精确地调控，进而确定了内部孔洞的大小及排列方式，由此可以根据实际需求进行自定义设计并制作不同声学特性的吸声降噪产品。该工艺生产的产品强度可达 0.7Mpa、防火 A2 级、产烟特性 S1 级，燃烧滴落微粒等级达 d0 级、防潮、抗冻、耐酸碱、抗盐雾防腐蚀，耐老化，而且工艺中采用绿色胶凝材料，使得微粒产品无任何有害挥发物，是绿色环保的声学材料。



Particle sound-absorbing plate: select inorganic particles of specific mesh size, such as natural sand particles, slag particles, etc., and evenly and thinly cover the surface of all particles with gelling solvent to form coated particles with specific angle coefficient. Under the action of the particles, the coating layer is solidified, so that the small particles are polymerized as if they were welded together, and a large number of irregular and interconnected nano sized small holes are naturally formed between the particles. When the sound wave hits the material surface, one part will be reflected back, and the other part will pass through the nano sized holes for friction, so that the heat energy generated by the sound energy will be gradually attenuated and consumed, thus achieving the function of sound absorption and noise reduction. Generally, the sound absorption coefficient NRC can reach 0.7-0.9.

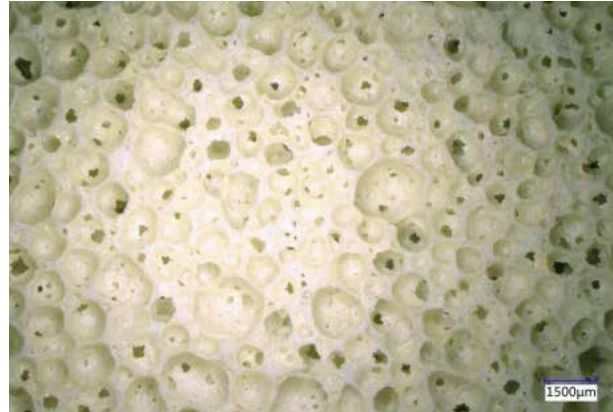
In this process, the particle size fraction and polymerization mode can be precisely controlled, and the size and arrangement of internal holes can be determined. Therefore, customized design can be carried out according to actual needs and sound absorption and noise reduction products with different acoustic characteristics can be made. The strength of the products produced by this process can reach 0.7Mpa, fire protection A2, smoke production characteristic S1, and the level of burning and dropping particles can reach d0, which is moisture-proof, antifreeze, acid and alkali resistant, salt spray resistant and anti-corrosion, and anti-aging. In addition, green cementing materials are used in the process, so that the particulate products are free of any harmful volatiles, and are green and environment-friendly acoustic materials.

轻质微粒吸声素板

Lightweight Particle Acoustic Panel

产品质感: 素色 / 喷色处理或雕刻造型
 产品规格: 1200mm × 600mm × 15mm
 产品密度: 350~400kg/m³ (15mm厚 5kg/m²)
 防火等级: A1 级
 环保等级: E0 级
 适用场所: 艺术中心、音乐厅、学校、报告厅、
 博物馆、声屏障等墙面和天花


Product texture: solid color/color spraying treatment or carving modeling
 Product specification: 1200mm × 600mm × 15mm
 Product density: 350~400kg/m³ (15mm thick 5kg/m²)
 Fire rating: A1
 Environmental protection level: E0
 Applicable places: art center, concert hall, school, lecture hall
 Walls and ceilings such as museums and sound barriers




采用大宗固废资源经特有技术及 1200°C 高温煅烧工业化生产后形成一种低密度、高通孔率的瓷化材料。表面形成大量不规则蜂窝状孔洞。内部无纤维，孔与孔之间由孔棱连接，相互贯通，轻结构，因此具有很好的保温隔热、吸声降噪、以及过滤和分离性能，属工业固废资源化充分利用的环保型产品。

Large amount of solid waste resources are used to form a low density and high through porosity porcelain material after special technology and industrial production of 1200 °C high-temperature calcination. A large number of irregular honeycomb holes are formed on the surface. There is no fiber inside, and holes are connected by hole edges, which are connected with each other and light in structure. Therefore, it has good thermal insulation, sound absorption and noise reduction, filtering and separation performance, and it is an environment-friendly product for full utilization of industrial solid wastes.


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 **吸音降噪强**
 声波吸收效果好，吸声、降噪系数高达 0.8，符合建筑隔声设计规范 GB50118-2010。

 **轻质**
 质量轻、安装便捷、有效减少安装荷载。

 **防火阻燃**
 导热系数小、A1 级防火，有效阻止燃烧蔓延。

 **绿色环保**
 抗菌、无甲醛、无异味。

 **耐候性**
 经久耐用、耐酸碱、耐腐蚀，不易老化，吸音效果好，产品使用寿命长。

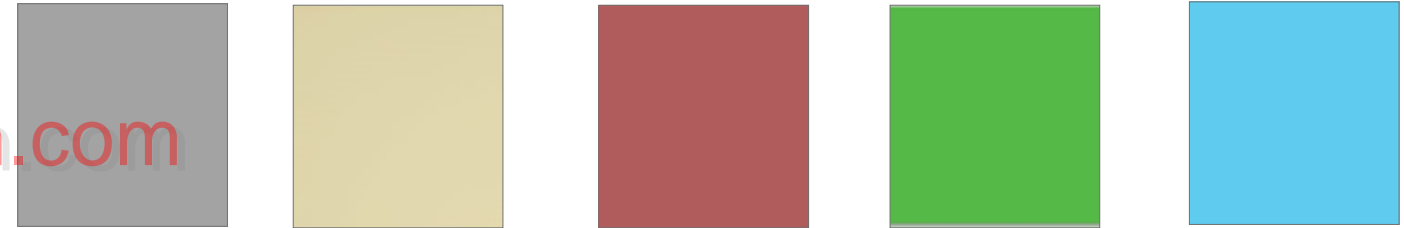
 **洁净度高**
 易清洗、易保养，无纤维飞絮等飘散。

轻质微粒吸声喷涂 / 批刮板

Lightweight Particulate Sound Absorbing Spray/Batch Scraper

产品组成: 轻质微粒吸声板 + 喷涂 / 批刮 / 肌理
 安装方式: 微粒吸声无缝安装
 产品质感: 平整颗粒质感 (表面吸声涂料 3mm 厚)
 产品规格: 1200mm × 600mm × 基板厚 15mm + 表面 3mm
 产品密度: 330kg/m³ (15mm厚 5kg/m²)
 吸声涂料密度: 1500kg/m³ (3mm厚 4.5kg/m²)
 防火等级: A2 级
 环保等级: E0 级
 适用场所: 艺术中心、音乐厅、学校、报告厅、博物馆等墙面和天花

Product composition: light particle sound-absorbing board + spraying/batch scraping/texture
 Installation mode: particulate sound absorption seamless installation
 Product texture: flat particle texture (3mm thick surface acoustic paint)
 Product specification: 1200mm × 600mm × Base plate thickness 15mm + surface 3mm
 Product density: 330kg/m³ (15mm thick 5kg/m²)
 Acoustic paint density: 1500kg/m³ (3mm thick 4.5kg/m²)
 Fire rating: A2
 Environmental protection level: E0
 Applicable places: walls and ceilings of art centers, concert halls, schools, lecture halls, museums, etc



微粒吸声板 (FDA 异型系列)

Particle Acoustic Panel (FDA Special-shaped Series)

产品规格: 定制
 防火等级: A2 级
 环保等级: E0 级、无甲醛释放
 产品造型: 任意造型、任意肌理、任意色彩

Product specification: customized
 Fire rating: A2
 Environmental protection grade: E0, no formaldehyde emission
 Product modeling: arbitrary modeling, arbitrary texture, arbitrary color



产品性能: 吸声与扩散可设计、吸声频率可定制、扩散频率可调节, 断裂载荷与 GRG 媲美, 可抵抗强外力破坏, 不变形, 主材湿涨率不大于 0.1%, 热膨胀系数与水泥制品类似, 耐用与建筑同寿命。

Product performance: the sound absorption and diffusion can be designed, the sound absorption frequency can be customized, and the diffusion frequency can be adjusted. The breaking load is comparable to GRG, and it can resist strong external force damage without deformation. The moisture expansion rate of the main material is not more than 0.1%. The thermal expansion series is similar to the cement products, and it is durable and has the same service life as the building.



微粒吸声板 (户外系列)

Particle Acoustic Panel (Outdoor Series)

产品规格: 定制
 产品质感: 平整面的凹凸质感
 防火等级: A2 级
 环保等级: E0 级、无甲醛释放
 适用场所: 艺术中心、音乐厅、学校、报告厅、博物馆等

Product specification: customized
 Product texture: concave convex texture of flat surface
 Fire rating: A2
 Environmental protection grade: E0, no formaldehyde emission
 Applicable places: art center, concert hall, school, lecture hall, museum, etc



吸声岩板 大理石纹系列

Acoustic Marble Slate - The Marbling Series

产品规格: 600 x 1200 x 8mm (15mm)

防火等级: A2 级

环保等级: E0 级、无甲醛释放

适用场所: 艺术中心、音乐厅、学校、报告厅、博物馆等。

产品说明: 表面纹理可更换, 可提供原图定制。

Product specification: 600 x 1200 x 8mm (15mm)

Fire rating: A2

Environmental protection grade: E0, no formaldehyde emission

Applicable places: art center, concert hall, school, lecture hall, museum, etc.

Product description: The surface texture can be changed, and the original drawing can be customized.



MS-001



MS-002



MS-003



MS-004



MS-005

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吸声岩板 Acoustic Marble Slate

吸声岩板精选特定目数的无机颗粒, 如天然砂粒, 矿渣颗粒等, 将胶凝溶剂均匀且极薄的覆盖在全部颗粒表面, 形成特定角形系数的覆膜微粒。在该微粒的作用下, 覆膜层固化, 使微小颗粒就像被焊接一样聚合在一起, 微粒之间天然地形成了大量的、不规则的、相互联通的微小孔隙。在该工艺中微粒粒径级配比与聚合方式均可精确地调控, 进而确定了内部孔隙的大小及排列方式, 由此可以根据实际需求进行自定义设计并制作不同声学特性的降噪产品。该工艺生产的产品强度高、防火、防潮、抗冻、耐老化, 而且工艺中采用绿色胶凝材料, 使得微粒产品无任何有害挥发物, 是绿色环保的声学材料。



The sound-absorbing rock plate selects inorganic particles of specific mesh size, such as natural sand particles, slag particles, etc., and evenly and thinly covers the surface of all particles with gelling solvent to form coated particles with specific angle coefficient. Under the action of the particles, the coating layer is solidified, so that the small particles are polymerized as if they were welded together, and a large number of irregular and interconnected small pores are naturally formed between the particles. In this process, the particle size fraction and polymerization mode can be precisely controlled, and the size and arrangement of internal pores can be determined. Therefore, customized design can be carried out according to actual needs and noise reduction products with different acoustic characteristics can be made. The products produced by this process have high strength, fire resistance, moisture resistance, frost resistance and aging resistance. In addition, green cementing materials are used in the process, so that the particulate products are free of any harmful volatiles and are green and environment-friendly acoustic materials.



不规则的石英颗粒并条有序的排放, 使表面形成无数纳米级孔洞, 从而达成吸声降噪的功能。自由散漫而高贵的石纹结合声学原理和环境空间的要求, 合理选择布置, 使美感呼之欲出。雅气而不奢华, 声音的清晰, 空间的淡雅, 放眼一看心旷神怡。

The orderly discharge of irregular quartz particles makes the surface form countless nano scale holes, thus achieving the function of sound absorption and noise reduction. The free and elegant stone pattern combines the acoustic principle and the requirements of environmental space, and reasonably chooses the layout to make the aesthetic feeling come out. Elegant but not luxurious, with clear sound and elegant space, you can feel relaxed and happy at a glance.

吸声岩板 吸声画系列

Acoustic Marble Slate - Acoustic Painting Series

产品规格：600 x 1200 x 8mm (15mm)
 防火等级：A2 级
 环保等级：E0 级、无甲醛释放
 适用场所：艺术中心、会议室、学校、报告厅、家装、商用空间等。
 产品说明：表面艺术画可更换，可提供原图定制。

Product specification: 600 x 1200 x 8mm (15mm)
 Fire rating: A2
 Environmental protection grade: E0, no formaldehyde emission
 Applicable places: art center, conference room, school, lecture hall, home decoration, commercial space, etc.
 Product description: The surface art painting can be replaced, and the original drawing can be customized.



厅堂的空间艺术感，搭配合适的画能带活空间的灵气，小小的一幅画可提升空间的整体美感。
 表面纳米级的孔洞根据声学原理使声能转换为热能衰减消耗，降低室内回声，提升视觉和音质的享受。
 装饰与吸声两者结合一体，给你带来无限的想象。

The sense of space art in the hall can bring the aura of living space with appropriate painting, and a small painting can enhance the overall aesthetic feeling of the space.
 The nano holes on the surface convert sound energy into heat energy according to acoustic principle to reduce consumption, reduce indoor echo, and improve the enjoyment of vision and sound quality.
 The combination of decoration and sound absorption brings you unlimited imagination.

吸声岩板 木纹系列

Acoustic Marble Slate - Wood Grain Series

产品规格：600 x 1200 x 8mm (15mm)
 防火等级：A2 级
 环保等级：E0 级、无甲醛释放
 适用场所：艺术中心、音乐厅、学校、报告厅、博物馆等。
 产品说明：表面纹理可更换，可提供原图定制。

Product specification: 600 x 1200 x 8mm (15mm)
 Fire rating: A2
 Environmental protection grade: E0, no formaldehyde emission
 Applicable places: art center, concert hall, school, lecture hall, museum, etc.
 Product description: The surface texture can be changed, and the original drawing can be customized.



MM-003

MM-004

MM-005

MM-006



砂粒与木纹合理搭配，保有通透吸声功能同时还可添上美丽多彩的木纹，大胆利用色彩的交融结合，使空间形成我们理想的样子。去掉嘈杂去掉浮华，使声音圆润而清晰。美……空间……静……生活！对了，是你想要的样子！

The sand and wood grain are reasonably matched to maintain the transparent sound absorption function, and at the same time, beautiful and colorful wood grain can be added. The blending and combination of colors can be boldly used to make the space form our ideal appearance. Get rid of noise and glitz to make the sound mellow and clear. Beauty... space... quiet... life! By the way, it's what you want!



吸声岩板 单色系列

Acoustic Marble Slate - Pure Color Series

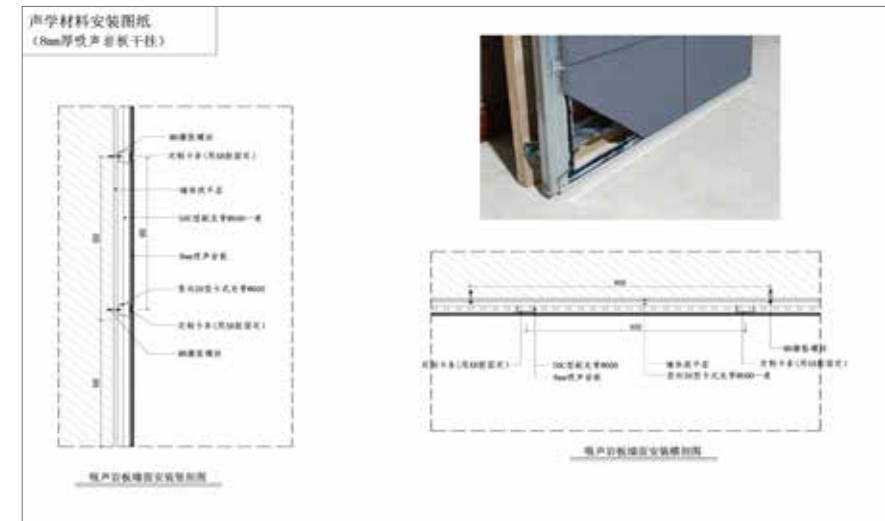
产品规格: 600 x 1200 x 8mm (15mm)
防火等级: A2 级
环保等级: E0 级、无甲醛释放
适用场所: 艺术中心、音乐厅、学校、报告厅、博物馆等。
产品说明: 可参照传统涂料色卡选色, 此款产品安装后可以见板缝。

Product specification: 600 x 1200 x 8mm (15mm)
Fire rating: A2
Environmental protection grade: E0, no formaldehyde emission
Applicable places: art center, concert hall, school, lecture hall, museum, etc.
Product description: The color can be selected by referring to the traditional paint color card. After the installation of this product, the seam can be seen.

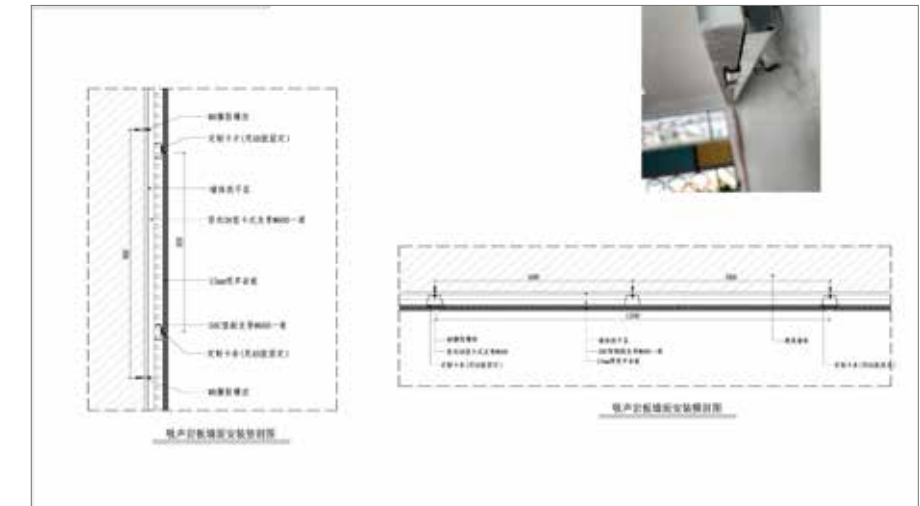


吸声岩板安装节点图

Acoustic Marble Slate Installation Instruction



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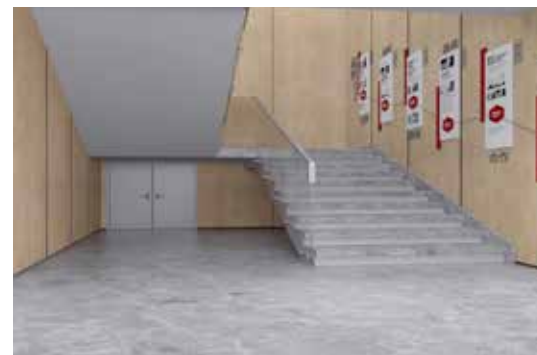


吸声系统性能参数

Sound Absorption System Performance Parameters

8mm 高强度吸声板 (经权威机构检测)
8mm high-strength sound-absorbing plate (tested by the authority)

项目 project	性能指标 performance index	检测标准 Test standard
甲醛释放量 Formaldehyde emission	未检出 Not detected	GB/T 17657-2013
化合物释放 (TVOC) Compound release (TVOC)	0.025mg/(m ³ ·h)	HJ 571-2010
材料密度 Material density	1372kg/m ³	GB/T 5486-20088
抗压强度 compressive strength	24.4Mpa	GB/T 50081-2002
抗折强度 Flexural strength	7Mpa	GB/T 7019-2014
抗冻性 Frost resistance	无破坏 No damage	JC/T 2185-2013(2017)
吸水厚度膨胀率 Water absorption thickness expansion rate	0.04%	GB/T 17657-2013
质量吸水率 Mass water absorption	2.3%	GB/T 5486-20089
耐碱性 Alkali resistance	外观无变化 No change in appearance	JC/T 2185-2013(2017)6.7
放射性 radioactivity	内照射指数 IRa ≤ 0.1 Internal exposure index IRa ≤ 0.1	GB 6566-2010
放射性 radioactivity	外照射指数 Ir ≤ 0.2 External exposure index Ir ≤ 0.2	GB 6566-2010
吸声性能 Sound absorption performance	NRC0.70 ~ 0.90(8mm 吸声板表面无涂料, 板层空腔 50mm-100mm 或填充吸音棉) NRC0.70 ~ 0.90 (no coating on the surface of 8mm sound absorption board, 50mm~100mm of board cavity or filled with sound absorption cotton)	GB/T 20247-2006



微粒吸声系统吸声参数

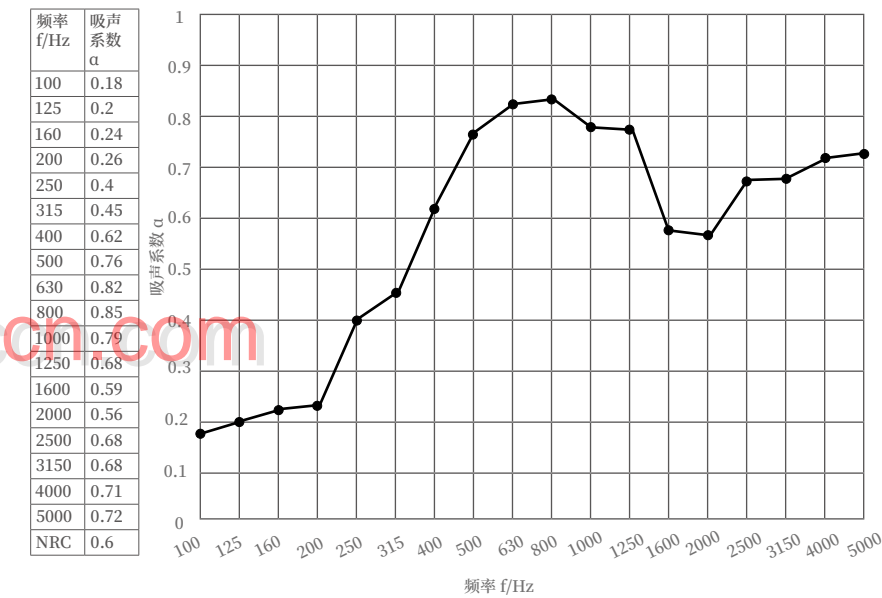
Sound Absorption Parameters Of Particle Sound Absorption System

墙系列吸声系统声学参数 I

Acoustic Parameters I Of Wall Series Seamless Acoustic System.

参数情景: 当使用厚度 8mm 微粒吸声板轻质吸声板, 板后空腔为 100mm, 且喷涂了 2mm 厚的雅声透声涂料的结构时, 可获得下列各频率下的声学系数数据。

Parameter scenario: when using 8mm thick particle sound absorption board, light sound absorption board, the back cavity of the board is 100mm, and the structure is sprayed with 2mm thick YASOON sound transmission coating, the following acoustic coefficient data at each frequency can be obtained.

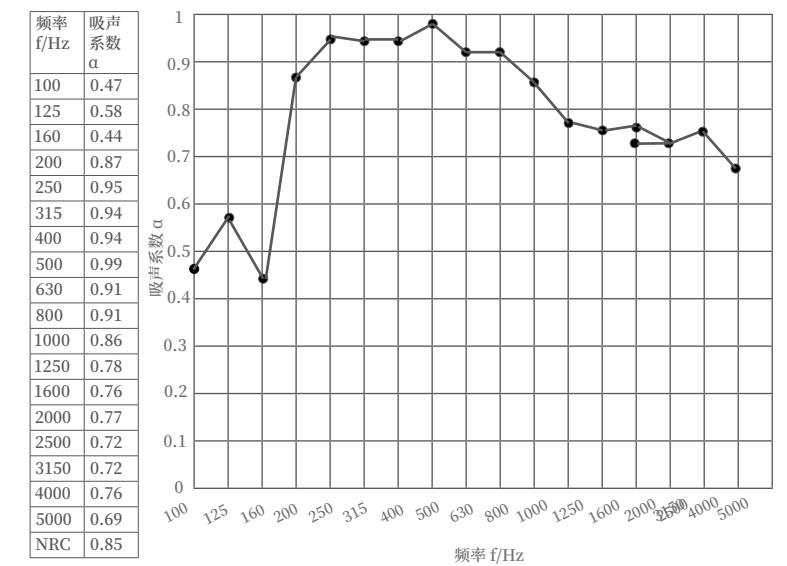


墙系列吸声系统声学参数 II

Acoustic Parameters II Of Wall Series Seamless Acoustic System.

参数情景: 当使用厚度 8mm 微粒吸声板高强度吸声板, 板后空腔为 100mm, 填充 50mm 厚白色憎水吸声棉包, 1/3 倍频系数如下:

Parameter scenario: when using 8mm thick particle sound absorption board and high-strength sound absorption board, the cavity behind the board is 100mm, filled with 50mm thick white hydrophobic sound absorption cotton bag, and the 1/3 octave coefficient is as follows:

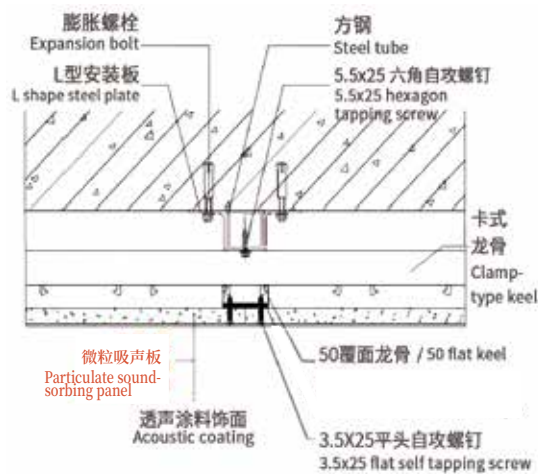


注: 以上测试数据在标准实验室测得, 属特定情境下的声学数据, 该系统可根据客户要求进行调节, 更多性能请咨询公司。

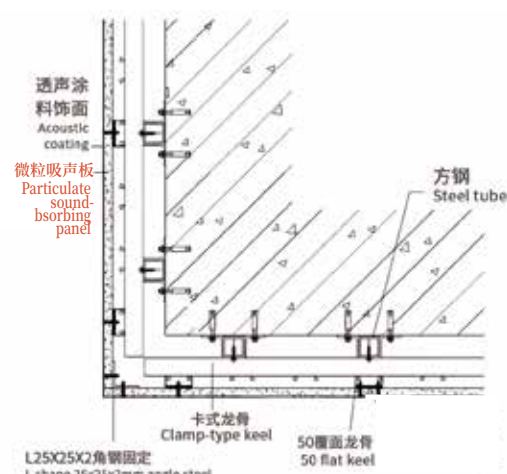
Note: The above test data are measured in the standard laboratory and belong to acoustic data in specific situations. The system can be adjusted according to customer requirements. Please consult the company for more performance.

微粒吸声系统安装节点图

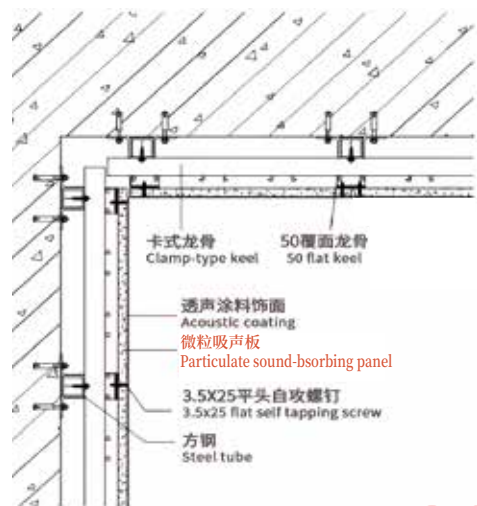
Installation Instruction Of Particle Sound Absorption System



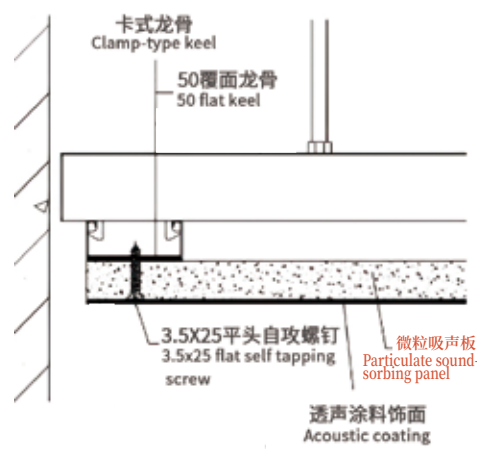
平面墙体安装节点
Plane wall installation node



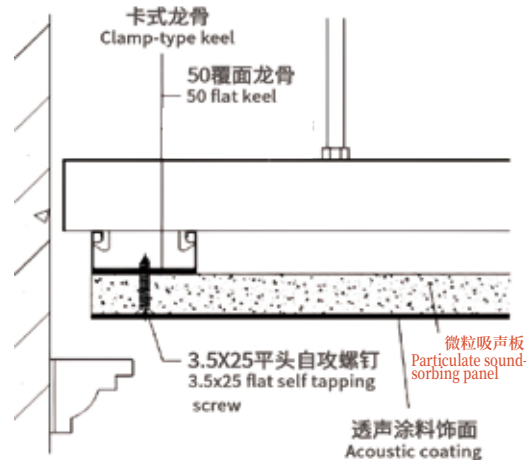
墙体阳角安装节点
Installation node at external corner of wall



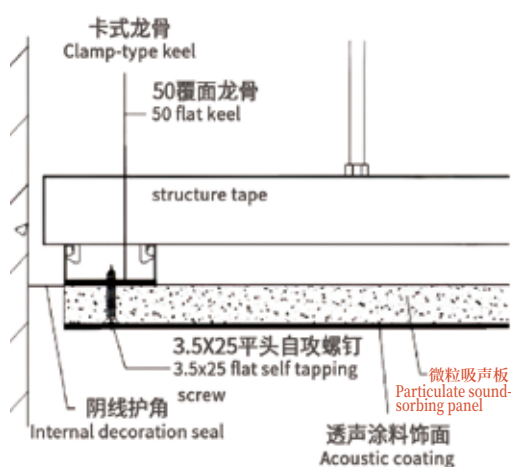
墙体阴角安装节点
Internal corner installation node of wall



顶与墙连接节点 1
Top wall connection node 1



顶与墙连接节点 2
Top wall connection node 2



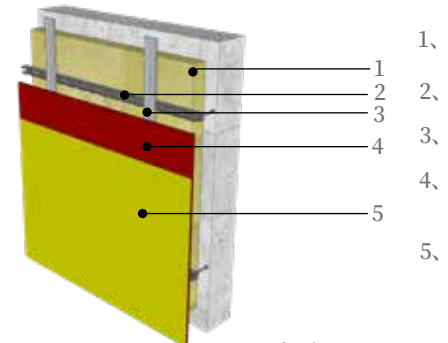
顶与墙连接节点 3
Top wall connection node 3

系统组成及结构描述

System Composition And Structure Description

微粒吸声板作为建筑室内装饰吸声结构,可支持大面积无缝安装,不仅有着优异的声学性能、同样拥有炫丽的色彩、整体美感和表面装饰质感,同时微粒吸声系统作为装修的一部分融入到建筑室内设计中,让声学装修与室内装饰装修融为一体。

As a sound absorption structure for building interior decoration, the particle sound absorption board can support large-area seamless installation. It not only has excellent acoustic performance, but also has gorgeous colors, overall aesthetic feeling and surface decoration texture. At the same time, the particle sound absorption system is integrated into the interior design of the building as part of the decoration, so that the acoustic decoration and interior decoration are integrated.



- 1、吸声棉 Sound-absorbing cotton
- 2、卡式龙骨 Card keel
- 3、C50 副骨 C50 accessory bone
- 4、微粒吸声板 Particle sound-absorbing plate
- 5、填缝剂+透声涂料饰面 Joint filler+acoustic paint finish

墙系列 Wall series

系统描述 System description

墙系列,主要用于建筑室内的吸声墙体,系统整体强度高、刚性好、防潮、抗冻、安装施工简便、支持大面积无缝安装。

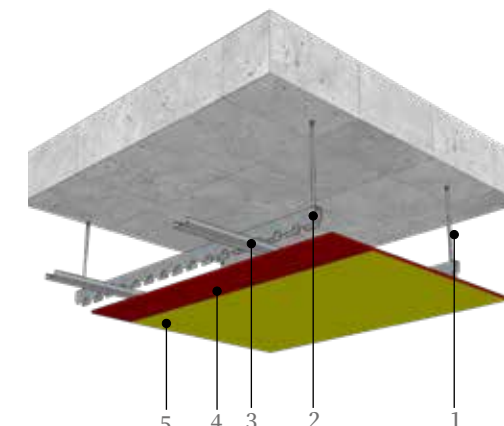
Wall series are mainly used for indoor sound absorption walls. The system has high overall strength, good rigidity, moisture resistance, frost resistance, simple installation and construction, and supports large-area seamless installation.

降噪系数 Noise reduction coefficient	NRC ≥ 0.6	系统重量 System weight	约 18kg/m ²
表面装饰涂料 Surface decorative coating	透声涂料 Acoustical coating	色彩范围 Color range	可参照传统涂料色卡选色 Color selection can refer to traditional paint color card

施工说明 Construction Notes

- 1、若施工人员未安装过本系统,应在施工前认真阅读本手册内容并经过培训,方可进行安装施工;
- 2、施工时应根据现场情况搭建适合高度的脚手架或施工平台,以保证系统的安装质量,吸声墙施工时应离施工面 300mm 以上距离搭设脚手架;
- 3、安装现场应保证光线的充足,不允许在昏暗的环境下施工;
- 4、应注意施工现场的温度,应在要求的温湿度环境下施工;
- 5、施工现场交叉施工时,应注意对原材料的堆放及保护,避免在交叉施工中损坏板材及其他材料;
- 6、应避免施工中产生的灰尘,以免出现双面胶吸附灰尘后与吸声板粘接下降的情况,影响系统整体牢固度;
- 7、施工过程中应注意施工人员的劳动保护,应提供相应的防护用品,如护目镜、口罩、手套等劳保用品;
- 8、施工前应认真查看设计图包括结构、灯具、设备等相关设计图纸。

1. If the construction personnel have not installed the system, they should carefully read the contents of this manual and receive training before construction;
2. During construction, scaffolding or construction platform with appropriate height shall be erected according to the site conditions to ensure the installation quality of the system. During construction of the acoustic wall, scaffolding shall be erected at a distance of more than 300mm from the construction surface;
3. Sufficient light shall be ensured at the installation site, and construction in a dark environment is not allowed;
4. Attention shall be paid to the temperature and humidity of the construction site, and the construction shall be carried out in the required temperature and humidity environment;
5. During cross construction at the construction site, attention shall be paid to the stacking and protection of raw materials to avoid damage to plates and other materials during cross construction;
6. The dust generated during construction shall be avoided to avoid the decrease of adhesion between the double-sided adhesive tape and the eyesoundboard after absorbing the dust, which will affect the overall firmness of the system;
7. Pay attention to the labor protection of construction personnel during construction, and provide corresponding protective equipment, such as goggles, masks, gloves and other labor protection equipment;
8. Before construction, carefully check the design drawings, including structure, lamps, equipment and other relevant design drawings.



- 1、吊杆 Suspender
- 2、卡式龙骨 Card keel
- 3、C50 副骨 C50 accessory bone
- 4、微粒吸声板 Particle sound-absorbing plate
- 5、填缝剂+透声涂料饰面 Joint filler+acoustic paint finish

系统描述 System description

天花系列主要应用于建筑室内的吸声吊顶,系统整体重量轻、防潮、抗冻、安装施工简便,不开裂,不下坠支持大面积无缝安装。

The ceiling series is mainly applied to the acoustic ceiling inside the building. The overall weight of the system is light, moisture-proof, frost resistant, simple installation and construction, no cracking, no falling, and large area seamless installation is supported.

降噪系数 Noise reduction coefficient	NRC ≥ 0.6	系统重量 System weight	约 18kg/m ²
表面装饰涂料 Surface decorative coating	透声涂料 Acoustical coating	色彩范围 Color range	可参照传统涂料色卡选色 Color selection can refer to traditional paint color card

红玻槽孔吸声板 Red MgO Grooved Acoustic Panel

红玻吸声板优势：对比传统木质吸音板，有先天优势。因玻镁基材为氧化镁材质，防潮性能好，减少受潮产生的发霉变形问题，特别适用南方雨水多的地区，同时防火性能达到 A2 级，是木质板不能比拟的。由于该产品质地硬，对工艺要求高，可以加工成完美声学产品。

材料用量：参考声学设计

结 构：由红玻基材板开槽打孔，板后贴吸声黑毡。

饰 面：防火面板

专 利 号：ZL 2019 3 0187186.X ; ZL 2019 3 0187180.2

防火等级：A 级 (GB 8624-2017)

环保等级：GB18580-2017《室内装饰装修材料 人造板及其制品中甲醛释放限量》的标准 E1 级

规 格：长度 :2440mm 宽度 133mm/197mm 厚度 :15mm
(允许公差：长度 ±2mm，宽度 ±1mm，厚度 ±0.2mm)

适用场所：剧院、音乐厅、学校、教堂、体育馆、礼堂、多功能厅、会议室、报告厅、录音室等声学要求高的场所均可。

Advantages of Red MgO Grooved Acoustic Panel: Compared with traditional wooden acoustic panel, it has inherent advantages. Because the MgO board is made of magnesium oxide, it has good moisture resistance and reduces the problem of moldy deformation caused by moisture. It is especially suitable for the areas with more rain in South China. At the same time, the fire resistance reaches the A-class incombustible level, which is better than wooden boards. Due to the hard texture and the high requirements for craftsmanship, the panel can be processed into a perfect acoustic product.

Material consumption: refer to acoustic design

Product structure: Slotted and punched on the MgO board, with black fireproof acoustic tissue behind

Finishing: HPL (high pressure laminate)

Patent No. ZL 2019 3 0187186.X ; ZL 2019 3 0187180.2

Fire rating: Class A (GB 8624-2017)

Environmental protection level: E1 Grade, according to GB18580-2017《Formaldehyde emission limit of wood based panel and its products》Standard.

Specifications: Length:2440mm width: 133mm/197mm Thickness: 15mm
(tolerance: length ± 2mm, width ± 1mm, thickness ± 0.2mm)

Applicable places: theaters, concert halls, schools, churches, gymnasiums, auditoriums, multi-function halls, conference rooms, lecture halls, recording studios and other places with high acoustic requirements.

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槽孔类吸声板 Grooved Acoustic Panel Series

特点：全频吸声、低频吸声系数高。无粉尘污染、抗静电、防水防潮使用寿命超长。安装简单、施工周期短、安装成本低。防火、A2 级防火性能能满足工程高消防要求。大方漂亮的装饰效果，可根据需要调整穿率、面板颜色、槽宽等规格。

Characteristics: Full frequency sound absorption and high efficient on low frequency. No dust pollution, anti-static, water proof and moisture-proof, long lime usage. Simple installation, short construction period and low installation cost. Fire resistance, A2 fire resistance can meet the project's high fire proof requiremnet. Generous and beautiful decorative effect. The perforated rate, finish color and groove width can be changed accoring to requirements.



碳塑（素）槽孔吸音板

Carbon Plastic (plain) Slot Hole Acoustic Panel

产品结构: 碳纤材料作为基材。

饰面: 木纹饰面或纯色饰面

防火等级: B1级 (GB8624-2017) (可定做A级)

环保等级: GB18580-2017《室内装饰装修材料人造板及其制品中甲醛释放限量》的标准E1级

安装辅材: 轻钢龙骨、12厘夹板条、吸声棉、钢丝网、枪钉等

规格: 长度: 2500mm (可定制) 宽度: 150mm 厚度: 12mm (允许公差: 长度 ±2mm, 宽度 ±1mm, 厚度 ±0.2mm)

产品特点:

- 1、产品表面光滑, 亦可印刷。
- 2、产品质地轻, 储运、施工方便。
- 3、加工时只需使用一般木材加工工具即可施工。
- 4、可像木材一样进行钻、锯、钉、刨、粘等加工。
- 5、碳塑(素)槽孔吸音板可与其他PV C材料粘接。
- 6、碳塑(素)槽孔吸音板具有防潮、防霉、不吸水的性能, 而且防震效果好。
- 7、碳塑(素)槽孔吸音板色泽可长久不变, 不易老化。



Product structure: Carbon fiber material as base material

Finish: wood grain or pure color finish

Fire rating: Class B1 (GB8624-2017)

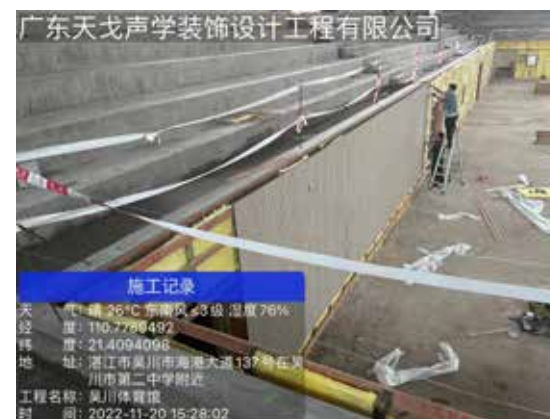
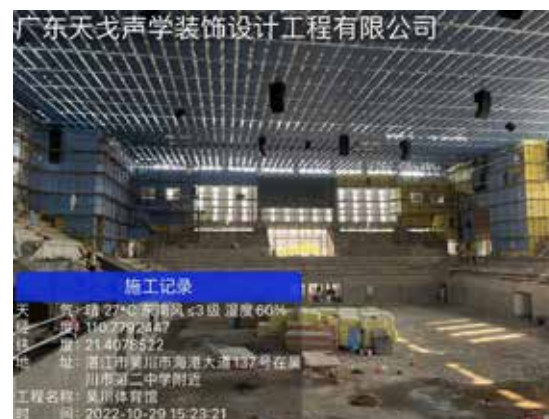
Environmental protection grade: E1 Grade, according to GB18580-2017《Formaldehyde emission limit of wood based panel and its products》Standard

Installation accessories: light steel keel, 12mm plywood batten, steel wire mesh, acoustic cotton, gun nail etc.

Specifications: Length 2500mm (Customizable) width: 150mm Thickness: 12mm (tolerance: length ± 2mm, width ± 1mm, thickness ± 0.2mm)

Characteristics of the product:

1. The product surface is smooth and can be printed.
2. The product is light in texture, convenient for storage, transportation and construction.
3. General wood processing tools can be used for construction.
4. It can be drilled, sawed, nailed, planed and glued like wood.
5. Carbon Plastic (plain) Slot Hole can be bonded with other PV C materials..
6. Carbon Plastic (plain) Slot Hole has the properties of damp proof, mildew proof and non water absorption, and has good shockproof effect..
7. The color of Carbon Plastic (plain) Slot Hole can remain unchanged for a long time, and it is not easy to age.



陶铝槽孔吸声板

Ceramic Aluminum Grooved Acoustic Panel

材料用量: 参考声学设计

产品结构: 由玻镁基材板开槽打孔, 板后贴吸声黑毡。

饰面: 防火面板

防火等级: A级 (GB8624-2017)

环保等级: GB18580-2017《室内装饰装修材料人造板及其制品中甲醛释放限量》的标准E1级

安装辅材: 轻钢龙骨、12厘夹板条、吸声棉、钢丝网、枪钉等

规格: 长度: 2440mm 宽度: 133mm/197mm 厚度: 15mm (允许公差: 长度 ±2mm, 宽度 ±1mm, 厚度 ±0.2mm)

产品特点: 玻镁吸声板采用玻镁板基材加工成槽孔及穿孔吸声板。玻镁吸声板传承了玻镁板的优点, 具有防火级别高、抗压力好、防潮、防霉、不变形等特点。特别适用于南方雨水多的地区。由于该产品质地硬, 对加工工艺要求很高, 在具备特殊器具时才可加工成完美声学产品。产品规格与传统槽孔及穿孔吸声板一致。

Material consumption: refer to acoustic design

Product structure: slotted and perforated on mgo bard, with sound-absorbing black fireproof felt behind

Finish: HPL board

Fire rating: Class A (GB8624-2017)

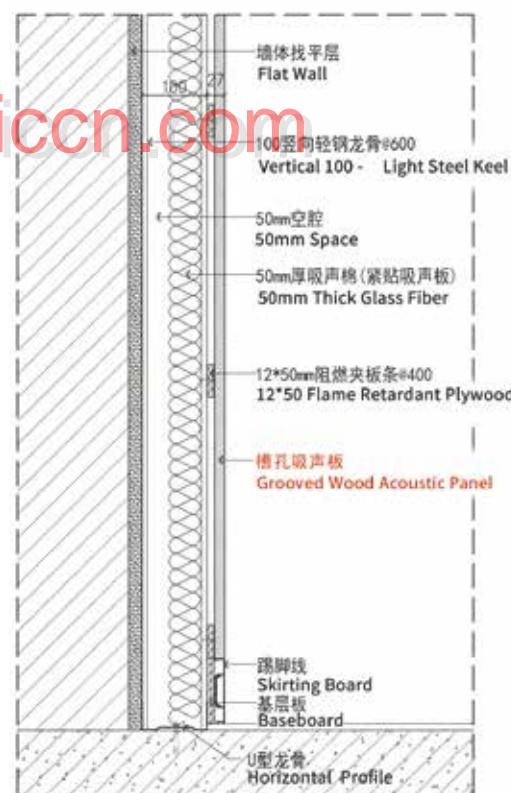
Environmental protection level: E1 Grade, according to GB18580-2017《Formaldehyde emission limit of wood based panel and its products》Standard.

Installation accessories: light steel keel, 12mm wooden keel, steel wire mesh, sound-absorbing cotton, Gun nail etc.

Specifications: Length 2440mm width: 133/197mm Thickness: 15mm (tolerance: length ± 2mm, width ± 1mm, thickness ± 0.2mm)

Characteristics of the product: Using magnesium oxide plate as base material, it is slotted and perforated to be Mgo acoustic panel. The Mgo acoustic panel inherits the advantages of magnesium board, and has the characteristics of high fire-proof level, good pressure resistance, moisture-proof, mildew proof, and no deformation. It is especially suitable for the areas with more rain in South China. Due to its hard texture and high requirements for processing technology, the product can be processed into a perfect acoustic product only when it has special tools. The product specification is consistent with our grooved panel and perforated acoustic panel.

www.acousticcn.com

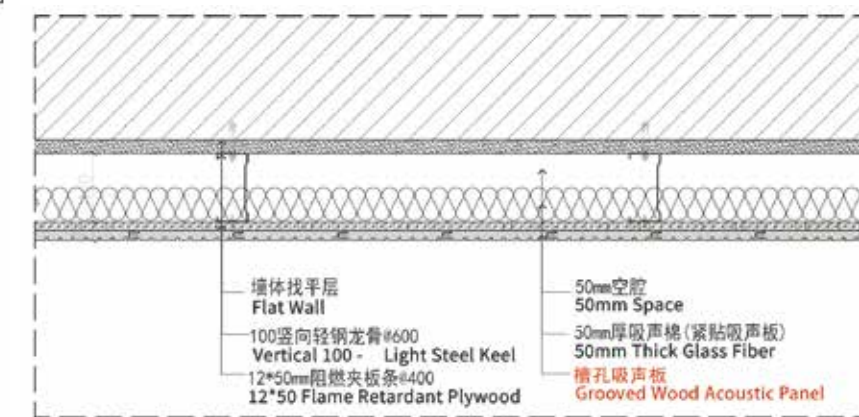


槽孔吸声板墙面安装竖剖图
Vertical Section Of Grooved Acoustic Panel Wall Installation

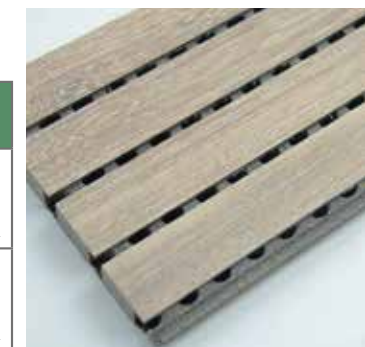
吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000	备注 Remark
28-4 吸声系数 α 28-4 Sound absorption coefficient α	0.32	0.73	0.82	0.53	0.39	0.40	50mm 空腔 + 50厚 32K 玻璃棉 50mm Back Cavity + 50mm 32K Glass Wool
13-3 吸声系数 α 13-3 Sound absorption coefficient α	0.38	0.81	0.91	0.68	0.62	0.55	50mm 空腔 + 50厚 32K 玻璃棉 50mm Back Cavity + 50mm 32K Glass Wool



槽孔吸声板墙面安装横剖图
Cross Section Of Grooved Wood Acoustic Panel Wall Installation



灰色玻镁吸声板
Gray MgO Grooved Acoustic Panel

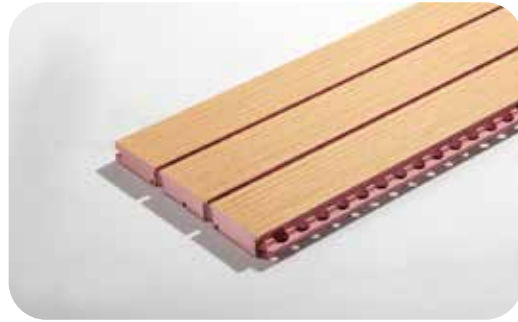


白玻吸声板
White MgO Grooved Acoustic Panel

槽孔吸声板的基材 Base Material of Grooved Acoustic Panel



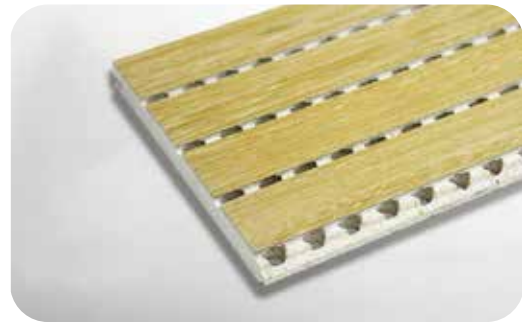
E1 级环保板基材
E1 class environmental protection base material



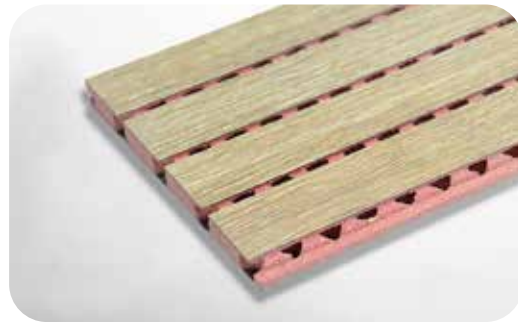
E1 级阻燃板基材
E1 grade flame retardant base material



陶铝板基材
Black MgO base material



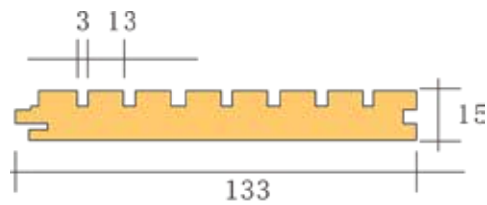
白色玻镁板基材
White MgO base material



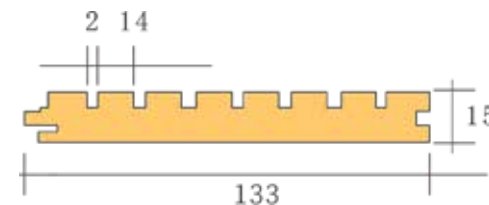
红玻板基材
Red MgO base material



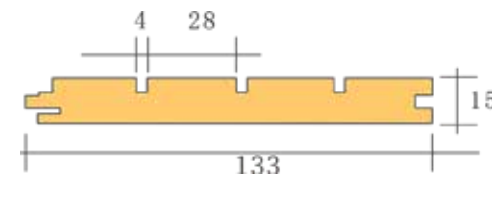
碳纤维板基材
Carbon fiber board base material



常规型号 13/3 穿孔率 12.8%
Standard model 13/3
Perforation rate 12.8%



常规型号 14/2 穿孔率 7.5%
Standard model 14/2
Perforation rate 7.5%



常规型号 28/4 穿孔率 9%
Standard model 28/4
Perforation rate 9%

吸声系数：（经权威机构检测）可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000
吸声系数 α Sound absorption coefficient α	0.38	0.81	0.91	0.68	0.62	0.55

频率 (Hz) Frequency	125	250	500	1000	2000	4000
吸声系数 α Sound absorption coefficient α	0.33	0.89	0.74	0.52	0.34	0.28

频率 (Hz) Frequency	125	250	500	1000	2000	4000
吸声系数 α Sound absorption coefficient α	0.32	0.73	0.82	0.53	0.39	0.4

槽孔类工程案例展示 Grooved Acoustic Panel Project Case



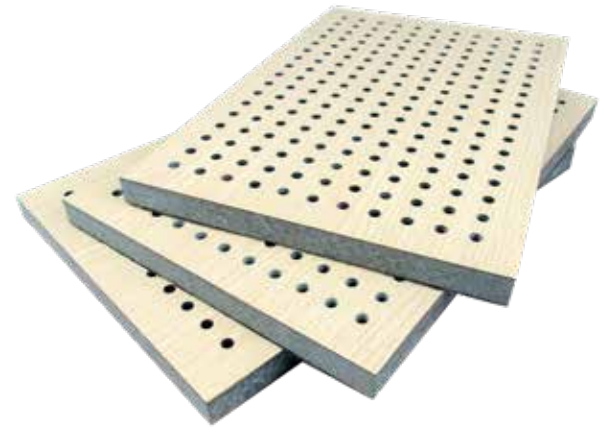
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常规穿孔吸声板 Standard Perforated Acoustic Panel

材料用量: 参考声学设计
结构: 由高密度基材板开孔, 板后贴吸声黑毡
饰面: 三聚氰氨、天然木皮、防火板、喷漆、金属面、科技木皮、皮革面等。
型号: 直通孔 E32/12; E32/10; E16/8; E16/6; E16/4;
 梅花孔 V32/12; V32/10; V16/8; V16/6; V16/4
安装辅材: 轻钢龙骨、12 厘夹板条、吸声棉、钢丝网、专用龙骨等
优势: 穿孔吸声板是一种在密度板上直接穿孔的共振吸声材料。穿孔吸声板对吸声频谱选择性较强, 对中低频有很好的吸声性能。如在吸声结构后空腔上填入适量的吸声棉可提高中、高频吸声效果。孔径、孔距可根据客户要求调整。

常用规格: 长度: 605mm/1210mm x 宽度: 605mm x 厚度: 12mm/15mm/18mm ;
规格: 长度: 600mm/1200mm/2400mm 宽度: 600mm/1200mm 厚度: 12mm/15mm/18mm
 或订制其他规格 (允许公差: 长度 ±2mm, 宽度 ±1mm, 厚度 ±0.2mm)
适用场所: 体育馆、多功能厅、音乐厅、大剧院、会议室、报告厅、家庭影院、酒店等对声学要求比较高场的场所。



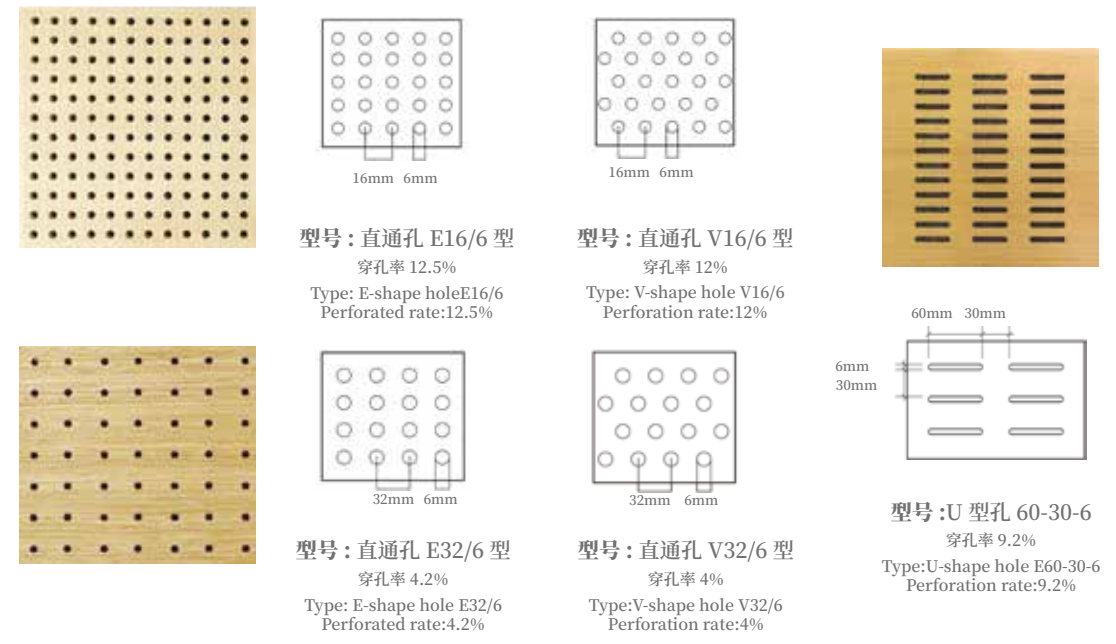
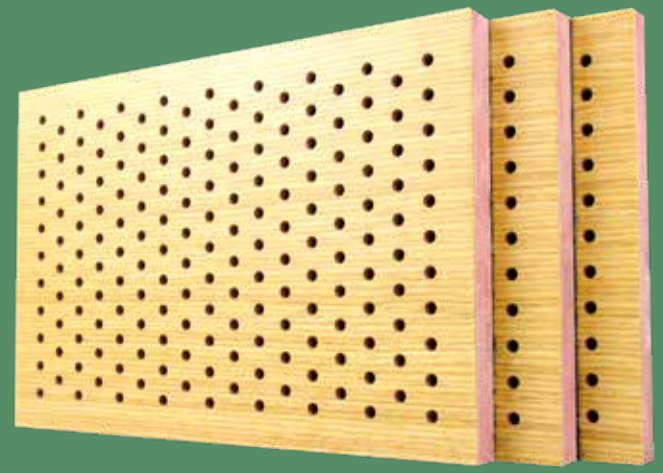
Material consumption: refers to acoustic design
Structure: Perforated on High density base materials, with black acoustic tissue behind.
Finish: melamine, natural veneer, fireproof board, painting, metal surface, veneer, leather surface, etc..
Model: E-shape hole: E32/12; E32/10; E16/8; E16/6; E16/4
 V-shape hole: V32/12; V32/10; V16/8; V16/6; V16/4
Installation accessories: light steel keel, 12mm plywood batten, sound-absorbing cotton and steel wire, special keel etc.
Advantages: Perforated Acoustic Panel is a kind of resonant sound absorption material directly perforated on density board. Perforated Acoustic Panel has strong selection on sound absorption spectrum. it has good sound absorption performance on medium and low frequency. The sound absorption effect of medium and high frequency can be improved with acoustic cotton filled behind the panel cavity . Perforated hole diameter and distance can be adjusted according to customer requirements.
Regular size: Length:605mm/1210mm x width:605mm x thickness:12mm/15mm/18mm
Specifications: Length : 600mm/1200mm/2400mm width: 600mm/1200mm thickness: 12mm/15mm/18mm
 or customize other specifications (tolerance: width ± 1mm, length ± 2mm, thickness ± 0.2mm)
Application: Gymnasium, multi-function hall, concert hall, Grand Theatre, conference room, lecture hall, family cinema, hotel and so on, which require high field of acoustics.

www.acousticcn.com

穿孔类吸声板 Perforated Acoustic Panel Series

特点: 穿孔吸声板是一种在密度板上直接穿孔的共振吸声材料。穿孔吸声板对吸声频谱选择性较强, 对中低频有很好的吸声性能。如在吸声结构后空腔上填入适量的吸声棉可提高中、高频吸声效果。孔径、孔距可根据客户要求调整。

Characteristics: Perforated Acoustic Panel is a kind of resonant sound absorption material directly perforated on density board. Perforated Acoustic Panel has strong selection on sound absorption spectrum. it has good sound absorption performance on medium and low frequency. The sound absorption effect of medium and high frequency can be improved with acoustic cotton filled behind the panel cavity . Perforated hole diameter and distance can be adjusted according to customer requirements.



微穿孔吸声板 Micro-perforated Acoustic Panel

微孔吸声板，是指面板孔直径 0.5~3mm，背面孔直径 8~12mm 的复合孔结构，组成微孔共振型吸声材料。

Micro perforated acoustic panel is a composite structure with a diameter of 0.5-3mm perforated surface sheet and a diameter of 8-12mm perforated base sheet at the back, which forms a micro-porous resonant sound-absorbing material.

优势: 采用高密度板材作为基材,由于其微孔结构,可形成对中低频段有较好的吸声效果,同时更显表面的无孔感,便于清洁,美观大方。最高可达 A 级防火要求;

适用场所: 广泛用于各种公共空间、剧院、体育馆、会议室、宴会厅等装饰要求高的声学场所;

安装辅材: 轻钢龙骨、12 厘夹板条、吸声棉、钢丝网、专用龙骨等;

材料用量: 参考声学设计;

饰面: 木纹色或根据需求定制素色。

Advantages: Use high-density board as base material, due to its micro-hole structure, it can form a low-medium frequency band, which has a better sound-receiving effect, at the same time, the surface is no-hole feeling, easy clean, beautiful and generous. The highest fire proof can be Grade A.

Applicable place: widely used in various public spaces, theaters, gymnasiums, conference rooms, Banquet Hall and other acoustic places with high decoration requirement;

Installation accessories: light steel keel, 12mm plywood batten, sound-absorbing cotton and steel wire, special keel etc;

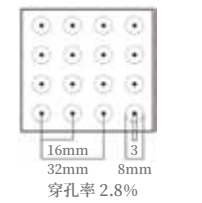
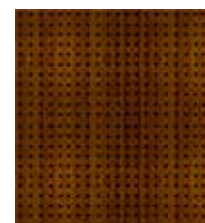
Material consumption: refer to acoustic design ;

Finish: Wood grain color or custom pure color according to requirement.

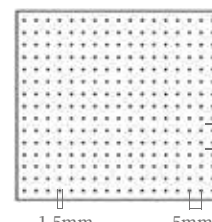
吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000	备注 Remark
吸声系数 α Sound absorption coefficient α	0.33	0.73	0.77	0.66	0.47	0.48	50mm 空腔 + 50 厚 32K 玻璃棉 50mm Back Cavity + 50mm 32K Glass Wool



Type: stepped E-shape hole
E16/3-10 Perforation rate: 2.8%



1.5mm (孔直径) hole diameter
5mm (孔间距) hole pitch

型号: 大小孔 E16/3-10 型



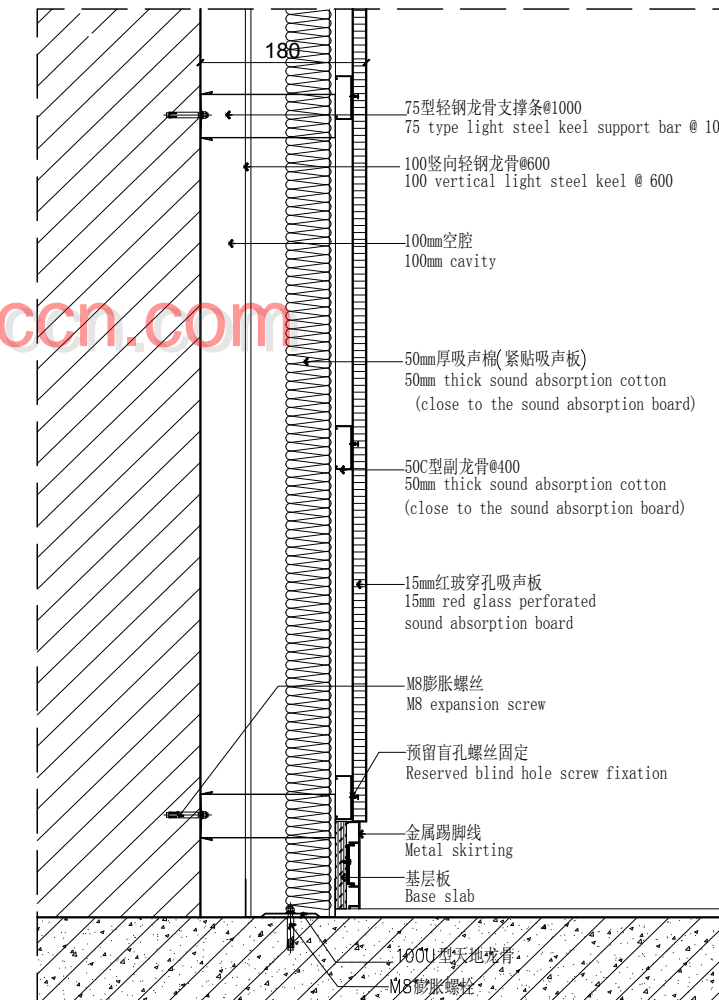
穿孔吸声板安装方式 Installation of Perforated Acoustic Panel

安装方法:

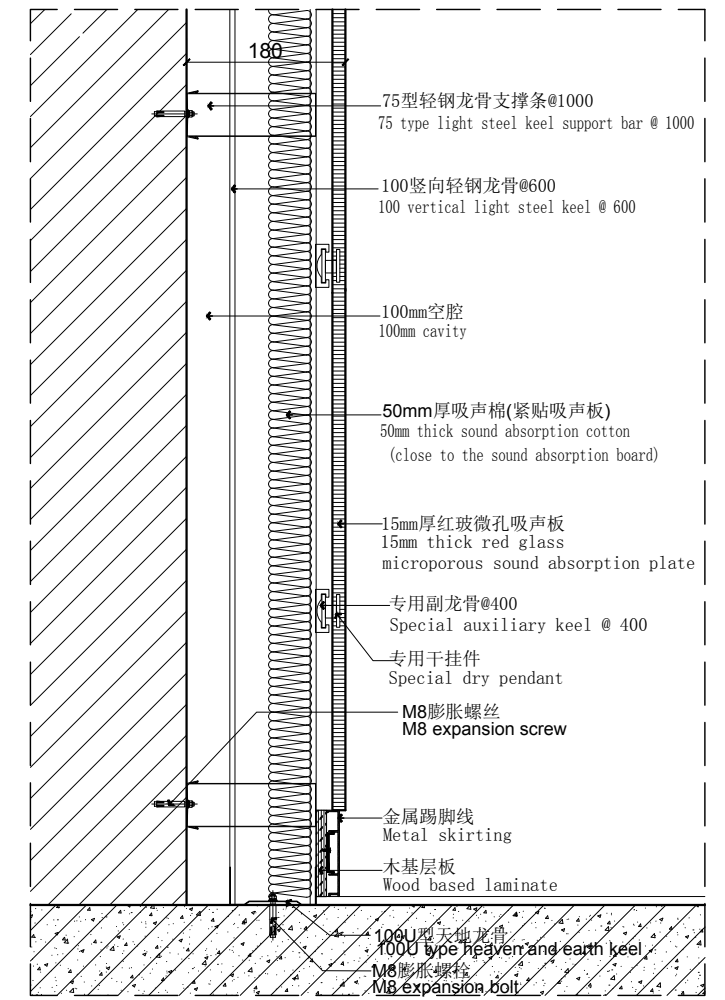
- 放线定位: 依照安装图纸, 并根据现场实际尺寸, 确定龙骨铺设间距, 按照间距用墨斗弹线;
- 铺设主龙骨: 根据图纸确定轻钢龙骨间距, 并依照墨线位置, 用膨胀螺栓将竖向轻钢龙骨固定于墙身;
- 铺设副龙骨: 根据图纸确定副龙骨间距 (按照 400mm 的间距), 用墙钉将 50C 型副龙骨固定于竖向轻钢龙骨上;
- 铺设专用龙骨: 将工字型龙骨固定于夹板条上, 龙骨距离按照需红玻穿孔吸声板尺寸而定。
- 放置吸声棉: 1200*600*50mm 吸声棉放置于龙骨之间;
- 安装吸声板: 用金属扣片将红玻穿孔吸声板卡固定于 50C 型副龙骨, 并且板与板之间需预留 1~2mm 伸缩缝, 以减低板材热胀冷缩所带来的影响。

Installation:

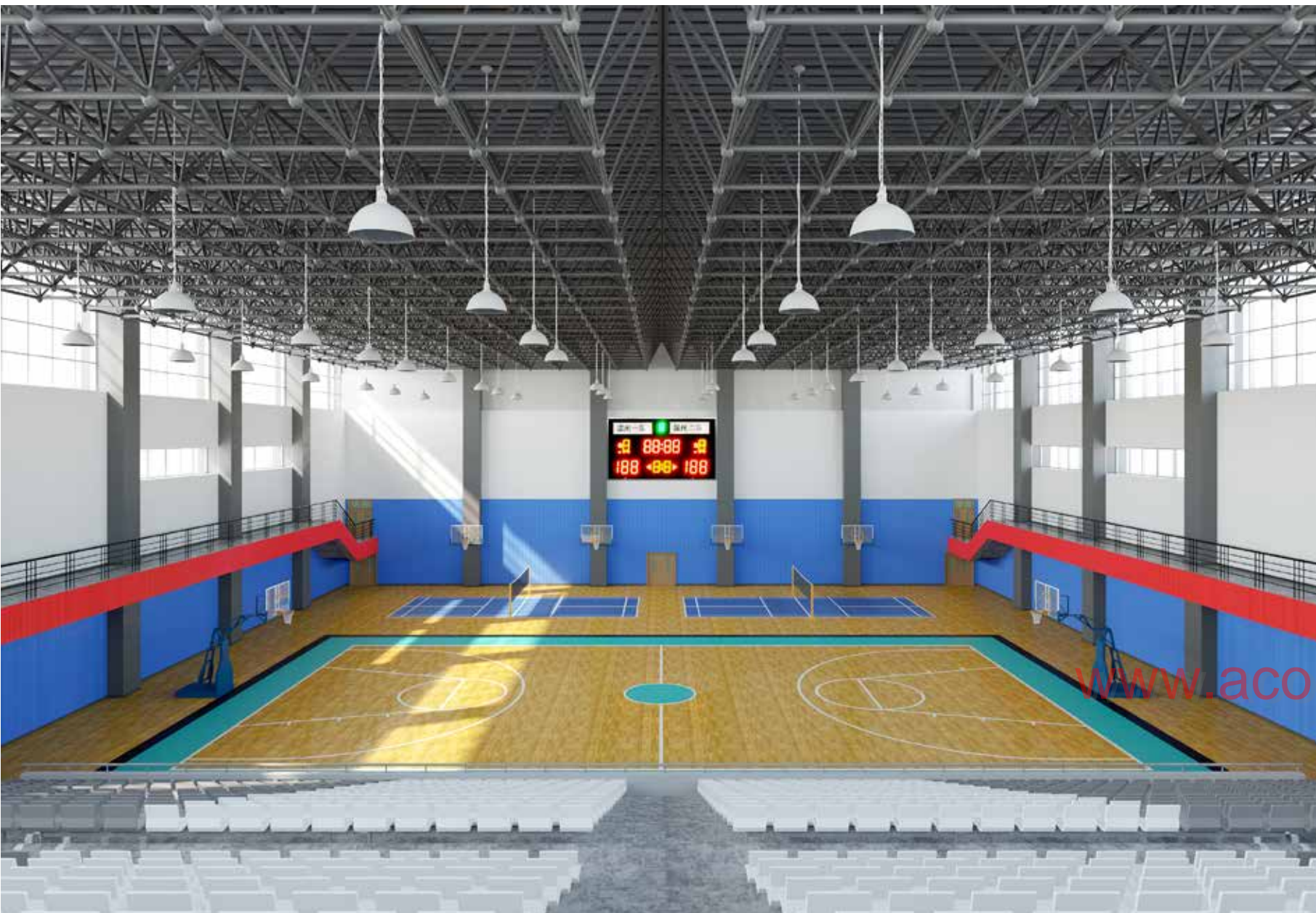
- Alignment: according to the installation drawings, and according to the actual size of the site, determine the keel laying space, according to the space with Ink Bucket Bullet Line;
- Laying the main keel: according to the drawings to determine the distance between the light steel keel, and according to the position of the ink line, with expansion bolts will be fixed to the vertical light steel keel wall;
- Laying auxiliary keel: determine the distance between auxiliary keels according to the drawing (according to the distance of 400mm), and fix the 50C-type auxiliary keel on the vertical light steel keel with the wall plate nail; Laying special keel: i-shaped keel fixed on the splint, keel distance according to the need for red glass perforated sound absorption board size.
- Place the sound-absorbing cotton: 1200 * 600 * 50mm sound-absorbing cotton placed between the keel;
- Install sound-absorbing board: fix the red glass perforated sound-absorption board to 50C sub-keel with metal buckles, and leave 1 ~ 2mm expansion joint between the board and the board to reduce the influence of the hot expansion and cold contraction of the board.



穿孔吸声板墙面安装竖剖面图
Vertical section of perforated sound absorption panel wall installation



微孔吸声板墙面安装竖剖面图
Vertical section of wall installation of micro-hole sound absorption board



槽铝吸声板 Aluminium Grooved Acoustic Panel

特点: 槽铝吸声板采用优质铝订制成型, 是木质槽孔、穿孔吸声板、铝穿孔板、复合吸声板等升级替换产品。

Characteristics: Aluminum grooved acoustic panel is made of high quality aluminum, and it is upgraded and replacement product of grooved wood acoustic panel, perforated acoustic panel, aluminum perforated panel, composite acoustic panel and so on.

槽铝吸声板 Aluminum Grooved Acoustic Panel

槽铝吸声板采用优质铝订制成型, 是木质槽孔、穿孔吸声板、铝穿孔板、复合吸声板等升级替换产品。

型号: 28-4、20-3、33-5 (可订制其他型号)

材料用量: 参考声学设计

安装辅材: 轻钢龙骨、吸声棉包、玻纤黑毡、钢丝网、自攻螺丝等

优势: 全频吸声性能、防火级别达到 A 级、无甲醛释放、防潮、防虫、防腐、防霉、不变形、抗击性好、易擦洗、安装简单、饰面选择种类多。

规格: 2400mm×595mm

专利号: ZL 2019 2 1340360.0

Aluminum groove sound absorption board is made of high quality aluminum, and it is upgraded and replaced by wooden slot, perforated sound absorption plate, aluminum perforation plate, composite sound absorption board and so on.

Model: 28-4、20-3、33-5 (can be customized)

Material consumption: refer to acoustic design

Installation accessories: light steel keel, sound-absorbing cotton bag, glass fiber felt, black wire mesh, self tapping screws etc.

Advantage: full frequency sound absorption, fireproof grade A incombustible, no formaldehyde release, moisture proof, moth proof, anti-corrosion, mildew proof, no deformation, good impact resistance, easy cleaning and simple installation, many color choices.

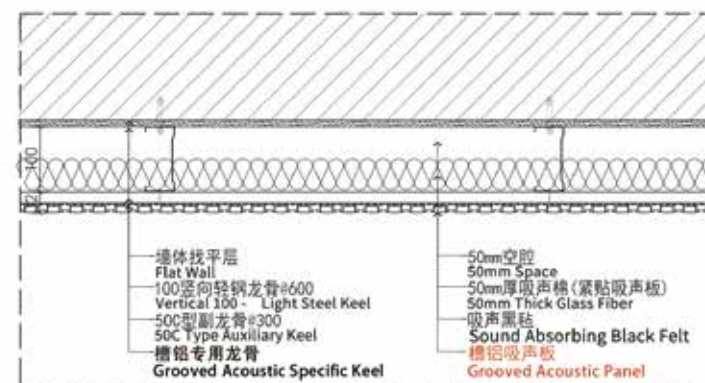
Specifications: 2400mm long x 595mm wide

Patent No. ZL 2019 2 1340360.0

吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000	备注 Remark
28-4 吸声系数 α 28-4 Sound absorption coefficient α	0.36	0.77	0.91	0.83	0.70	0.56	50mm 后空腔 +50 厚 32K 玻璃棉 50mm Back Cavity +50mm 32K Glass Wool
33-5 吸声系数 α 33-5 Sound absorption coefficient α	0.61	0.96	0.96	0.84	0.72	0.52	100mm 后空腔 +100 厚 32K 玻璃棉 100mm Back Cavity +100mm 32K Glass Wool
20-3 吸声系数 α 20-3 Sound absorption coefficient α	0.22	0.52	0.86	0.72	0.70	0.54	100mm 后空腔 +30 厚 32K 玻璃棉 100mm Back Cavity +30mm 32K Glass Wool



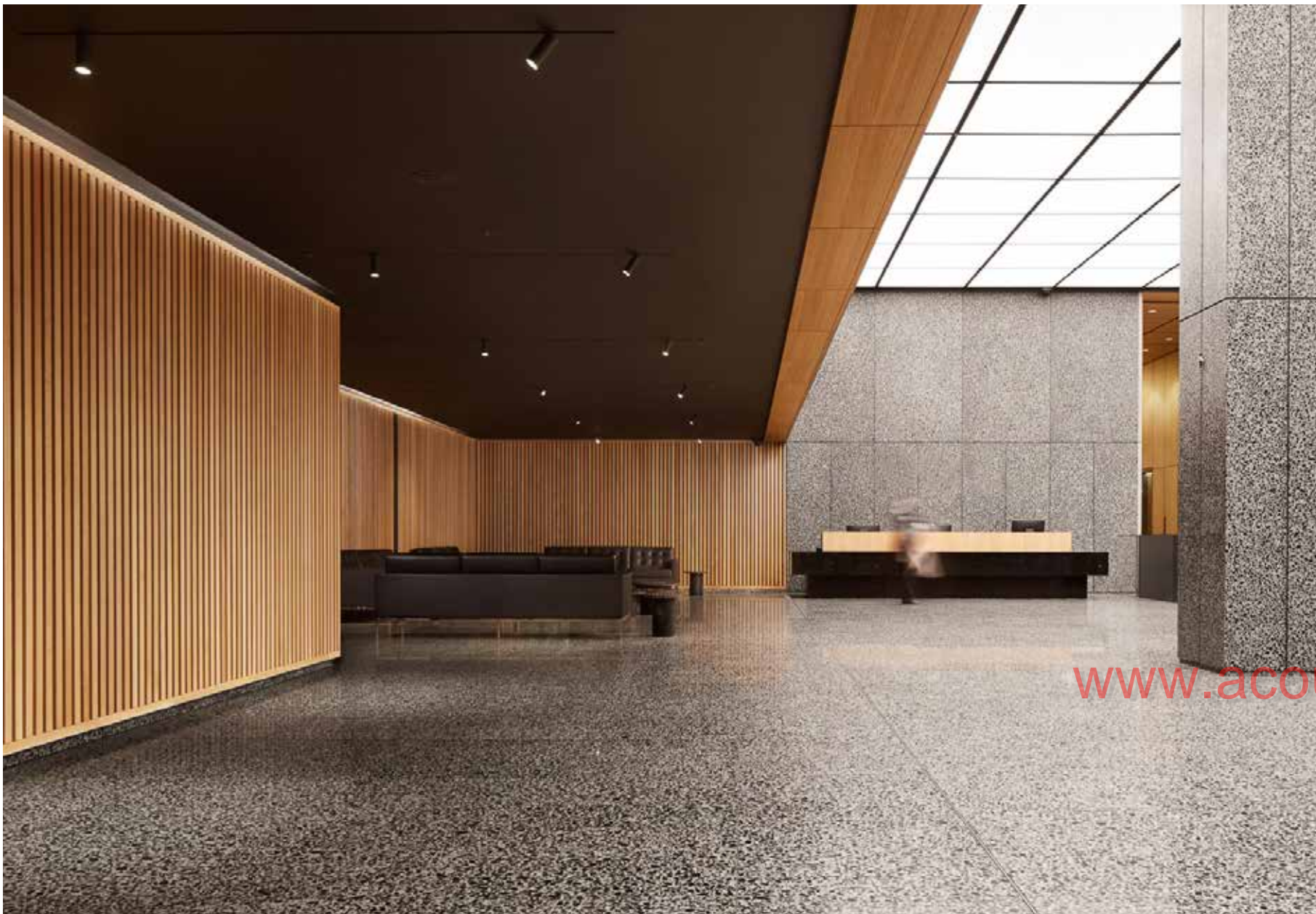
槽铝吸声板墙面安装横剖图
Cross Section Of Grooved Acoustic Panel Wall Installation



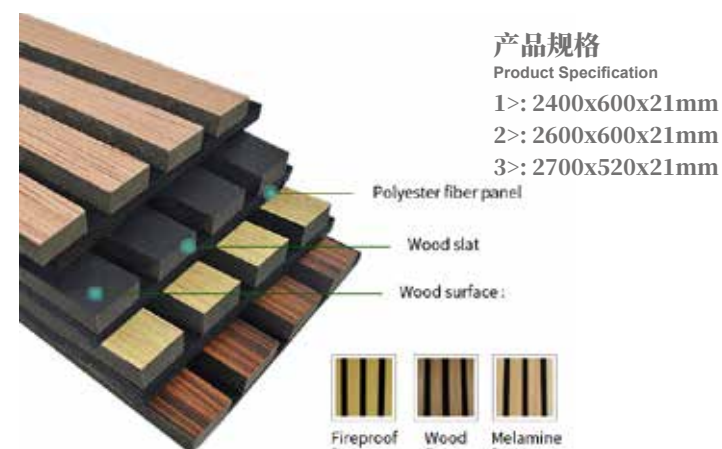
色卡 Color



槽铝吸声板墙面安装竖剖图
Vertical Section Of Grooved Acoustic Panel Wall Installation

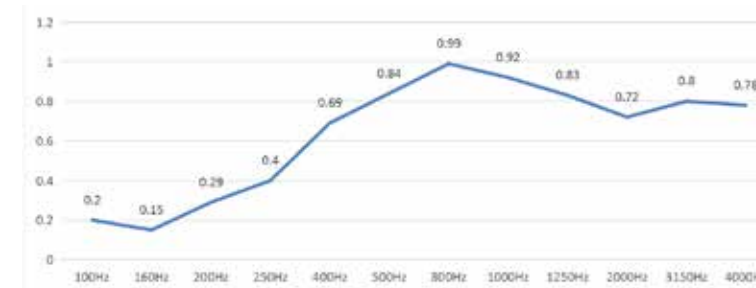


条形吸声板 Slatted Acoustic Panel



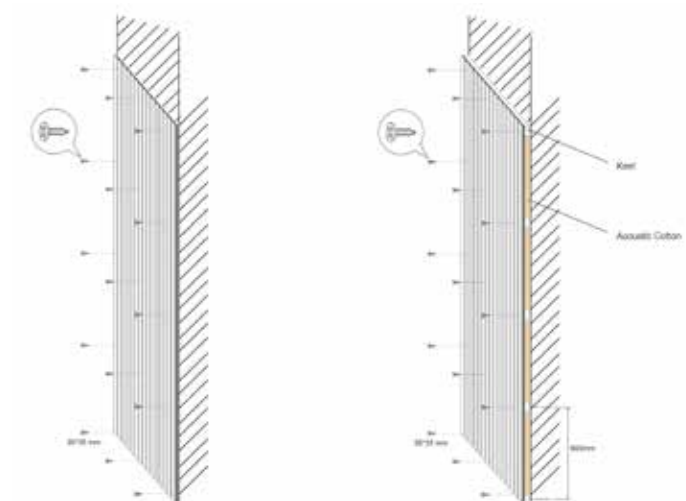
产品优势 Advantage

1. 品质稳定，零投诉
1. Stable product quality and zero complaint.
2. 标准产品可库存
2. Standard products, available for stock.
3. 有吸声功能，装饰性强
3. Functional products with sound absorption, strong decorative.
4. 运用广泛：家装与工装
4. Wide range of applications: suitable for both house and industry decoration.
5. 适用于网络销售
5. Applicable online sales and distributor channel sales.
6. 100% 环保材料
6. 100% recycled material.



Laboratory measurement: NRC= 0.7 实验数据 NRC=0.7
Standard: GB/T 20247-2006/ISO354:2003
标准: GB/T 20247-2006/ISO354:2003
Certificate: CE, Fire retardant certificate, etc.
CE 认证, 防火认证

www.acousticcn.com



天戈条形吸音板可直接安装在墙壁和天花板上，如方法1和方法2（具有更好的声学性能）。

The TianGe slatted panel can be installed to the wall and ceiling directly as the method 1 and method 2(with better acoustic performance).



条形吸声板

特点：每一块天戈条形板都是手工制作采用无甲醛的吸声 PET 和环保木质作为底面基材，表面可以根据客户要求定做成三聚氰胺、木皮、布艺、皮革等饰面。这不仅增强了视觉上的装饰感，而且创造了一个更安静、更舒适的环境。本产品都采用环保材料，并拥有权威机构报告认证。是办公空间、商业空间、家居客厅、卧室、影院的首选吸声装饰材料。

Slatted Acoustic Panel

Features: Each piece of Tenge strip board is handmade with formaldehyde free sound absorption PET and environment-friendly wood as the bottom substrate. The surface can be made into melamine, wood leather, cloth, leather and other finishes according to customer requirements. This not only enhances the visual sense of decoration, but also creates a quieter and more comfortable environment. This product is made of environment-friendly materials and has the report and certification of the authority. It is the first choice of sound absorbing decorative materials for office space, commercial space, living room, bedroom and cinema.

吸声软包

Fabric Acoustic Panel

墙面憎水无醛吸声软包 **Hydrophobic&formaldehyde free fabric acoustic panel**

产品规格 (常用)

Product Specification (Commonly Used)

长度 /length: 595mm / 1195mm (可订制)
 宽度 /width: 595mm
 厚度 /thickness: 25mm / 50mm
 密度 /density: 48kg/m3 / 64kg/m3 / 80kg/m3 / 96kg/m3

产品信息

基 材: 憎水无甲醛白色玻璃棉
边 框: 树脂边框、铝边框、软边框
饰 面: 布艺系列、皮革系列、玻纤布系列
憎水参数: 达到 98% 以上
含 水 率: 0.4 %
热荷重收缩温度: 380℃
防 火: 基材为 A 级
环 保: 经检测无甲醛
施 工: 与传统软包一致, 可粘贴、可扣片、可枪钉



直角
Right Angle

小切角 (常规)
Small Chamfer (routine)

大切角
Big Chamfer



树脂边框
Resin Frame

铝边框
Aluminum Frame

软边框
Soft Frame



Products Information

Base material: hydrophobic & formaldehyde free white glass wool
Frame: resin frame, aluminum frame, soft frame
Finish: fabric series, leather series, fiber glass fabric series
Hydrophobic rate: ≥ 98%
Moisture content: 0.4%
Shrinkage temperature of thermal load: 380 °C
Fire protection: class A (base material)
Environmental protection: no formaldehyde release
Construction: consistent with the fabric acoustic panel, it can be pasted, buckled and nailed

吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000
25mm 吸声系数 α 25mm Sound Absorption Coefficient α	0.38	0.77	0.91	0.88	0.86	0.89
50mm 吸声系数 α 25mm Sound Absorption Coefficient α	0.61	0.98	1.00	0.85	0.98	0.95

全频吸声软包

Full-frequency Absorption Fabric Acoustic Panel



墙面环保吸声软包 **Environment protection fabric acoustic panel**



基 材: 欧文斯科宁棉、黄棉、红棉
边 框: 树脂边框、铝边框、软边框
饰 面: 布艺系列、皮革系列、玻纤布系列
防 火: 基材为 A 级
环 保: 经检测无甲醛
施 工: 与传统软包一致, 可粘贴、可扣片、可枪钉
最大规格: 1.4m x 6m 以内

Base material: ovens corning cotton, glass cotton, red glass cotton
Frame: resin frame, aluminum frame, soft frame
Finish: fabric series, leather series, fiber glass fabric series
Fire protection: class A (base material)
Environmental protection: no formaldehyde release
Construction: consistent with the fabric acoustic panel, it can be pasted, buckled and nailed.
Largest size: 1.4m wide x 6m (within)

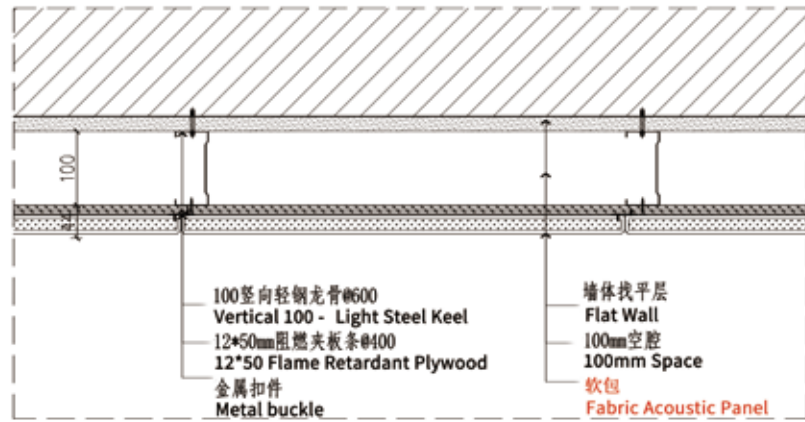
吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

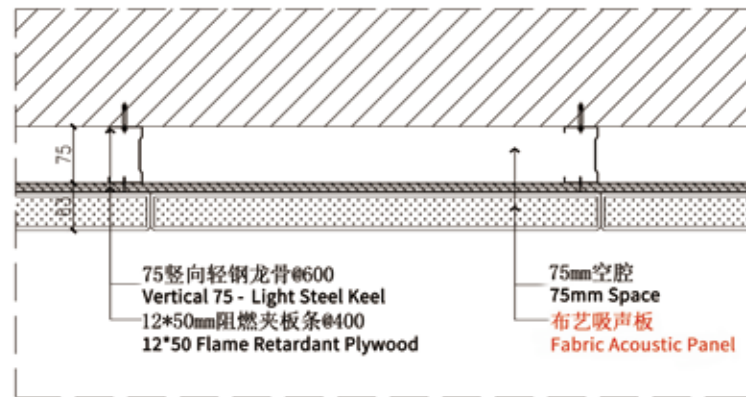
频率 (Hz) Frequency	125	250	500	1000	2000	4000
25mm 吸声系数 α 25mm Sound Absorption Coefficient α	0.21	0.55	0.82	0.72	0.69	0.67
50mm 吸声系数 α 50mm Sound Absorption Coefficient α	0.33	0.64	0.75	0.80	0.80	0.77



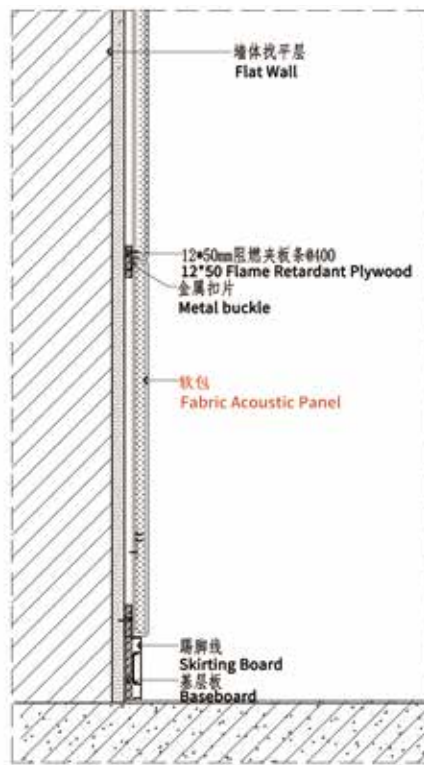
吸声软包节点图 Fabric acoustic panel installation node drawing



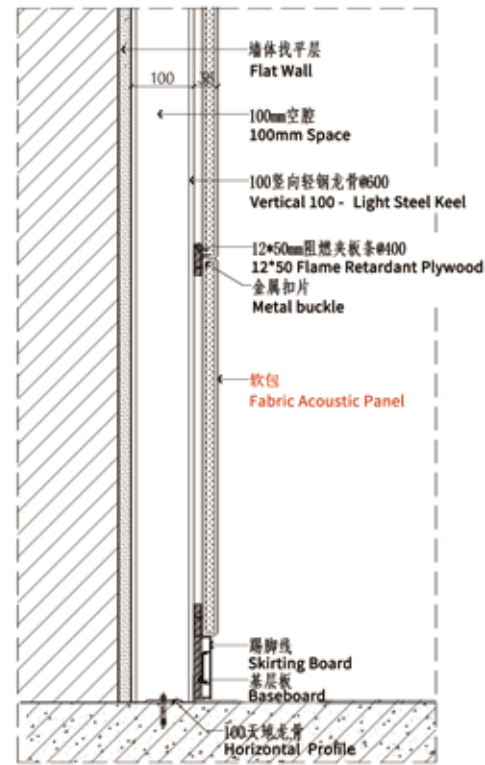
扣片安装方法横剖图
clip installation horizontal section drawing



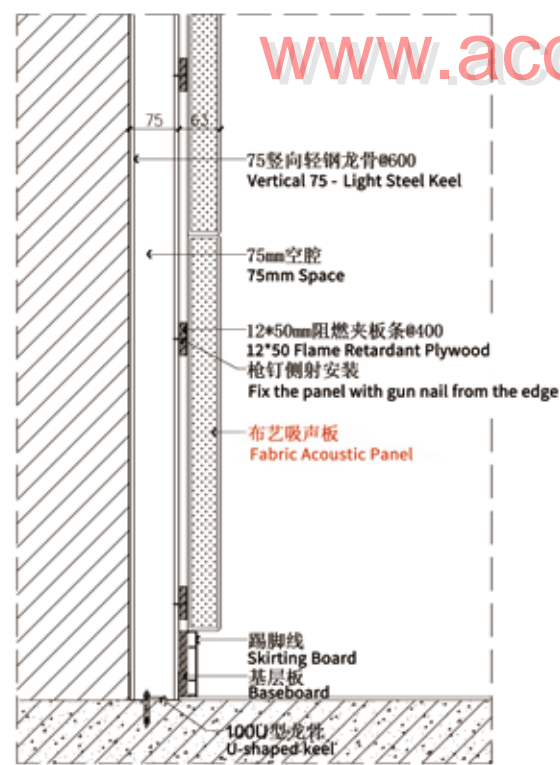
枪钉加板条安装方法横剖图
nail and wood batten installation horizontal section drawing



实贴底板安装方法竖剖图
pasted to backboard installation vertical section drawing



扣片安装方法竖剖图
clip installation vertical section drawing



枪钉加板条安装方法竖剖图
nail and wood batten installation vertical section drawing

吸声软包工程案例展示 Fabric Acoustic Panel Project Case



吸声棉包 Sound Absorbing Cotton Bag

安装位置: 作为填充材料, 安装在吸声产品背面

颜色: 白色或黑色

结构: 欧文斯科宁红棉、无甲醛憎水白棉、黄棉, 外包 100g-200g/m² 白色玻纤布

防火性能: A 级

常规: 长度: 1200mm/2400mm 宽度: 600mm/1200mm
厚度: 25mm/50mm/80mm/100mm

(允许公差: 长度 ±2mm, 宽度 ±1mm, 厚度 ±1mm)

用法: 适用于槽铝吸声板、槽孔吸声板、穿孔木质吸声板、穿孔铝板、陶晶砂等各类吸声材料的后空腔内进行吸声性能加强处理

Installation position: installed behind the sound absorbing material as filling material

Color: white or black

Structure: Owens Corning wool, hydrophobic & formaldehyde free white glass wool, wrapped with 100g-200g/m² white glass fiber cloth.

Fire resistance: Class A

Size: Length:1200mm/2400mm width:600mm/1200mm Thickness: 25mm/ 50mm/ 80mm/ 100mm (tolerance: length ± 2mm, width ± 1mm, thickness ± 1mm)

Applicable place: it is suitable for strengthening the sound absorption performance in the back cavity of various sound absorption materials, such as grooved aluminum acoustic panel, grooved acoustic panel, perforated acoustic panel, perforated aluminum panel and crystal-sand acoustic panel etc.

吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000
铝箔轻质低频吸声体 吸声系数 α Sound Absorption Coefficient α	0.84	0.95	0.71	0.66	0.48	0.31



吸声泡棉 Melamine Foam

产品特点: 吸声泡棉拥有高孔隙率、孔隙率能达到 99% 以上, 使得声波能够充分有效地进入泡沫体的深层, 并能变成网络的振动, 动能被消耗和吸收。从而有效地消除反射声波。可直接用于室内吸声降噪、施工时也不会产生粉尘或有害气体。可调节混响时间, 另外还可以用于共振吸声结构的内胆, 增强共振吸声材料的全频吸声效果。

优势:

- (1) 优越的吸声性能: 25 厚吸声泡棉相当于 50 厚 32kg 容重玻璃棉的吸声性能。
- (2) 可加工成任意形状吸声体, 加工性及施工环境也远远优于传统产品。
- (3) 高温发泡制成, 具有独特的化学稳定性, 其卫生性可以达到食品卫生级要求。具有耐久性和卫生性。亦可用于家居清洁。
- (4) 无毒、无甲醛释放绿色环保。
- (5) 与其它吸声棉板相比较: 具有更佳的吸声性能、无粉尘污染、对人体无伤害。

规格: 长度: 600mm/1200mm/2400mm 宽度: 600mm/1200mm 厚度: 25-100mm (允许公差: 长度 ±2mm, 宽度 ±1mm, 厚度 ±1mm)

容重: 8-10kg/m³

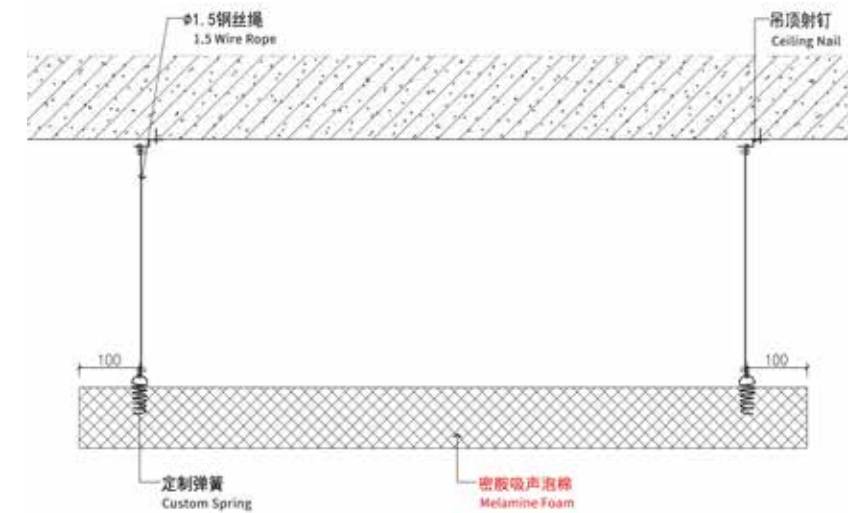
适用场所: 体育馆、剧院、礼堂、教堂、录音室、演播厅、多功能厅、家庭影院等。

安装辅材: 轻钢龙骨、12 厘夹板条、专用龙骨等

吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000	备注 Remark
50mm 吸声系数 α 50mm Sound Absorption Coefficient α	0.23	0.45	0.88	0.86	0.84	0.70	无后空腔 No cavity



密胺吸声泡棉天花安装大样图
Installation Of Melamine Foam Ceiling

Product features: Melamine foam has high porosity, which is more than 99%, so that the sound wave can enter the deep inside of foam effectively and transfer to kinetic and hot energy by the internal friction, is consumed and absorbed. So that the reflected sound wave can be effectively eliminated. It can be directly used for indoor sound absorption and noise reduction, no dust or harmful gas release during construction. It also can be used inside the resonant structure to improved the full frequencies sound absorption effect.

Advantage:

- (1) Excellent sound absorption performance: 25mm melamine foam is similar to 50mm 32kg/M3 glass wool on the sound absorption performance.
- (2) It can be processed into any shape of sound absorber, and its work ability and construction environment are much better than traditional foam products.
- (3) It is made of high temperature foaming, with unique chemical stability. Its sanitation can meet the requirements of food hygiene level. It has resistance to chemical reaction, can also be used for household cleaning.
- (4) It's green product, environmental protection, non-toxic and formaldehyde free.
- (5) compared with other sound absorbing cotton board: it has better sound absorption performance, no dust pollution and no harm to human body.

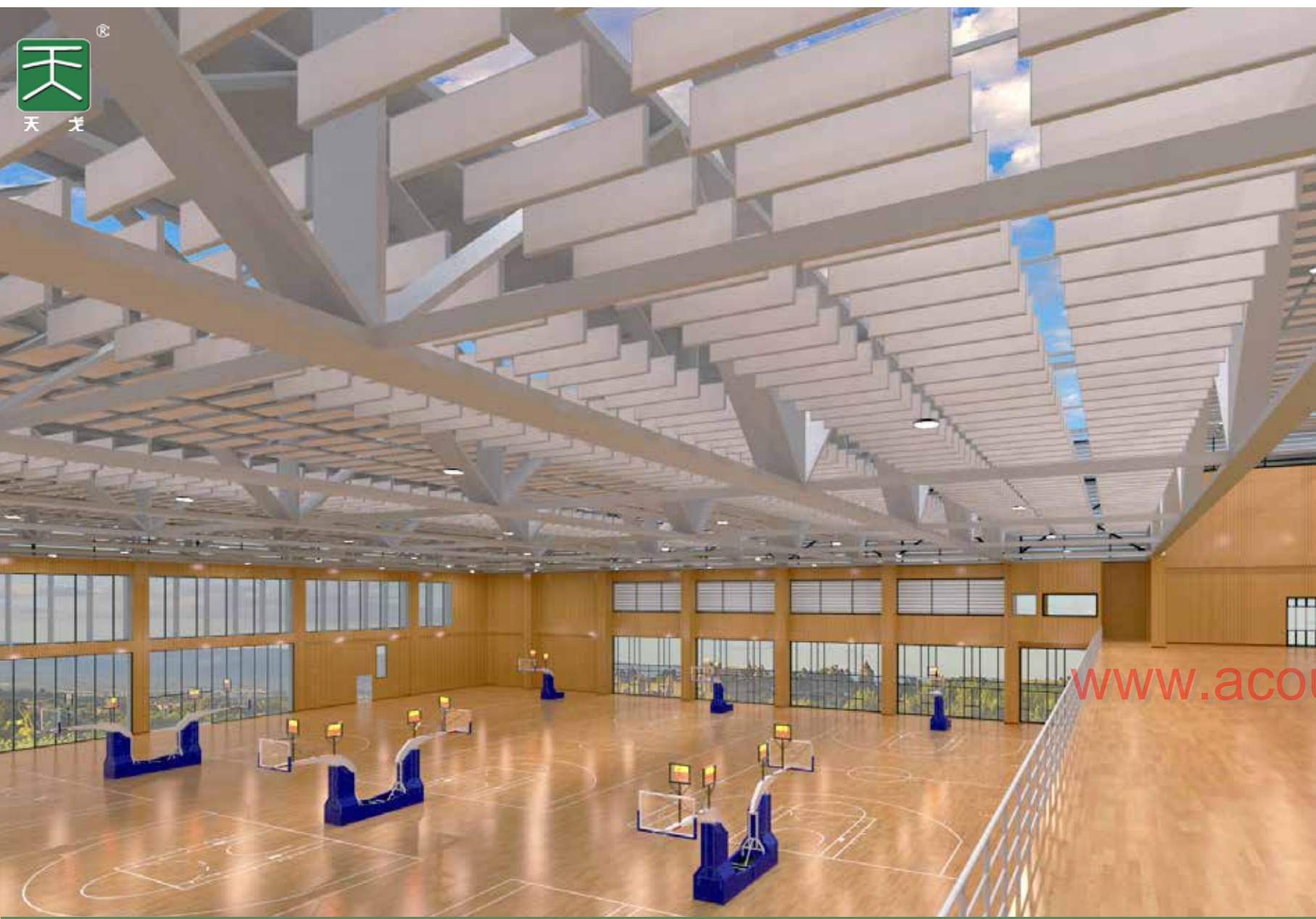
Specification: Length:600mm/1200mm/2400mm width:600mm/1200mm thickness: 25-100mm (tolerance: length ± 2mm, width ± 1mm, thickness ± 1mm)

Density: 8-10kg/m³

Applicable places: gymnasium, theatre, auditorium, church, recording room, studio, multi-function hall, home theater, etc.

Installation accessories: light steel keel, 12mm plywood batten, special clip piece





空间吸声体类 Suspended Sound Absorber Series

特点: 空间吸声体是唯一一种具有两面吸声的声学材料, 常用于大空间天花声学处理, 可大大降低声学装修的成本。
Characteristics: Suspended sound absorber is the only acoustic material with two sides sound absorption. It is widely used in large space ceiling acoustic treatment, which can greatly reduce the cost of acoustic decoration.



空间吸声体 Suspended Sound Absorber

天花平板吸声体 Ceiling Suspended Sound Absorber

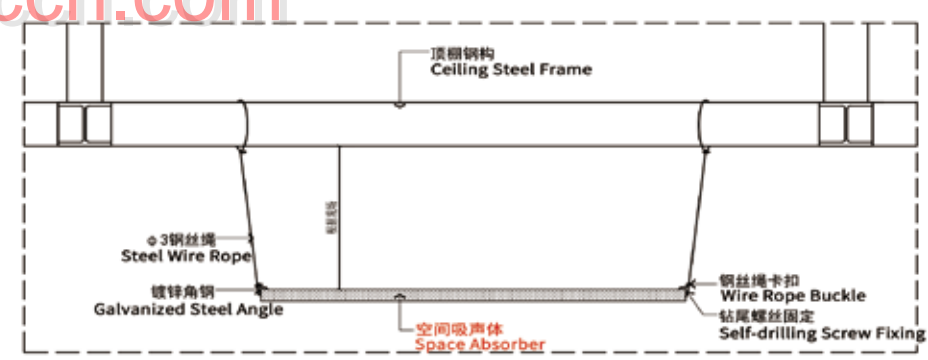


内包布 Aluminum frame visible 外包布 Aluminum frame invisible

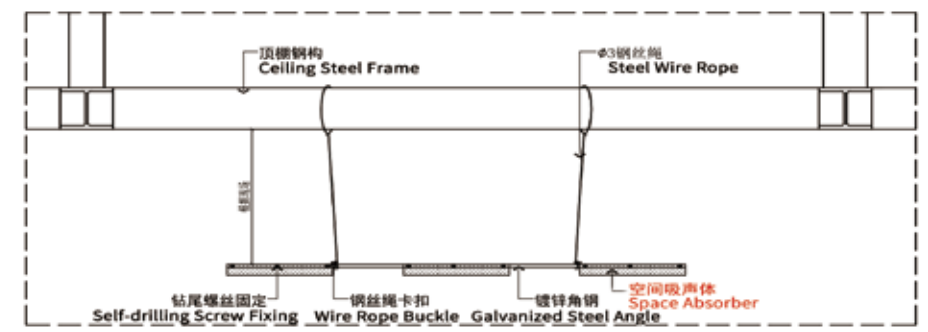
吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000
间隔铺吸声系数 α Interval suspend Absorption Coefficient α	0.41	0.86	1.15	1.18	1.21	1.15
满铺吸声系数 α Full suspend Absorption Coefficient α	0.20	0.72	0.92	0.89	0.89	0.88



空间吸声体水平安装图①
Horizontal Installation Of Space Absorber ①



空间吸声体水平安装图②
Horizontal Installation Of Space Absorber ②

产品特点: 平板空间吸声体是由优质玻璃纤维棉、定制铝质边框、吸声防尘玻纤布组成。具有环保、防火、吸声性能高等性能。饰面颜色及材料选择性广, 能很好地满足客户多样化的声学及装饰需求。最高防火性能达 A2 级、最高环保性能达 E1 级

表面处理: 外包布、内包布
饰面: 玻纤布、布艺系列
基材: 80Kg/m³ 欧文斯科宁玻璃棉
重量: 5.5Kg/m²(50mm 厚) 11.5Kg/m²(100mm 厚)
结构: 四周铝合金框内置欧文斯科宁吸声棉, 外包吸声玻纤难燃 / 不燃吸声布
安装方式: 水平 / 垂直吊挂
安装配件: 角钢、轻钢龙骨、螺栓、拉铆钉、钢丝绳、吊环、安全扣
产品规格: 1200mm × 2400mm 范围 (异形可订制)

Product features: Product features: Suspended sound absorber is made of high-quality glass fiber cotton, custom aluminum frame and sound-absorbing & dust proof glass fiber cloth. It has the properties of environmental protection, fire proof, high sound absorption, various shape choice and so on. The wide colors and materials selection can well meet the customers any acoustic and decorative requirement. The fire resistance reaches A2 grade and the environmental protection performance reaches E1 grade.

Surface treatment: aluminum frame invisible, aluminum frame visible
Finish: fiberglass cloth series, fabric series
Base material: 80kg/m³ Owens Corning Glass wool
Weight: 5.5kgs/m² (50mm thick) 11.5kgs/m² (100mm thick)
Structure: Aluminum alloy frame around, Owens Corning sound-absorbing cotton inside, wrapped with flame retardant fiberglass cloth or incombustible acoustic fabric.
Installation: horizontal / vertical hanging
Installation accessories: angle steel, light steel keel, screw bolt, pull rivet, wire rope, hanging rings, safety hook.
Size: within 1200mm x 2400mm (offer customized shape)

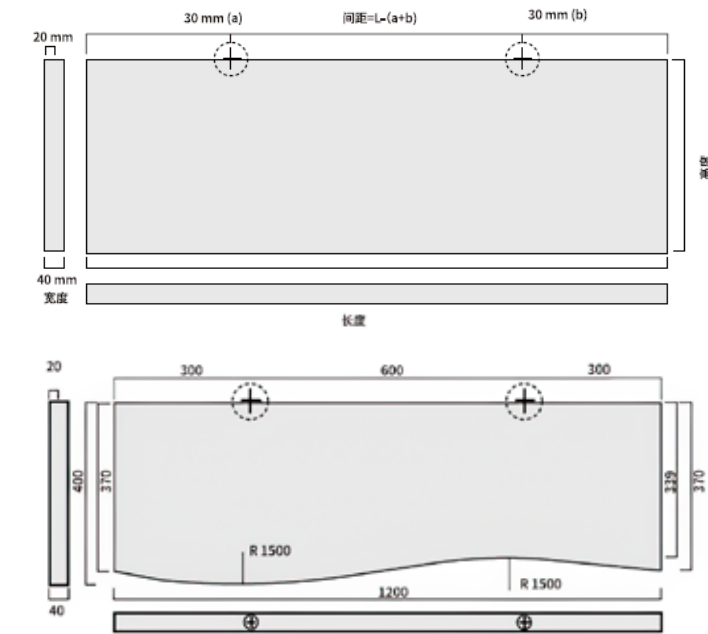


空间吸声体 Suspended Sound Absorber

艺术天花吸声体 Art Ceiling Decoration Absorber

产品特点: 艺术天花吸声体是一种以防火、环保玻璃纤维为主要材料, 加入适量的粘结剂、防潮剂、防腐剂, 经加工、烘干、饰面而形成的一种新型吊顶装饰材料。艺术天花吸声体适用于体育馆、大剧院、广播电台、电视台录音室、演播室、学校、图书馆、文化中心、礼堂、多功能厅、会议室及音乐厅等对音质要求较高的场所 (适用于各类公共建筑物的吊顶装饰)。

Product features: Art Ceiling Decoration Absorber is a new type of ceiling decoration material, which is made of fire-proof and environmental protection glass fiber as the main material, with proper amount of binder, moisture-proof agent and preservative added, processed, dried and finished. It is suitable for gymnasium, grand theater, radio station, television studio, studio, school, library, cultural center, auditorium, multi function hall, conference room, concert hall and other places where need higher requirements for sound absorption quality.



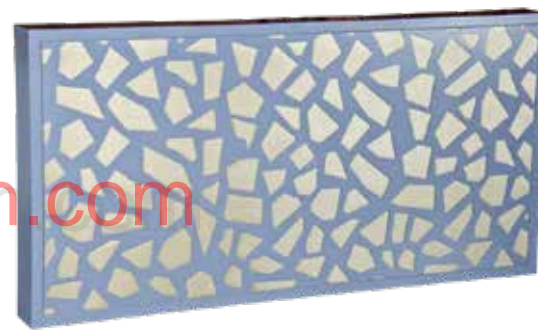
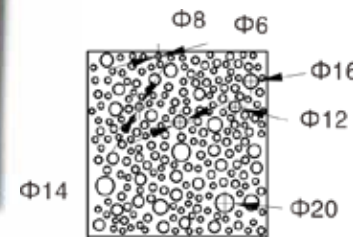
优势: 质轻、吸声、防火、环保、施工方便、美观大方、可定制造型、RAL 颜色多样选择
材料用量: 参考声学设计
安装辅材: 缆线、连接帽、底部调节器、保险钩、自攻螺丝 (与面板相连)
规格: 长方形: 长 1200/1600/1800 × 宽 200/400/500 × 厚 40mm
 波浪形: 长 1200/1800 × 宽 400 × 厚 40mm

Advantages: light weight, sound absorption, fire prevention, environment protection, easy installation, elegant appearance and many RAL color choice.
Material consumption: refer to acoustic design
Installation accessories: cable, connecting cap, bottom regulator, safety hook, self tapping screw (connected to panel)
Specifications: Rectangle: length: 1200/1600/1800mm × width: 200/400/500mm × thickness: 40mm
 Waves: length: 1200/1800mm × width: 400mm × thickness: 40 mm

吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000
吸声系数 α Sound absorption coefficient α	0.50	0.88	1.42	1.45	1.33	1.34

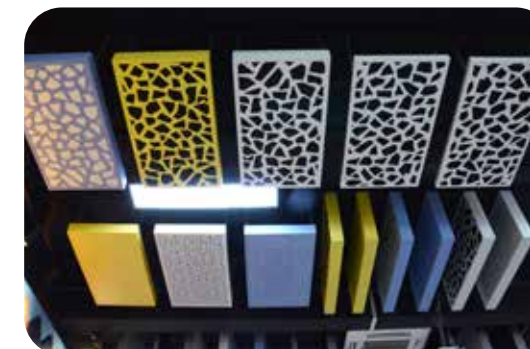


允许公差: 宽度为 ±2mm, 长度为 ±2mm

吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000
100mm 吸声系数 α 100mm Sound Absorption Coefficient α	0.65	1.1	0.99	1.17	1.28	1.24



空间吸声体 Suspended Sound Absorber

大小孔空间吸声体 Irregular Perforated Suspended Sound Absorber

产品特点: 天戈声学大小孔空间吸声体是由优质玻璃纤维棉、定制铝质边框、定制铝质饰面、吸声防尘玻纤布组成。具有环保、防火、吸声性能高、表面花样多等性能。饰面颜色及材料选择性广, 能很好地满足客户多样化的声学及装饰需求。最高防火性能达 A2 级、最高环保性能达 E1 级。

Product features: The irregular perforated suspended sound absorber is made of high quality glass fiber cotton, custom aluminum frame, custom aluminum facing and acoustic dust proof fiberglass cloth. It has the properties of environmental protection, fire proof, high sound absorption, various shape choice and so on. The wide colors and materials selection can well meet the customers any acoustic and decorative requirement. The fire resistance reaches A2 grade and the environmental protection performance reaches E1 grade.

材料用量: 参考声学设计

饰面: 定制铝质饰面可做各种颜色

表面处理: 带色穿孔铝板

基材: 80Kg/m³ 欧文斯科宁玻璃棉

重量: 9.8Kg/m² (50mm 厚)

穿孔率: 32%

结构: 四周铝合金框内置欧文斯科宁吸声棉, 双面异形穿孔铝板

安装方式: 水平 / 垂直吊挂

安装配件: 角钢、轻钢龙骨、螺栓、拉铆钉、钢丝绳、吊环、安全扣等

产品规格: 长度: 1200mm~2400mm 宽度: 600mm~1200mm

允许公差: 长度为 ±2mm, 宽度为 ±2mm

Material consumption: refer to acoustic design

Finish: Custom aluminum finish with many color choice

Surface treatment: colored perforated aluminum sheet

Material: 80Kg/m³ Owens Corning Glass wool

Weight: 9.8Kg/m² (50mm thick)

Perforation rate: 32%

Structure: Aluminum alloy frame around, Owens Corning sound-absorbing cotton wrapped with cloth inside, covered with custom perforated aluminum sheet.

Installation method: horizontal / vertical hanging

Installation accessories: Installation accessories: angle steel, light steel keel, screw bolt, pull rivet, wire rope, hanging rings, safety hook etc..

Product specifications: length: 1200mm~2400mm width: 600mm~1200mm

Allow tolerance: width: ±2mm, length: ±2mm

空间吸声体 Suspended Sound Absorber

网状空间吸声体 Mesh facing Suspended Sound Absorber

材料用量: 参考声学设计
结构: 四铝合金框内置欧文斯科宁吸声棉, 外包吸声玻纤难燃 / 不燃吸声布加铝网饰面。
安装方式: 水平, 垂直
安装配件: 角钢、轻钢龙骨、螺栓、拉铆钉、钢丝绳、吊环、安全扣等
颜色: 白 / 米 / 黑绝燃声学玻织布或彩色常规可选择
重量: 50厚 6.6kg/m² 100厚 13kg/m²
防火性能: A级 /B1级
环保等级: GB18580-2017《室内装饰装修材料人造板及其制品中甲醛释放限量》的标准 E1级
产品规格: 长度:1200mm~2400mm 宽度:600mm~1200mm
允许公差: 长度为±2mm, 宽度为±2mm

Material consumption: refer to acoustic design
Structure: Aluminum alloy frame around, Owens Corning sound-absorbing cotton wrapped with cloth inside, covered with mesh sheet.
Installation method: horizontal / vertical hanging
Installation accessories: Installation accessories: angle steel, light steel keel, screw bolt, pull rivet, wire rope, hanging rings, safety hook etc..
Color: White / cream / black non combustible cloth, or normal colored fabric choice.
Weight: 50 mm: 6.6kgs/m² 100 mm: 13kgs /m²
Fire resistance: class A /B1 Grade
Environmental protection grade: E1 Grade, according to GB18580-2017《Formaldehyde emission limit of wood based panel and its products》Standard.
Product specifications: length:1200mm~2400mm width: 600mm~1200mm
Allow tolerance: length: ±2mm, width: ±2mm

吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000
吸声系数 α sound absorption coefficient α	0.48	0.75	0.99	1.21	1.19	1.24



聚酯纤维吸声板 Polyester Fiber Acoustic Panel



安装辅材: 轻钢龙骨、9厘夹板、枪钉、免钉胶
材料用量: (参考声学设计)

产品参数
基材: 100% 聚酯纤维
边角处理: 可倒角
密度: 160-229kg/m³
饰面: 多种颜色可供客户选择。

产品规格: 长度/length: 2420mm 宽度/width: 1220mm 厚度/thickness: 9mm

Installation accessories: light steel keel, 9mm plywood batten, gun nails, nail free glue
Material consumption: refer to acoustic design

Product specification
Substrate: 100% polyester fiber
Corner processing: chamfering
Density: 160-229kg/m³
Color: a variety of colors for customers to choose.

Product specification: 2420mm length x 1220mm width x 9mm thickness

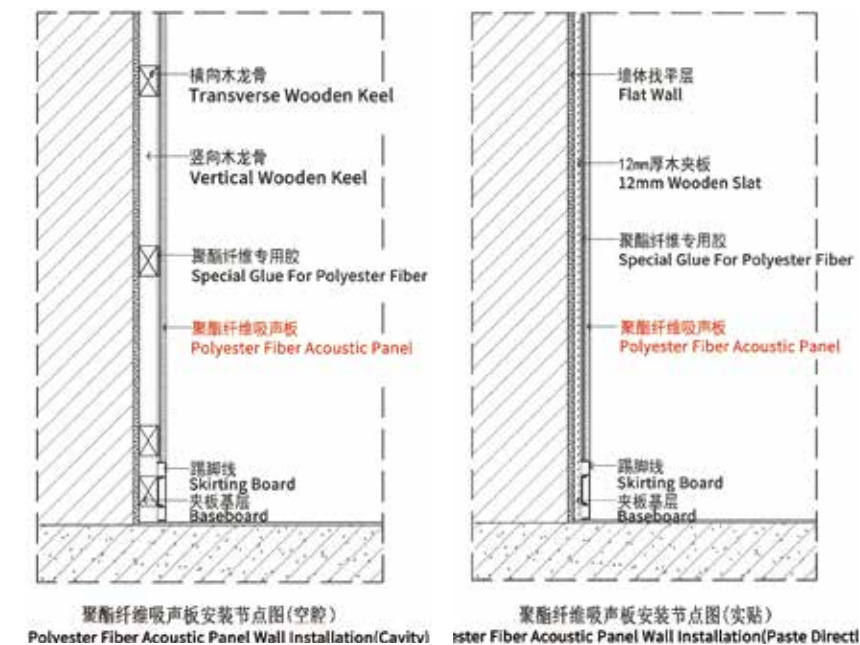
吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

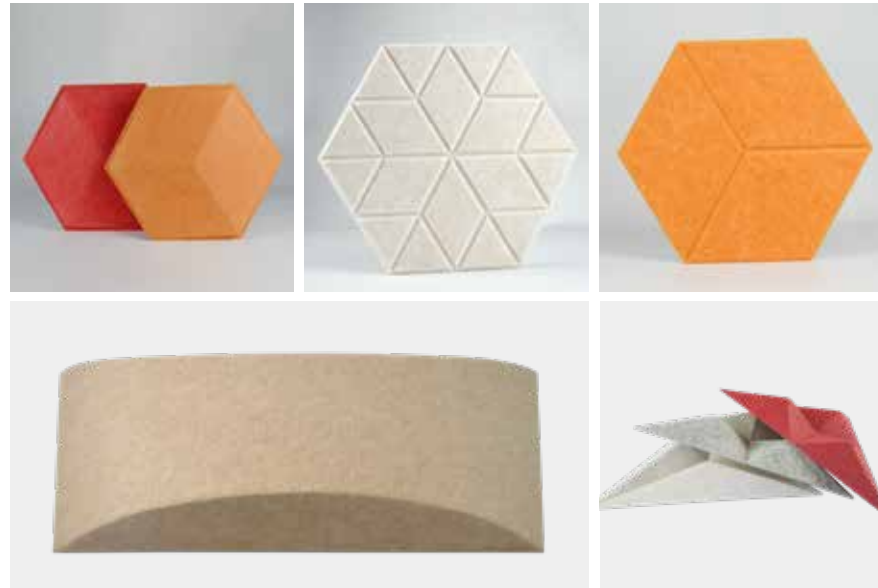
频率 (Hz) Frequency	125	250	500	1000	2000	4000
9mm 厚吸声系数 α 9mm Sound absorption coefficient α	0.23	0.57	0.75	0.82	0.68	0.62

产品特点: 天戈声学聚酯纤维吸声板具有高密度、环保、防火、吸声频带宽、装饰性强、施工简单、易于切割、无粉尘污染等性能, 饰面颜色及材料选择性广, 能很好地满足客户多样化的声学及装饰需求。最高防火性能 B1 级、最高环保性能 E1 级。

Product features: TianGe polyester fiber acoustic panel with high density, environmental protection, fire proof, wide frequency sound absorption, strong decoration, simple construction, easy cutting, no dust pollution and other properties, many color and decorative shape choices, can well meet customer's acoustic and decoration requirements. The highest fire resistance grade B1, the highest environmental protection grade E1.



艺术 3D 聚酯纤维 3D Art Polyester Fiber Acoustic Panel



此系列产品有着现代化的曲线、几何形状和平滑的边缘，是设计师将自然界法则和现代美学结合的产物。3D 设计自带空腔，相较平板设计对处理低频有更显著的效果，且凹凸部分可以充分地多余声线进行扩散，可实现全频吸声、扩散，使得整个场所的声音更加清晰和饱满；让声学与现代装饰美学更好地融合在一起。

This series of products has modern curves, geometric shapes and smooth edges, which is the product of the designer's combination of natural laws and modern aesthetics. The 3D design has its own cavity, which has a more significant effect on low-frequency processing than the flat design, and the concave and convex parts can fully diffuse the excess sound rays, which can achieve full-frequency sound absorption and diffusion, making the sound of the whole place clearer and fullness; let acoustics and modern decorative aesthetics better blend together.

吸声系数：（经权威机构检测）可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000
9mm 厚吸声系数 α 9mm Sound Absorption Coefficient α	0.24	0.57	0.81	0.92	0.68	0.58



艺术 3D 聚酯纤维 3D Art Polyester Fiber Acoustic Panel

此系列产品有着现代化的曲线、几何形状和平滑的边缘，是设计师将自然界法则和现代美学结合的产物。3D 设计自带空腔，相较平板设计对处理低频有更显著的效果，且凹凸部分可以充分地多余声线进行扩散，可实现全频吸声、扩散，使得整个场所的声音更加清晰和饱满；让声学与现代装饰美学更好地融合在一起。

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产品规格: 长度: 500mm 宽度: 500mm 厚度: 20mm/25mm/48mm/53mm (尺寸可定制)
优势: 质轻、装饰性强、吸声性能佳、环保优质品
装饰空间: 办公场所、会所、运动馆、公共区域
饰面: 多种颜色可供客户选择
材料用量: 参考声学设计

Product Specifications: Length: 500mm Width: 500mm Thickness: 20mm/25mm/48mm/53 mm (size can be customized)

Advantages: light weight, strong decoration, good sound absorption performance, environmental protection & high quality products

Applicable place: Office Space, Clubhouse, Sports Hall, Public Area

Finish: may colors choice

Material consumption: refer to Acoustic Design



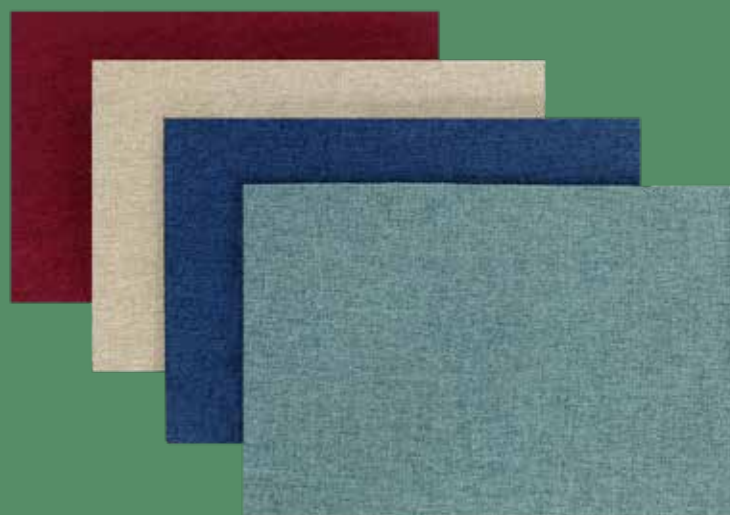


新型吸声硬包类

Newly Acoustic Hard Fiber Panel Series

特点: 天戈高纤吸声板是用柔性材料对室内墙板表面加以包装而成的新型吸声硬包, 所使用的材料质地柔软、色彩柔和, 能够柔化整体空间氛围, 其纵深的立体感亦能提升档次。

Characteristics: TianGe high-density fabric acoustic decor panel is a kind of wall decoration panel which is wrapped with fabric on the fiber panel surface and mostly used on the interior wall. The material used is soft in texture and soft in color, which can soften the overall space atmosphere and improve the level of its deep three-dimensional feeling.



新型吸声硬包

Newly Acoustic Hard Fiber Panel

彩纤吸声板 Colour Fabric Acoustic Decor Panel

天戈彩纤吸声板是用柔性材料对室内墙板表面加以包装而成的新型吸声硬包, 所使用的材料质地柔软、色彩柔和, 能够柔化整体空间氛围, 其纵深的立体感亦能提升档次。除具备空间美化作用外, 更是集阻燃、吸音、隔音、防潮、防霉、抗菌、防水、防油、防尘、防静电以及防撞功能于一身, 性价比更高。

TianGe colour fabric acoustic decor panel is a kind of wall decoration panel which is wrapped with fabric on the fiber panel surface and mostly used on the interior wall. The material used is soft in texture and soft in color, which can soften the overall space atmosphere and improve the level of its deep three-dimensional feeling. In addition to the space beautification function, more importantly, it has the functions of flame-retardant, sound-absorbing, sound-proof, moisture-proof, mildew proof, anti-bacterial, water-proof, oil-proof, dust-proof, pollution-proof, anti-static and anti-collision, which is more cost effective.

- 结构:** 优质纤维经 200 度以上的温度与布艺饰面压制而成, 形成一体, 永不变形;
- 密度:** 120~300kg/m³;
- 声学:** 降噪系数 NRC ≥ 0.70, 检测依据 GB/T 20247-2006 《声学 混响室吸声测量》;
- 防火:** 燃烧性能 B1 级 (最高可达 A 级), 依据 GB8624-2017 《建筑材料及制品燃烧性能分级》;
- 环保:** 环保等级 E1 级, 根据 GB18580-2017 《室内装饰装修材料 人造板及其制品中甲醛释放限量》;
- 防水:** 板材细密, 不透水, 基本形成荷叶效应。
- 装饰:** 饰面可多样化, 可做布艺、皮革等多种护面, 任意素材高清喷绘或刺绣, 亦可做曲面、凹凸等异形面。
- 装饰空间:** 餐厅、会议室、办公室、酒店、宴会厅 (可喷绘各种图形)

吸声系数: (经权威机构检测) 可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory) sound coefficient can be adjusted according to installation structure

频率 (Hz) Frequency	125	250	500	1000	2000	4000
9mm 厚吸声系数 α 9mm Sound Absorption Coefficient α	0.44	0.80	0.85	0.82	0.73	0.68



- Structure:** High-quality fiber panel is pressed by over 200 degrees temperature with fabric finish, forming a whole, never deformation panel;
- Density:** 120 ~ 300kg / m³;
- Acoustics:** Noise reduction coefficient NRC ≥ 0.75, tested according to GB / T 20247-2006 《Sound Absorption Measurement in Acoustic Reverberation Room》;
- Fire resistance:** Grade B1 combustion performance (can be Grade A), tested according to GB8624-2017 《Classification of Combustion Performance of Building Materials and Products》;
- Environmental protection:** E1 Grade, tested according to GB18580-2017 《Formaldehyde Release Limit in Wood-based Panel of Interior Decoration Materials and Its Products》;
- Waterproof:** The boards are fine dense and impervious to water, basically forming a lotus leaf effect;
- Decoration:** The decorative surface can be diversified, which can be used for fabric, leather, and other protective surfaces. Any material in high definition can be painted or embroidered. It can also be curved, concave-convex and other special-shaped surfaces;
- Applicable places:** restaurant, conference room, office, hotel, banquet hall (can be painted).

产品规格 (常用)

Product Specification (Commonly Used)

长度 /length: 1220mm 2500mm 3000mm

宽度 /width: 1210mm 2420mm

厚度 /thickness: 5mm 9mm 12mm

现场安装可任意裁切 / it can cut to any shape easily at site installation.



新型吸声硬包 Newly Acoustic Hard Fiber Panel 声学吸音画 Acoustic Painting Panel

天戈声学吸声画采用高科技印刷工艺，可达到艺术原作的表现效果，又可使声波穿透表面而被芯材有效吸收和降低，且灵活多变，可满足大型图片吸声方案。非常适用于对声学要求特别高并需要在较宽频率范围内吸收噪音的空间。根据画框厚度分为 20mm/25mm/50mm、单幅最大尺寸达 6 米 × 1.4 米的作品。

TianGe Acoustic Panting panel is made by high-tech printing Technology.It can achieve the expressive effect of the original art, and also allows sound waves to enter the base material and be absorbed effectively and reduced by the panels.Besides, it is flexible and changeable on size, which can satisfy the sound-absorbing scheme of large-scale pictures.It's very suitable for spaces with particularly high acoustic requirements and need to absorb noise in a wide frequency range. This biggest size 1.4m x 6.0m, the thickness can be 20mm , 25mm or 50mm.

吸声系数：（经权威机构检测）可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory)sound coefficient can be adjusted according to installation structure

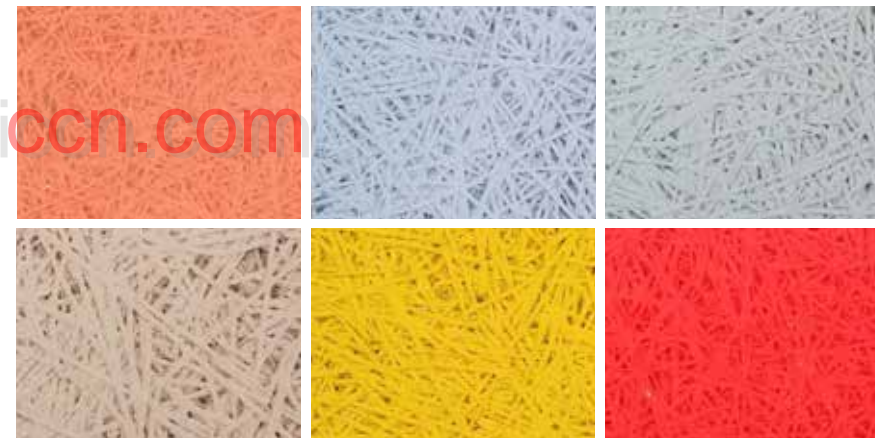
频率 (Hz) Frequency	125	250	500	1000	2000	4000
9mm 厚吸声系数 α 9mm Sound Absorption Coefficient α	0.44	0.80	0.85	0.82	0.73	0.68



木丝吸声板 Wood Wool Acoustic Panel

特点：木丝吸声板在我国已有几十年的生产和使用历史，是常用的建筑吸声、保温材料。由菱镁及 100% 纯木丝组成，对中高频噪音具有显著的吸声效果。

Characteristics: Wood wool acoustic panel has been produced and used for many years in China , is often used as building sound absorption and temperature reservation material . Wood wool acoustic panel is composed of magnesite and 100% pure wood , which has remarkable sound absorption effect on medium and high frequency noise .



吸声系数：（经权威机构检测）可根据安装结构调整吸声系数

Sound absorption coefficient: (Tested by authority laboratory)sound coefficient can be adjusted according to installation structure

产品名称 Product Name	安装条件 Installation conditions	频率 (Hz) Frequency	125	250	500	1000	2000	4000
15mm 厚木丝吸声板 15mm Wood Wool Acoustic Board	50mm 后空腔 + 50 厚 24K 吸声棉 50mm rear cavity + 50mm 24kg/m³ glass wool	吸声系数 α Sound absorption coefficient α	0.37	0.65	0.8	0.55	0.59	0.58

原色水泥木丝 Original color Wood Wool Panel

产品特点：木丝吸声板具有环保、防火、吸声频带宽、施工简单易于切割等性能，表面可喷涂各种色彩颜料。表面丝状纹理，给人一种原始粗犷的感觉。安装后可使声学环境更加接近自然。防火性能 B1 级、环保性能 E1 级。

Product features: Wood wool panel has the features of environmental protection, fire prevention, wide frequency range' s sound absorption , simple construction and easy cutting and other properties, the surface can be painted with various color pigment. The surface filamentous texture, giving a raw rough feeling. After installation, the acoustic environment is closer to nature. Fire resistance Grade B1, environmental protection Grade E1.

产品结构：木丝吸声板是由菱镁及 100% 纯木丝组成；
防火等级：B1 级；
环保等级：GB18580-2017《室内装饰装修材料 人造板及其制品中甲醛释放限量》的标准 E1 级，具有防潮、防火、防霉、环保等特点；
按装方式：自攻螺丝或专用龙骨安装；
密度：580Kg/m³；
饰面：可喷各种颜色和涂料；
安装辅材：轻钢龙骨、12 厘夹板条、自攻螺丝等；
使用场所：体育馆、多功能厅、音乐厅、大剧院、会议室、报告厅、家庭影院、酒店等对声学要求比较高场的场所；
产品规格：长度：2440mm 宽度：1220mm 厚度：15mm / 20mm / 25mm；
允许公差：长度 ±2mm，宽度 ±2mm，厚度 ±2mm

Product structure: magnesite + 100% pure wood wool
Fire rating: B1 class.
Environmental protection grade: E1 Grade, according to GB18580-2017《Formaldehyde emission limit of wood based panel and its products》Standard.As well as moisture proof, fire prevention, mildew prevention and environmental protection.
Install method: self tapping screw or special installation keel.
Density: 580Kg/ m³ .
Color : can be sprayed to various colors or coatings.
Installation accessories: light steel keel, 12mm plywood batten, self tapping screws etc.
Applicable places: Gymnasium, multi-function hall, concert hall, Grand Theater, conference room, lecture hall, home theater, hotel and other places with high acoustics requirements .
Product specification: length:2440mm wide:1220mm thickness:15mm / 20mm /25mm.
Allow tolerance: length:± 2mm,width: ± 2mm, thickness:± 2mm

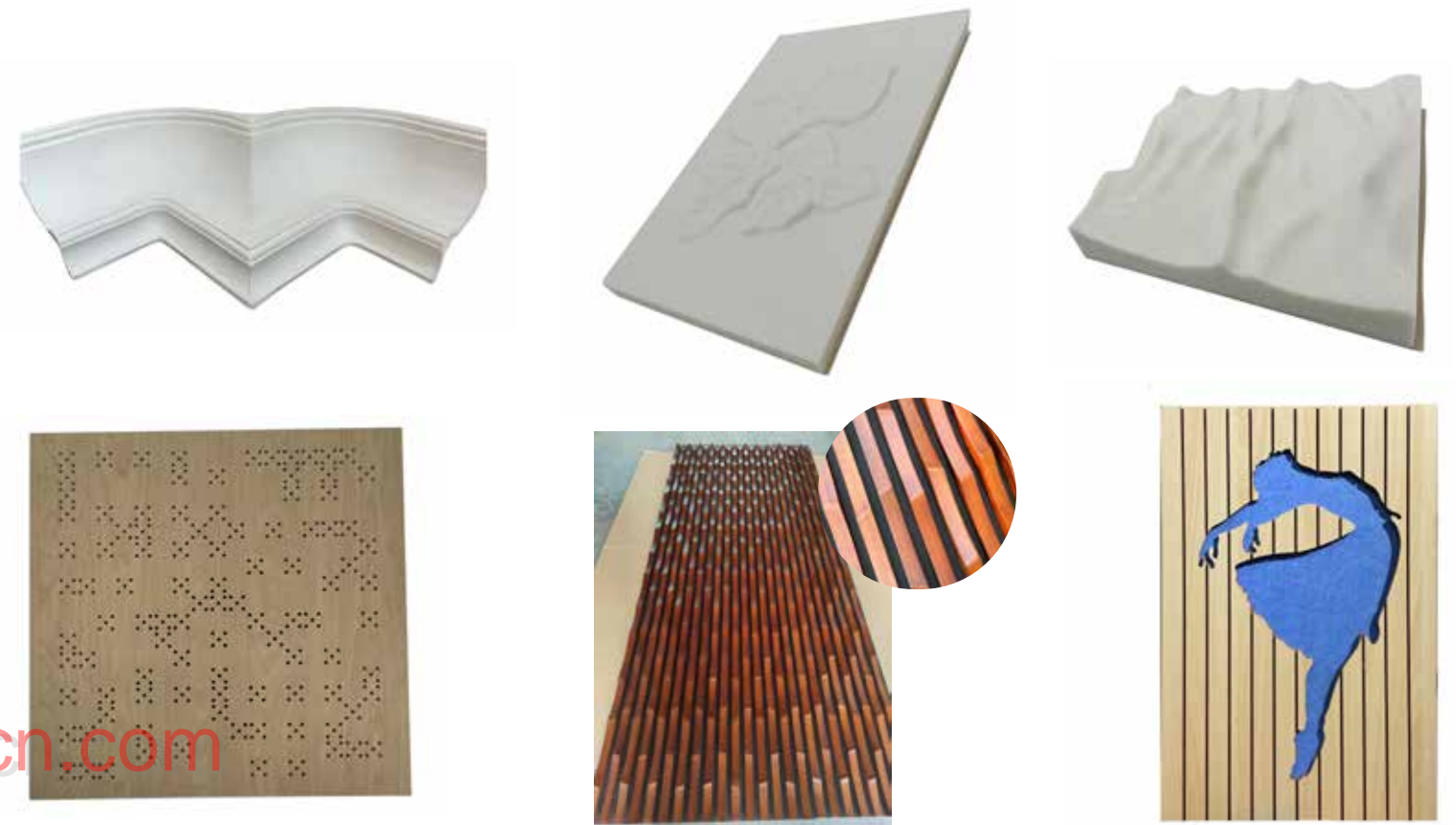
二、【非标定制产品系列】
Non-standard custom product series

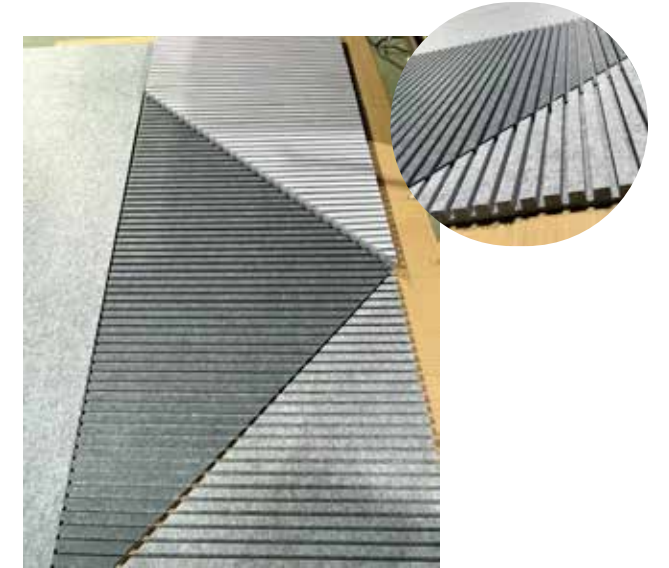


施工记录

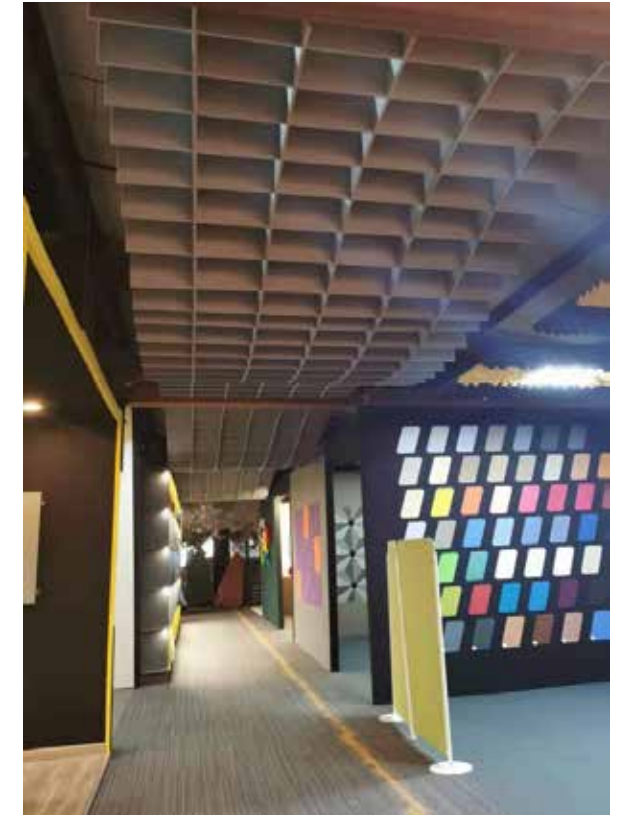
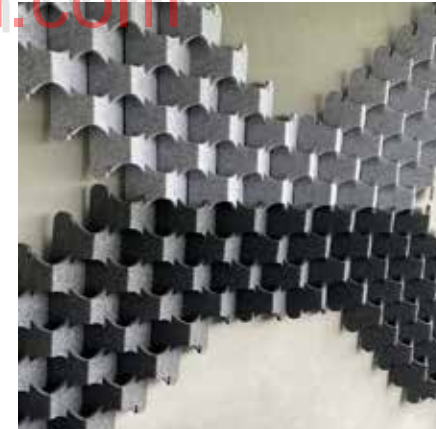
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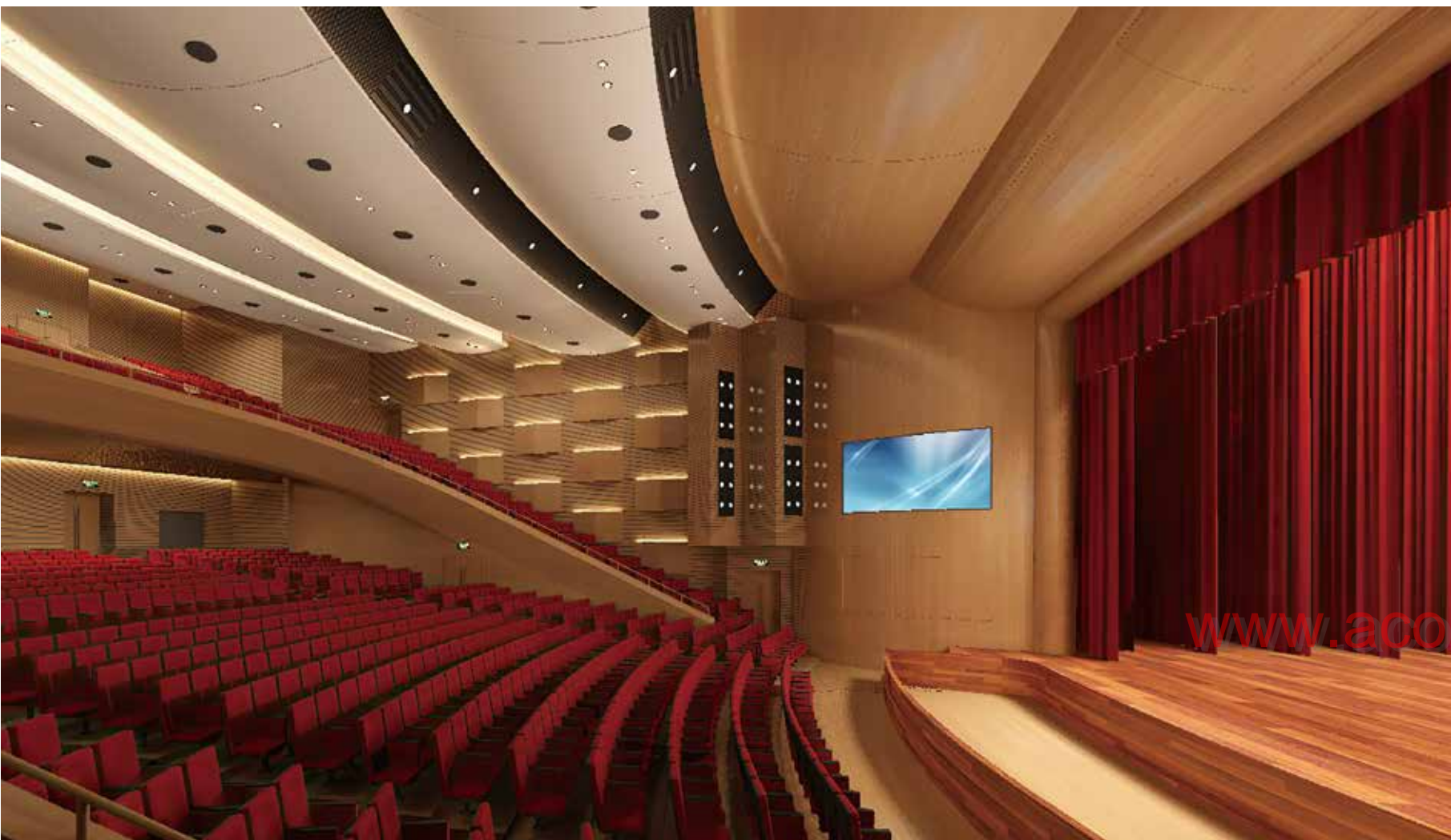




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三、【扩散反射系列】 Diffuse & Reflection Series



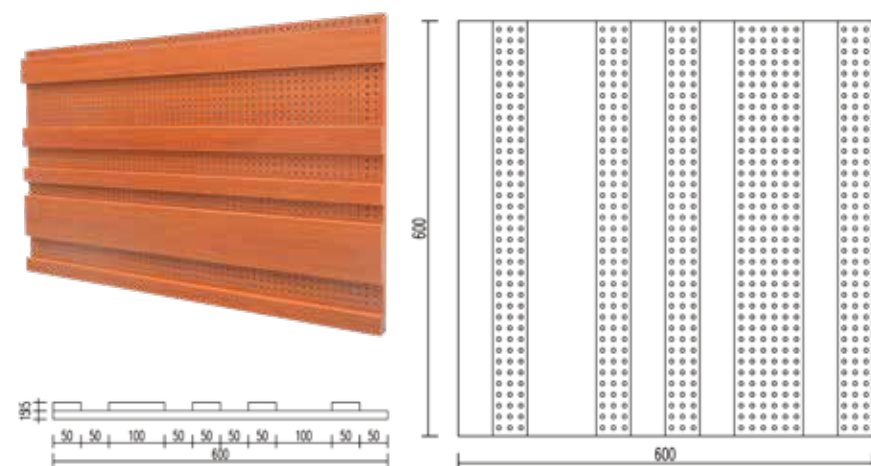
扩散反射 Diffuse / Reflection

MLS 扩散体 MLS Diffuser



声学扩散是音质建声的重要组成部分，包括很多诸如赛宾公式或伊林公式的计算都是在声场完全扩散的基础上计算的，所以一个声场扩散不充分的环境，很可能影响到声学计算公式的准确性。为此，我们在塑造声环境时，使得声场扩散均匀作为一个重要的建声项目，有利于音质的纯净与提高。

Acoustic diffusion is an important part of sound quality construction, including many calculation formula such as Sabine formula or Irlin formula are calculated based on the complete diffusion in the field, so a sound diffusion is not sufficient, it is likely to affect the accuracy of acoustic formula. Therefore, when we create sound environment, we can make the sound field diffusion evenly as an important building sound project, which is conducive to the purity and improvement of sound quality.



产品特点: MLS 实木扩散体相比以往传统的密度板 MLS，饰面采用原实木的纹理，不需要再次贴面，减少了生产工艺并且更富有整体感和美观度。MLS 扩散体具有优越的扩散性能。能有效地把入射声能分散开从而避免回声和产生驻波。使声场更加均匀，改善声环境，提高声音的明亮度。扩散频率范围 (500Hz-4000Hz)，最高至 20000Hz、最高环保性可达 E1 级。

Product features: Compared with the traditional MDF board MLS, the solid wood MLS diffuser adopts the texture of the original solid wood, and no need to veneer again, reduce the production process and more overall and aesthetic. MLS diffuser has excellent diffusion properties. The incident sound energy can be effectively dispersed so as to avoid echo and produce standing wave. The sound field is more uniform, the sound environment is improved, as well as the sound brightness. The frequency range of diffusion (500Hz-4000Hz) up to 20000Hz, and the highest environmental protection reached E1 Grade.

适用范围 Applicable places

家庭影院、音乐厅、歌剧院、视听室、录音棚、休闲所等。
Home theatre, concert hall, opera house, audio visual room, recording studio, leisure place and so on.

产品结构

型号: MLS
基 材: 橡胶实木 / 密度板贴实木皮
饰 面: 原木色 / 油漆色
面密度: 25kg-40kg/ m²

Product Structure

Model: MLS
Base material: Rubber solid wood / density board with veneer
Finish: Original wood color / paint color
Density: 25kg-40kg/ m²

产品规格 (可定制)

Product Specification (offer size customization)

长度 /length: 600mm/1200mm/1800mm
宽度 /width: 600mm
厚度 /thickness: 33mm
允许公差: 长度为 ±2mm, 宽度为 ±2mm, 厚度为 ±0.5mm
Allow tolerance: length: ± 2mm, width: ± 2mm, thickness: ±0.5mm

扩散反射体类 Diffuse/ Reflection Series

特点: 天戈声学扩散体系列采用 QRD 扩散原理。QRD 扩散理论就是二次余数理论，基于二次余数计算踏板不同深度而构成扩散体。声能进入不同深度的踏板，然后在不同的时间被逐渐地释放。其结果是高峰和低谷的更加平滑，因此构成了一个更加平衡中立的听音环境。

Characteristics: TianGe Acousticdiffusers adopts QRD diffusion theory.The theory is the quadratic remainder theory, which is based on the quadratic remainder to calculate the different depth of the pedal to form the diffuser. Sound energy goes into different depths, and then is gradually released at different times. The result is that the peaks and valleys are smoother, thus forming a more balanced and neutral listening environment.

扩散反射 Diffuse / Reflection

声学墙挂板 Acoustic Decor Wall Panel

产品特点: 挂板又称声学反射板是一种在高密度板材上贴一层装饰面后具有装饰及反射功能材料。声学反射板主要对声音具有反射的同时该材料是对以前的饰面板进行成品化,避免了饰面板现场做油漆时产生的危险性。具有良好的装饰性。

天戈声学装饰板(可进行异形定制)采用优质的板材、具有环保、防火、防潮等性能,饰面颜色及材料选择面广,能很好地满足客户多样化的声学及装饰需求。

Product features: The deco panel, also known as the acoustic reflected panel, is a kind of material that has decorative and reflective function after putting on a decorative layer on the density board. The acoustic reflector is mainly reflective of the sound while the material paint is finished in the factory to avoid the risk of painting on the project site. It has good decoration.

The TianGe acoustic decorative panel adopts high quality board, which has the properties of environmental protection, fire prevention and waterproof, and has a wide range of color and material selection. It can well meet the diversified acoustic and decorative needs of customers.

产品基材: 密度板 白玻镁板 红玻镁板 橡胶实木

规格: 长度: 600mm / 1200mm 宽度: 600mm (非常规可订做)

厚度: 12mm / 15mm / 18mm

允许公差: 长度 ±1mm 宽度 ±1mm 厚度 ±0.2mm

使用范围: 剧院 会议室 家装别墅 档案馆 报告厅 录音棚 多功能厅

Base Material: densityboard, white MGO Board, red MGO board, rubber solid wood

Specifications: length: 600mm 1200mm width: 600mm (Customize size)

Thickness: 12mm / 15mm / 18mm

Tolerance: width±1mm length ±1mm thickness±0.2mm

Applicable places: Theater, Conference Room, Villa, Archives Center, Recording Studio, Multifunctional hall



扩散反射 Diffuse / Reflection

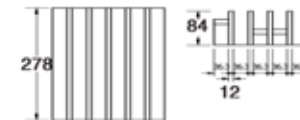
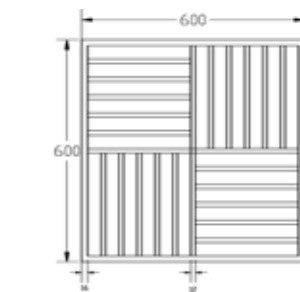
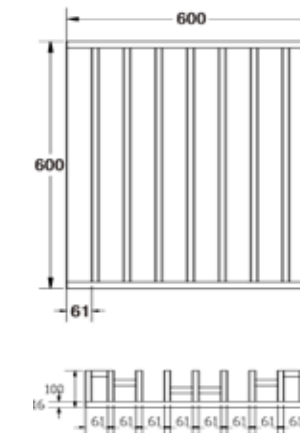
QRD-N1\N2 扩散体 QRD-N1\N2 Diffuser



QRD-N1 扩散体



QRD-N2 扩散体



环保等级: GB18580-2017《室内装饰装修材料人造板及其制品中甲醛释放量》的标准 E1 级;

基材: 橡胶实木;

使用场所: 家庭影院、音乐厅、歌剧院、视听室、录音棚、休闲会所等;

厚度: 100mm;

规格: 长度: 600mm / 1200mm / 1800mm 宽度: 600mm

(允许公差: 长度 ±2mm, 宽度 ±2mm, 厚度 ±1mm)

N1 扩散频率范围 (500Hz-2000Hz), 最高至 2529Hz。

N2 扩散频率范围 (615Hz-1229Hz), 最高至 2529Hz。

产品特点: N1 实木扩散体可以将入射声能分散开从而避免回声和产生驻波。使声场更加均匀,改善声环境,提高声音的明亮度。扩散频率范围 (500Hz-2000Hz);

N2 (615Hz-1229Hz) 最高至 2529Hz, 最高环保性能达 E1 级。QRD 扩散体采用二次余数理论,基于二次余数计算踏板不同深度而构成扩散体。声能进入不同深度的踏板,然后在不同的时间被逐渐地释放。其结果是高峰和低谷的更加平滑,因此构成了一个更加平衡中立的听音环境。

Product features: N1 solid dispersion can disperse incident sound energy to avoid echo and produce standing wave. The sound field is more uniform, the sound environment is improved, as well as the soundbrightness. Diffusion frequency range (500Hz-2000Hz);

N2 (615Hz-1229Hz) up to 2529Hz, the highest environmental performance of E1 class. The theory is the quadratic remainder theory, which is based on the quadratic remainder to calculate the different depth of the pedal to form the diffuser. Sound energy goes into different depths, and then is gradually released at different times. The result is that the peaks and valleys are smoother, thus forming a more balanced and neutral listening environment.



Environmental protection: E1 Grade, according to GB18580-2017 Standard for 《formaldehyde emission limit in wood-based panels of interior decoration materials and their products》;

Base Material: Rubber solid wood;

Applicable places: Home Theatre, concert hall, opera house, audio visual room, recording studio, Recreation Club and so on;

Thickness: 100mm;

Specifications: length: 600mm / 1200mm / 1800mm width: 600mm

(allowable tolerance: length ±2mm, width ±2mm, thickness ±1mm)

N1 diffusion frequency range (500Hz-2000Hz), up to 2529Hz.

N2 diffusion frequency range (615Hz-1229Hz), up to 2529Hz.

扩散反射 Diffuse / Reflection

QRD-D1/D2 扩散体 QRD -D1/D2 Diffuser

产品特点: D1 实木扩散体能有效地立体扩散声音能量,防止回声和驻波,起到全方位扩散作用,有效改善声音的明亮度和空间感。扩散频率范围:615Hz-3125Hz.最高环保性能达 E1 级。

D2 实木扩散体是严格根据 QRD 理论公式计算出来的定位序列栅格,它的沟槽深度、宽度能在全方位、多角度的入射声情况下产生均匀的扩散反射,使人声更加柔顺,高频变得更加洪亮,具有大厅堂般的效果。扩散频率范围:675Hz-2150Hz.最高环保性能达 E1 级。

Product features: D1 solid wood diffuser can effectively diffuse sound energy, prevent echo and standing wave, and play an all-round diffusion effect, which can effectively improve the sound brightness and sense of space. Diffusion frequency range: 615Hz-3125Hz. The highest environmental protection performance reaches E1 Grade.

D2 wood diffuser is strictly according to the theory of QRD grid localization sequence formula, diffusion reflection uniform incident sound its groove depth and width in the full range, multi angle, make the voice more supple, more high frequency resonant, with hall like effect. Diffusion frequency range: 675Hz-2150Hz. The highest environmental protection performance reaches E1 Grade.

环保等级: GB18580-2017《室内装饰装修材料人造板及其制品中甲醛释放限量》的标准 E1 级。具有环保、无粉尘污染等性能。

基 材: 橡胶实木。
使用场所: 家庭影院、音乐厅、歌剧院、视听室、录音棚、休闲会所等。
厚 度: 100mm
规 格: 长度: 600mm / 1800mm / 2400mm 宽度: 600mm
允许公差: 长度 ±2mm, 宽度 ±2mm, 厚度 ±1mm

D1 扩散频率范围: 615Hz-3125Hz,
D2 扩散频率范围: 675Hz-2150Hz。

Environmental protection: E1 Grade, according to GB18580-2017 Standard for 《formaldehyde emission limit in wood-based panels of interior decoration materials and their products》.Environmental protection, no dust pollution .

Base Material : Rubber solid wood.

Applicable places: Home Theatre, concert hall, opera house, audio visual room, recording studio, Recreation club, etc..

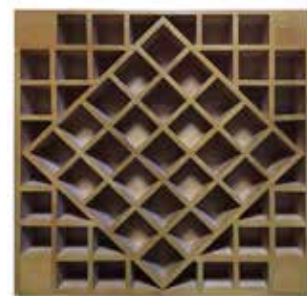
Thickness: 100mm

Specifications: length: 600mm /1800mm / 2400mm width 600mm

Allowable tolerance: length ± 2mm, width ± 2mm, thickness ±1mm

D1 diffusion frequency range: 615Hz-3125Hz,

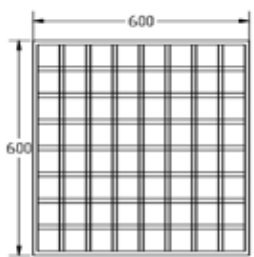
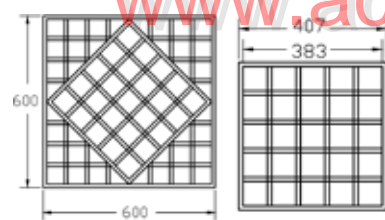
D2 diffusion frequency range: 675Hz-2150Hz.



QRD-D1 扩散体



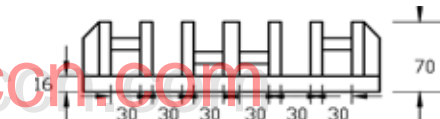
QRD-D2 扩散体



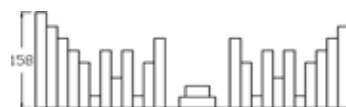
QRD-N3 扩散体 QRD - N3 Diffuser

天戈声学扩散体系列采用 QRD 扩散原理。QRD 扩散理论就是二次余数理论,基于二次余数计算踏板不同深度而构成扩散体。声能进入不同深度的踏板,然后在不同的时间被逐渐地释放。其结果是高峰和低谷的更加平滑,因此构成了一个更加平衡中立的听音环境。

TianGe Acousitc diffuser adopts the QRD diffusion theory.The theory is the quadratic remainder theory, which is based on the quadratic remainder to calculate the different depth of the pedal to form the diffuser. Sound energy goes into different depths, and then is gradually released at different times. The result is that the peaks and valleys are smoother, thus forming a more balanced and neutral listening environment.



QRD-N4 扩散体 QRD - N4 Diffuser



扩散反射 Diffuse / Reflection

QRD-N3\N4 扩散体 QRD - N3\N4 Diffuser

产品特点: N3 实木扩散体对声能的扩散有显著的作用,在不提升混响时间的作用下,有效改善小空间内声音的干湿度,有效提高环境的饱满度、清晰度及立体感,最高环保性能达 E1 级。

N4 实木扩散体还原声音空间感和提升厅堂的音质显著。声学特性达到国家同类材料标准,配合其他吸声材料使用能有效地提高音质环境的饱满度、清晰度和立体感。扩散频率范围:320Hz-3125Hz.最高环保性能达 E1 级。

Product features: The N3 solid diffuser has significant effect, without increasing the reverberation time effect, effectively improve the sound of small space in the dry environment, effectively improve the fullness, clarity and three-dimensional sense, the highest environmental protection performance reaches E1 Grade.

N4 solid wood diffuser restores the sense of sound space and improves the sound quality of the hall significantly. The acoustic characteristics are up to the national standard of the same material. When it used with other sound absorbing materials, it can effectively improve the fullness, clarity and three-dimensional sense of the sound quality environment. Diffusion frequency range: 320Hz-3125Hz. The highest environmental performance is up to E1 Grade.

环保等级: GB18580-2017《室内装饰装修材料人造板及其制品中甲醛释放限量》的标准 E1 级;

基 材: 橡胶实木;
使用场所: 家庭影院、音乐厅、歌剧院、视听室、录音棚、休闲会所等;
规 格: N3: 长度: 1800mm / 2400mm 宽度: 300mm 厚度: 70mm
N4: 长度: 1200mm / 1800mm / 2400mm 宽度: 540mm 厚度: 158mm

允许公差: 长度 ±1mm 宽度 ±1mm 厚度 ±1mm
N4 扩散频率范围: 320Hz-3125Hz。

Environmental protection: E1 Grade, according to GB18580-2017Standard for 《formaldehyde emission limit in wood-based panels of interior decoration materials and their products》;

Base Material: Rubber Solid Wood;

Applicable places: Home Theatre, concert hall, opera house, audio visual room, recording studio, Recreation Club and so on;

Specifications:

N3: Length:1800mm / 2400mm Width:300mm Thickness:70mm

N4: Length:1200mm / 1800mm / 2400mm Width:540mm Thickness:158mm

Allowable Tolerance: length ±1mm width±1mm thickness±1mm

N4 diffusion frequency range: 320Hz-3125Hz.

扩散反射 Diffuse / Reflection

QRD-DW5 扩散体 QRD - DW5 Diffuser

产品特点: QRD-DW5 实木扩散体是通过多维度、多方位、多角度对声能进行扩散。该扩散体扩散性能佳, 对改善声音的明亮度具有一定的作用。

扩散频率范围: 675Hz-2150Hz. 最高环保性能达 E1 级。

Product features: QRD-DW5 solid wood diffuser diffuses sound energy through multi-dimensions, multi-directions and multi-angles. The diffuser has good diffusivity and can improve the brightness of sound.

Diffusion frequency range: 675Hz-2150Hz., the highest environmental performance of E1 class.

环保等级: GB18580-2017 《室内装饰装修材料 人造板及其制品中甲醛释放限量》的标准 E1 级。

型号: QRD-Dw5

基材: 橡胶实木

饰面: 原木色 / 红木色

厚度: 350mm

规格: 长度: 1800mm/2400mm 宽度: 350mm

允许公差: 长度为 ±2mm, 宽度为 ±2mm, 厚度为: ±1mm

Environmental protection: E1 Grade, according to GB18580-2017 Standard for 《formaldehyde emission limit in wood-based panels of interior decoration materials and their products》. Environmental protection, no dust pollution

Model: QRD-Dw5

Substrate: Rubber solid wood

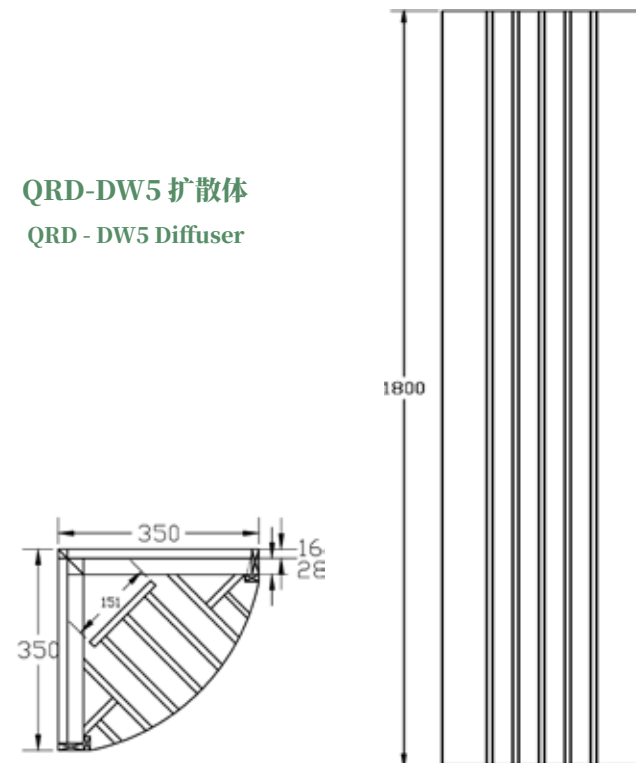
Veneer: log color / mahogany color

Thickness: 350mm

Specifications: length: 1800mm 2400mm width: 350mm

Allowable Tolerance: length is ± 2mm, width is ± 2mm, thickness : ± 1mm

QRD-DW5 扩散体 QRD - DW5 Diffuser



扩散反射 Diffuse / Reflection

浮云扩散体 Cloud Shape Diffuser

产品特点: 浮云扩散体是三维扩散体的一种, 浮云扩散体采用双曲面的设计, 对声波进行多方面的扩散。另外外观成云状, 特别安装在天花上, 具有不一样的视觉感受。装饰效果高端, 特别适用于家庭影院、录音棚、演播厅等小型房间。

Product features: The cloud shape diffuser is a kind of 3D diffuser. The cloud shape diffuser adopts hyperbolic design to diffuse sound waves in many aspects. The appearance becomes cloud shape, install especially on ceiling, have different visual experience. High-end decorative effect, especially suitable for home theater, recording studio, studio and other small rooms.

型号: QRD-D8

材质: 采用高密度玻璃钢开模压制而成

饰面: 白色、灰色、蓝色 (或定制颜色)

特点: 浮云扩散体云状式双曲面设计, 能对低、中、高频进行有效扩散, 特别是中、高频范围明显。

防火等级: 达到 GB8624-2012 的 A 级

环保等级: GB18580-2017 《室内装饰装修材料 人造板及其制品中甲醛释放限量》的标准 E1 级, 具有环保、无粉尘污染等性能。

规格: 长度: 600mm 宽度: 600mm 厚度: 80mm

允许公差: 长度为 ±1mm, 宽度为 ±1mm, 厚度为 ±1mm

安装方式: 自攻螺丝固定

安装辅材: 12 厘阻燃夹板、自攻螺丝等

适用范围: 家庭影院、视听室、录音棚、会所等



Model: QRD-D8

Bae material: High-density FRP mould pressing

Color: white, gray, blue (customized color)

Product Features: cloud diffuser, cloud like double curved surface design, can effectively diffuse low, medium and high frequency, especially in the middle, High frequency range.

Fire Retardant rating: Class A, according to GB8624-2012

Environmental protection: E1 Grade, according to GB18580-2017 Standard for 《formaldehyde emission limit in wood-based panels of interior decoration materials and their products》. Environmental protection, no dust pollution .

Specifications: length: 600mm width: 600mm thickness: 80mm

Allowable tolerance: length:± 1mm,width:± 1mm, thickness:± 1mm

Installation method: self tapping screw fixation

Install accessories: 12mm flame retardant plywood batten, self tapping screws etc.

Application places: home theater, audio-visual room, recording studio, club and so on



四、【隔音减震系列】 Sound Insulation & Vibration Series



隔音板 Sound Insulation Board

产品特点: 复合隔音板采用三层以上不同密度和特性的材质, 夹加高分子阻尼材料, 改变原材质声振动频率, 三文治结构高压复合成型, 行程阻尼约束结构, 将透声墙体系统的声波能量最高可以降低 95% 以上。当隔声板在声波撞击下开始振动时, 板中间的高分子材料会在剪应力的作用下联系的经受挤压应力和剪应力, 有效地将声波的机械能转化为热能耗散掉, 从而提高隔音板的隔声效果。

Product features: The composite sound insulation board is made of three layers or more of materials with different densities and characteristics, and the material with high molecular damping is added to change the original material acoustic vibration frequency, uses sandwich structure with high pressure composite forming, stroke damping constraint structure, to reduce the sound waves energy around 95%. When the sound insulation plate begins to vibrate under the impact of sound waves, the polymer material in the middle of the plate will undergo shear stress. Under the action of the contact under compression stress and shear stress, effectively convert the mechanical energy of sound waves into heat energy dissipation, thus improve the sound insulation of the board.

隔声系数: (经权威机构检测)

Sound absorption coefficient: (Tested by authority laboratory)

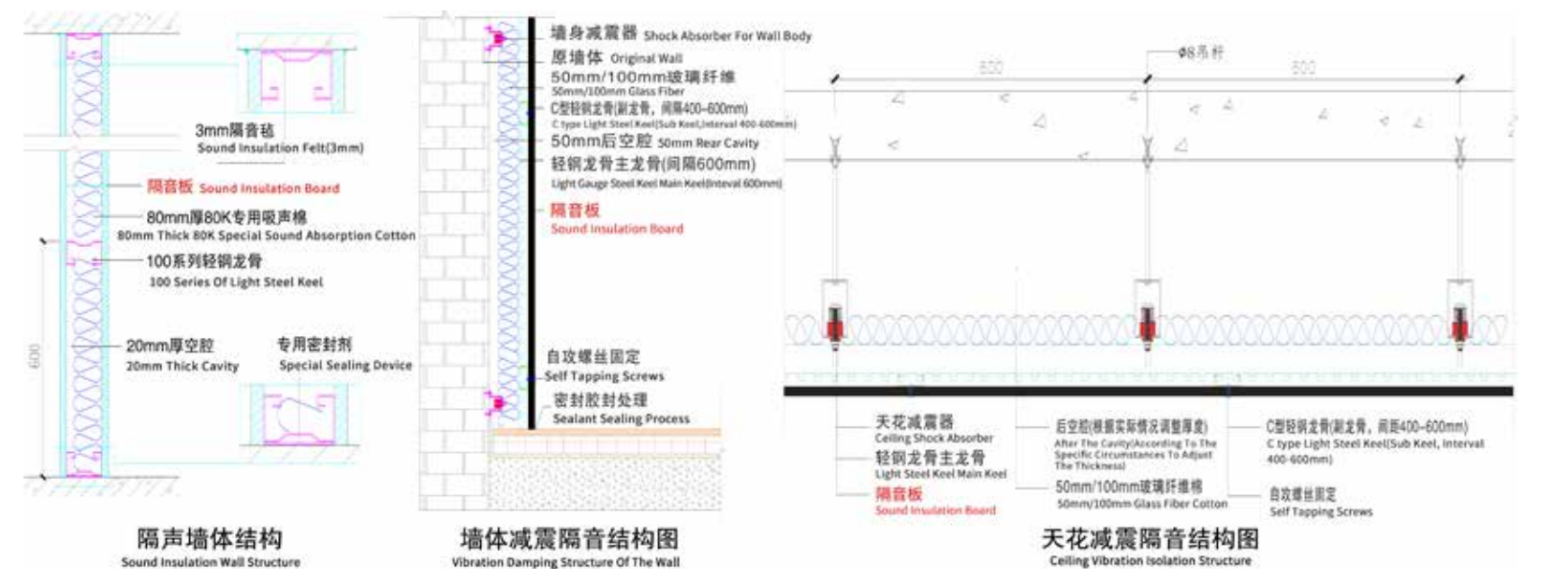


型号 Model	面密度 kg/m ²	单件重量 (kg)	规格 Specifications	单件面积 (m ²)	双层板结构隔声量 Double layers sound insulation rate	单层板结构隔声量 Single layer sound insulation rate	备注 Remark
T-258	18.5	55	1220*2440*16	2.9768	50 dB	48 dB	龙骨: 75 系列隔墙龙骨 / Steel keel: 75 series keels 隔声板: 双面单 / 双层隔声板 / sound insulation board: single / double layer sound insulation board 填充物: 48kg/m ³ *100mm 玻璃棉 / Filler: 48 kg/m ³ *100mm glass cotton
T-568	24.9	74	1220*2440*18	2.9768	56 dB	53 dB	

隔音板 Sound Insulation Panel

隔音: 简单地说就是在声音传播的过程中衰减声音, 使其衰减传播的一种措施。我们把利用高密度材质制成的板材平均隔声量超过 30dB 的板材才称做隔音板。

Sound insulation: simply speaking, it is a measure to attenuate sound in the process of sound propagation, so that it attenuates propagation. A sheet made of high-density materials has an average sound insulation of more than 30 dB called the sound insulation board.



隔音毡 Deadening Felt

阻尼隔音毡是全程采用高新技术工艺制成的新型隔声材料。它由高分子材料，金属粉末和各类助剂通过反应配制而成。

阻尼隔音毡广泛应用于建筑行业、家居卧室、厂房、机房、空压机房、会议室、多功能厅、KTV 歌厅、工业管道、办公室、汽车等多种需要降噪的场所。

产品特点：

- 1、无臭氧破坏物质；
- 2、不含铅和产生任何的油污；
- 3、易于剪切、胶合、缝制、钉固或机械复合；
- 4、燃烧安全、移除火焰后自灭、不滴液；
- 5、高抗张强度耐撕裂。
- 6、环保性能 E1 级

产品规格（常用）

Product Specification (Commonly Used)

- ①：长 10m x 宽 1m x 厚 1.2mm / 2.0mm
length 10m x width 1m x thickness 1.2mm / 2.0mm
- ②：长 5m x 宽 1m x 厚 3.0mm
length 5m x width 1m x thickness 3.0mm

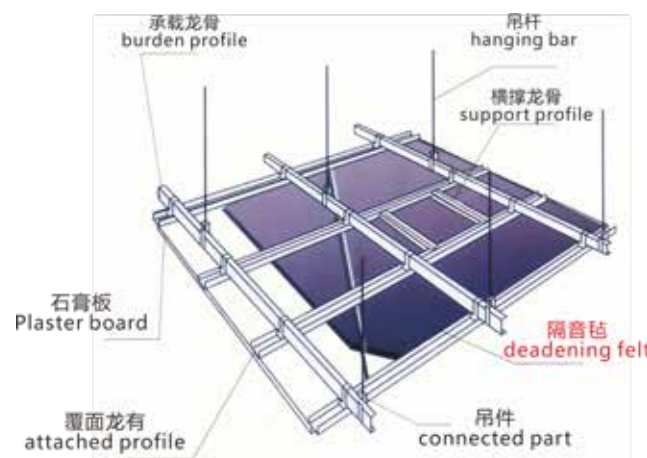
单件面积：5 m² 10 m²

Acreage/pcs: 5 m² 10 m²

允许公差：长度 ±2mm / 宽度为 ±2mm / 厚度 ±0.5mm

Allowance Tolerance: width±2mm, length±2mm, thickness±0.5mm

型号	厚度 Thickness/mm	单件重量 /kg Weight/pcs	隔音量 (dB) Insulate dB
TI-d1.2	1.2	24 (10 m ²)	24
TI-d2.0	2.0	35.7 (10 m ²)	27
TI-d3.0	3.0	29 (5 m ²)	30

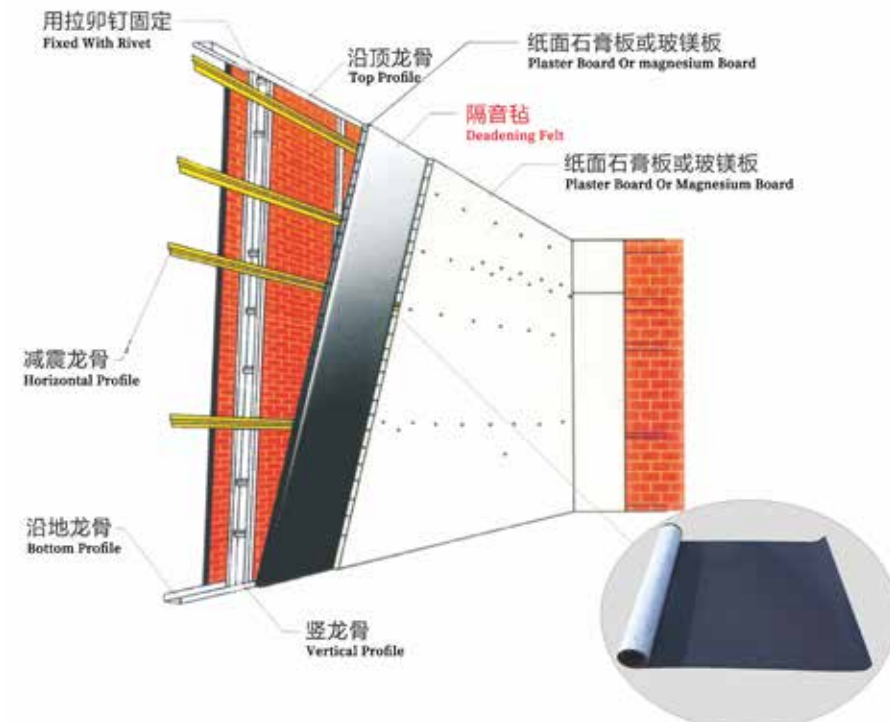


Deadening felt is a new kind of sound insulation material made of high and new technology. It is made of polymer material, metal powder and various additives.

Deadening felt is widely used in the construction industry, home bedroom, factory building, machine room, air compressor room, conference room, multifunction hall, KTV singing room, industrial pipeline, office, automobile and other places that need noise reduction.

Product Features:

1. No ozone damaging substances;
2. No lead and oil pollution;
3. Easy to shear, glue, sew, nail or mechanical compound;
4. Safe combustion, self-extinguishing after flameremoval, no drops;
5. High tensile strength and tear resistance.
6. The environmental performance is E1 Grade.



天花 / 墙身减震器 Ceiling/Wall Shock Absorber

产品特点：天花减震器采用高分子阻尼缓震胶，100% 原生胶铸造，耐老化时间及阻尼系数是翻新胶件的五倍以上，具有永久性和安全性。对低频的减振隔音效果明显。

Product features: the ceiling shock absorber is made of high polymer damping rubber and cast with 100% original rubber. The aging resistance time and damping coefficient are more than five times of the refurbished rubber parts, which is permanent and safe. The low frequency sound insulation effect is obvious.

产品规格 / Standard size:

长度 /Length: 100mm

宽度 /width: 50mm

高度 /Height: 50mm

单个承重能力: 40Kgs-60Kgs

适用频率范围: 50Hz-2000Hz

安装方式: 膨胀螺丝固定

适用范围: 酒吧、KTV 房、录音棚等（天花安装各类隔音板、石膏板等）

用量: 2-3 个 / m²

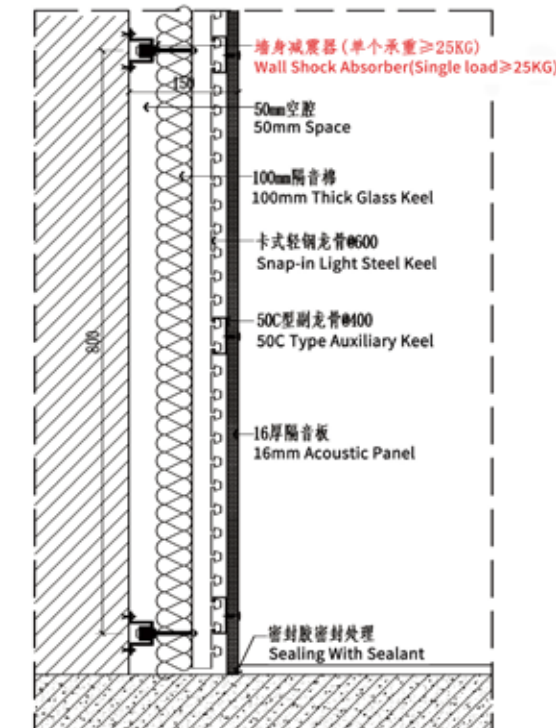
Single load-bearing capacity: 40Kgs-60Kgs

Effective frequency range: 50Hz 2000Hz

Installation method: fixed with expansion screws

Applicable places: bar, KTV room, recording studio, etc (the ceiling with installation of various sound insulation board, plasterboard, etc.)

Consumption settlement : 2-3pcs/ m²



天花减震器
Ceiling Shock Absorber



墙身减震器
Wall Shock Absorber

产品特点：墙身减震器采用高分子阻尼缓震胶，100% 原生胶铸造，耐老化时间及阻尼系数是翻新胶件的五倍以上，具有永久性和安全性。对低频的减振隔音效果明显。

产品规格：长度 :110mm / 宽度 :50mm / 高度 :50mm

单个承重能力：40KG-50KG

适用频率范围：50Hz-2000Hz

安装方式：膨胀螺丝固定

适用范围：酒吧、KTV 房、录音棚等（墙身安装各类隔音板）

用量：2-3 个 / m²

Products Features: The ground shock absorber is made of high polymer damping rubber and cast with 100% original rubber. The anti-aging time and damping coefficient are more than five times of the refurbished rubber parts, which is permanent and safe. The low frequency sound insulation effect is obvious.

Product Specification: Length: 110mm / Width: 50mm / Height: 50mm

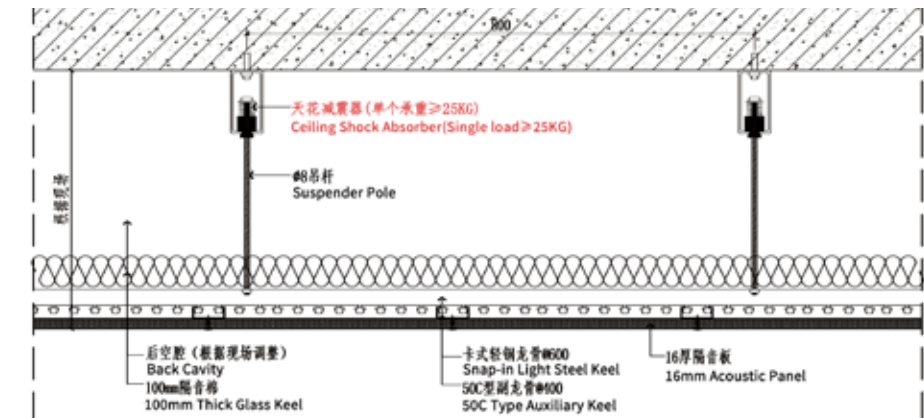
Single load-bearing capacity: 40kg-50kg

Effective frequency fange: 50hz-2000hz

Installation Method: Expansions Screw Fix

Applicable places: Wine Bar, KTV Room And Music Studio etc. (the wall with installation of various sound insulation board, plasterboard, etc.)

Consumption settlement : 2-3pcs/ m²



隔音板顶面安装图
Top Surface Of Acoustic Panel Installation

地面隔音减震垫

Sound And Vibration Absorption Mat

产品特点: 地面隔音减震垫由高密度胶连聚乙烯发泡经纳米技术制成。是一种绿色环保, 经济耐用产品, 使用寿命 70 年以上。对楼板撞击声的改善具有明显的效果。同时, 该材料质量轻不显著增加楼板及建筑结构的荷载, 荷载能力强。

特点: 防潮、防水、防霉、易于安装、易切割等。

一、地面隔音减震垫产品应用:
地面隔音减震垫主要用于 KTV、迪厅、健身房、机房降噪、家庭影院、酒店、高档住宅小区等地面隔声。

二、地面隔音减震垫隔声原理:
撞击声: 通过纳米泡沫的弹性使整个楼板形成浮筑结构, 衰减了固体传声效应。并改善了上层地面的吻合效应, 增强声阻抗力。通过纳米泡沫的微小孔洞使人耳敏感频率带的的声能产生腔体共振, 削弱声音的能量, 达到降低撞击声的目的。

隔声效果: 在 12~14cm 的混凝土楼板上铺设该产品, 抹一层 4cm 厚的水泥, 可以符合国家对楼板撞击声的隔声要求小于 75dB(指楼下不超过 75dB)。

- 三、地面隔音减震垫安装方法:**
- 1、平整、清洁地面, 安装前将该产品按所需尺寸切割。
 - 2、将该产品铺设在楼板上, 铺设位置四周高至踢角线接缝对齐, 并用胶带封住。
 - 3、避免产品与地面之间产生漏铺或留缝铺装现象。
 - 4、铺完该产品后, 马上铺上水泥、瓷砖或木地板。

I> the sound and vibration absorption mat applicable places:
Sound and vibration absorption mat is mainly used for ground insulation in KTV, disco, gym, machines room, home theater, high-end residential district and other strong noise areas.ciple of sound and vibration absorption mat insulation:

II> the principle of sound and vibration absorption mat insulation:
Impact sound isolation: the elastic nano-bubbles forming the whole floor floating building structure, attenuates the sound transmission effect of solid. It decreases the upper ground match effect, enhance acoustic impedance force. Nano bubbles with tiny holes structure generated cavity resonance and weaken sound energy, result in the noise reduction.

Sound insulation effect: Laying the materials on 12-14cm thick concrete floor, paving 4cm thick cement on the surface, which can meet the national sound insulation requirements for floor impact sound less than 75 dB (refers to the downstairs no more than 75 dB)

- III>the sound and vibration absorption mat installation method:**
- 1、Smooth, clean surface, cutting as per required size before installation.
 - 2、The product is laid on the floor, the laying position is as high as the kick line seam alignment, and sealed with tape.
 - 3、Avoid leakage or any seam between the product and the ground.
 - 4、After all above process, immediately pave with cement, tile or wood floors.

1.GB 50118-2010 中的表 4.2.7 分户楼板撞击声隔声标准
1.Table 4.2.7 Sound insulation standard for floor plate impact in households GB 50118-2010

构件名称 Component name	撞击声隔声单值评价量 (dB) Single value evaluation value of impact Sound Insulation (dB)	
卧室、起居室的分户楼板 Floor slab for bedroom and living room	计权规范化撞击声压级 Ln,w (实验室测量) Weighted normalized impact sound pressure level Ln, W (laboratory measurement)	< 70
	计权标准化撞击声压级 L'nT,w (实验室测量) Weight standardized impact sound pressure level L 'nt, W (laboratory measurement)	≤ 70

2.GB 50118-2010 中的表 4.2.8 卧室、起居室分户楼板的撞击声隔声性能高要求标准
Table 4.2.8 Standard for high sound insulation performance of bedroom and living room floor plates

构件名称 Component name	撞击声隔声单值评价量 (dB) Single value evaluation value of impact Sound Insulation (dB)	
卧室、起居室的分户楼板 Floor slab for bedroom and living room	计权规范化撞击声压级 Ln,w (实验室测量) Weighted normalized impact sound pressure level Ln, W (laboratory measurement)	< 60
	计权标准化撞击声压级 L'nT,w (实验室测量) Weight standardized impact sound pressure level L 'nt, W (laboratory measurement)	≤ 60

Product features: Sound and vibration absorption mat is made of high density polyethylene foam through nanotechnology. It's a green, economical and durable products with over 70 years service life, having significant effect of reducing the floor impact sound. At the same time, the material is light weight, giving strong load capacity to the construction.

Features: moisture-proof, waterproof, mildew-proof, easy installation, easy cutting.



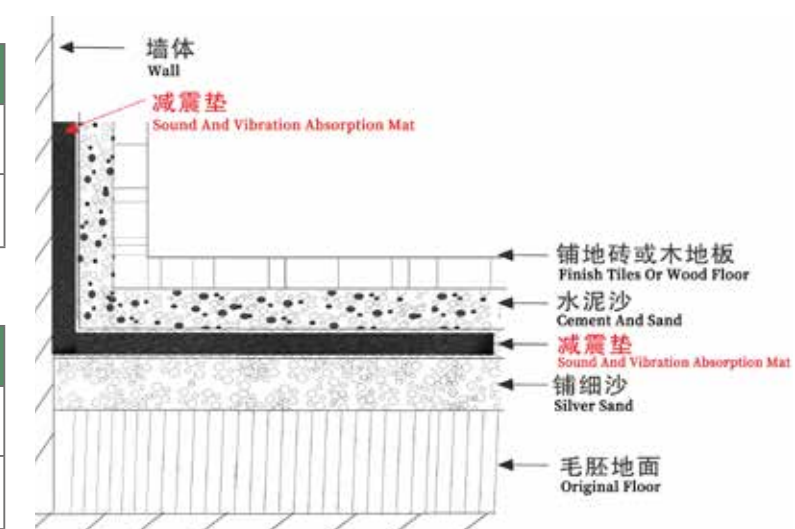
TD-10A
(规格: 宽 970* 长 10000* 厚 10mm)
(Dimention:W970*L10000*T10mm)



TD-10B
(规格: 宽 1000* 长 20000* 厚 10mm)
(Dimention:W1000*L20000*T10mm)



TD-10C
(规格: 宽 1000* 长 20000* 厚 10mm)
(Dimention:W1000*L20000*T10mm)



T8 无机纤维喷涂

T8 Inorganic Fiber Spray Coating

T8 系列喷涂应用领域

Application Field Of T8 Series Spraying Coating

设备机房、体育馆、KTV、影剧院、会议厅、教堂、电梯井、厂房等吸声隔声保温工程。

Equipment room, gymnasium, KTV, theatre, conference hall, church, elevator well, workshop and other sound insulation project.

型号: T8
喷涂厚度: 25~80mm

Number: T8
Spraying thickness: 25-80mm



节能环保、保温
Energy Saving And Environmental Protection



导热系数 0.037, 节能 30%
Thermal Conductivity 0.037, Energy Saving 30%



高空屋顶施工
High-Altitude Roof Construction



可配合声学材料使用增强声学效果
Use Acoustic Materials To Enhance The Acoustic Effect



防火等级可达 A 级
Fire Rating Up To Grade A



隔声量 25 分贝以上
Sound Insulation Volume Of 25 dB Or More



吸声系数 0.65 以上
Sound Absorption Coefficient Of 0.65 or More

钢质木纹隔音门 Soundproof Metal Door

天戈隔音门采用全钢材质，经整体裁剪压制而成，内部填充天戈专用隔音减震材料，配合使用天戈专用密封胶条及多层折压技术，确保隔音效果。根据客户提供门洞尺寸即可定做。安装方法与普通木门一样。

TianGe Soundproof door is made of all-steel material, which is cut out and pressed in one piece, filled with TianGe special sound-absorbing and shock-absorbing materials, and used with TianGe special sealing tape and multi-layer folding technology to ensure the sound insulation effect. It can be customized according to the size of the door provided by the customer. The installation method is the same as the ordinary wooden door.

一、标准配置 / 有门槛 (Standard Configuration/ with threshold)

品名 Item	Y-01/02 平板 (Panel)
门扇厚度 door panel thickness	66mm
材质厚度 metal sheet thickness	1.5mm
门框内径 door frame inner distance	830mm
门洞尺寸 wall open size	850mm

二、标准规格 (Standard Specification)

单开标准 /mm Single Sliding/mm	860 X 2050
双开标准 /mm Double Sliding/mm	1500 X 2100

三、隔音效果 (Soundproof Effect)

双开 Single Sliding	40 - 45 dB
单开 Double Sliding	35 - 40 dB

四、五金配件 (Hardware Fittings)

闭门器
(Door Closer)



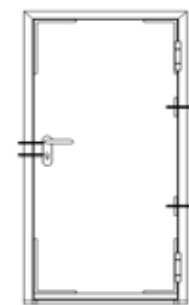
开门标志
(Door Open Mark)



高级拉手
(Door Handle)



升降式门底密封
(Up And Down Sealing On Door Bottom)



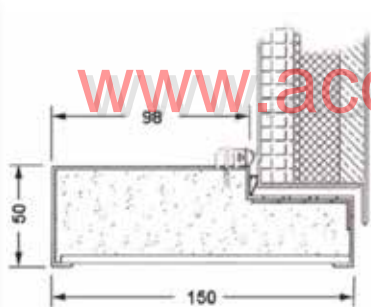
单开门
Single Sliding



双开门
Double Sliding



门槛示意图 (Threshold drawing)



一、标准配置 (Standard Configuration)

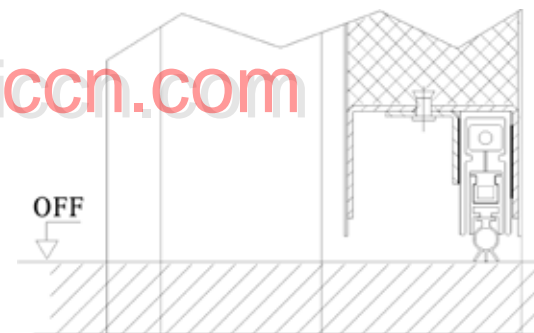
品名 Item	Y-05/06 平板 (Panel)
门扇厚度 door panel thickness	60mm
材质厚度 metal sheet thickness	60mm
门页尺寸 door panel size	800mm
门洞尺寸 wall open size	960mm

二、标准规格 (Standard Specification)

单开标准 /mm Single Sliding/mm	800 X 2100
双开标准 /mm Double Sliding/mm	1500 X 2100

三、隔音效果 (Soundproof Effect)

双开 Single Sliding	35 - 40dB
单开 Double Sliding	30 - 35 dB



可升降式底部密封 (Sinking Bottom Sealing)



技术点1/ Technical point 1
特殊隔音材料
Special insulation material
内部填充高性能隔音棉、低频阻尼材料
Filled with high performance sound insulator cotton and low frequency damping material

技术点3/ Technical point 3
3D合页 3D hinges
承重轴承铰链
Loading bearing hinge

技术点5/ Technical point 5
优质把手 Excellent handle
优质静音声压把手
High quality mute handle

技术点7/ Technical point 7
实木木纹
Wood grain texture
实木门表面采用实木木纹，高端有档次
High level with wood grain texture

技术点2/ Technical point 2
T型双阻口
T shape double stopper
采用双层磁控密封条
使用寿命20年
Double-layer magnetic sealing strip; service life 20 years

技术点4/ Technical point 4
高精度数控
High precision CNC
缝隙控制3mm
Seam control 3mm

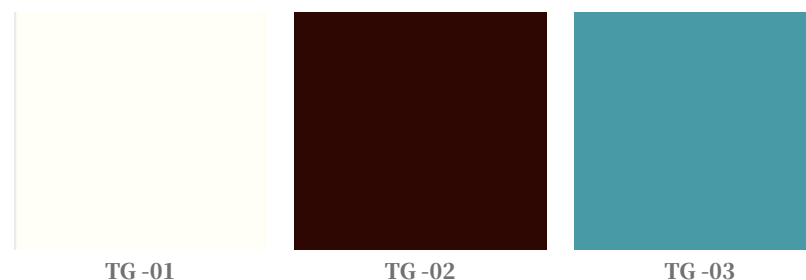
技术点6/ Technical point 6
无缝处理
Seamless treatment
无缝对接技术表面
无痕迹
Seamless joint technology

技术点8/ Technical point 8
门槛隔音 insulate threshold
有门槛隔音结构
可做无门槛 采用隐藏升降式密封条
with threshold structure can be non-threshold invisible sealing strip

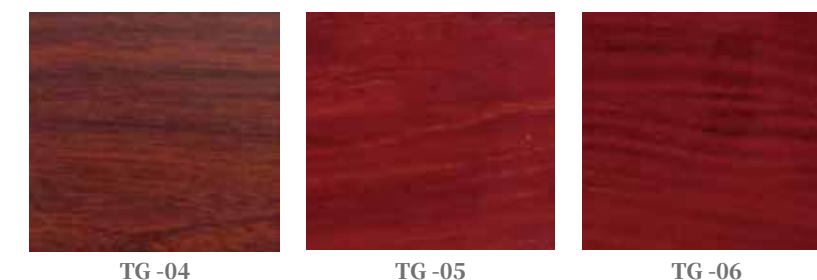
使用范围：医院、学校、工厂、机房、KTV、酒店、实验室、电视台、文艺中心、会议厅、演播室、录音棚、琴房、影剧院、电影院、家居室内、儿童书房隔音门等。

Applicable places: hospital, school, factory, machine room, KTV, hotel, lab, TV center, culture center, conference hall, studio, recording studio, piano room, theater, cinema, residential, study room etc..

烤漆色卡 / Pure Paint Color Chart



木纹色卡 / Wood Grain Color Chart



五、【新风隔声窗】 Fresh Air Sound Insulation Window



采用系统化技术设计、制造，用于建筑门窗、幕墙上采用主动方式实现室内外空气交换、过滤、可控的通风系统被称为窗式新风系统。不需要布置送风管道和排风管道。（根据现场实际需要，有竖款可以选择）

The Ventilation System Designed And Manufactured With Systematic Technology, Which Is Used For Building Doors, Windows And Curtain Walls To Realize Indoor And Outdoor Air Exchange, Filtration And Control In An Active Wy, Is Called Window Fresh Air System. It Is Not Necessary To Arrange Air Supply Duct And Exhaust Duct. (According To The Actual Needs Of The Site, Vertical Payment Can Be Selected)

专注生活和工作空间提供安静舒适的声音环境，为以下困扰提供有效的解决方案

Focus On Living And Working Space, Provide A Quiet And Comfortable Sound Environment, And Provide Effective Solutions To The Following Problems



社会生活噪声
Social Noise



建筑施工噪声
Construction Noise



工业噪声
Industrial Noise



雾霾天气
Haze Weather

www.acousticcn.com

您和家人是否正饱受噪音的困扰?
Are You And Your Family Suffering From Noise?



听力受损 / 血压升高 / 失眠
精神压力 / 影响人的寿命
居住在 60dB(A) 地区, 25 岁以上成年人和 75 岁以上
老年人, 死亡率总体高 4%

Hearing Impairment/High Blood Pressure/Insomnia
Mental Stress/affect People's Life Span
Living In 60dB (A) Area, The Mortality Rate Of Adults Over 25
Years Old And The Elderly Over 75 Years Old Is 4% Higher
Overall



噪声每提高 1dB(A), 深度睡眠减少 4%
噪声每提高 2dB(A), 相当于一年少睡 1 个月
噪声对专注力的影响
噪声降低 10dB(A), 专注力提升 10 ~ 20%

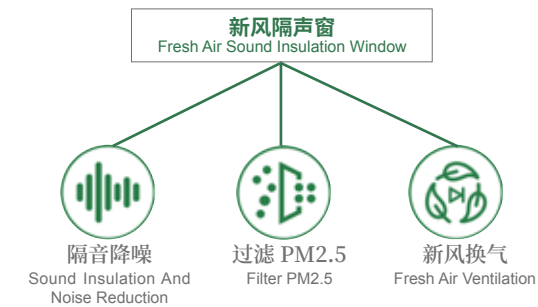
Every 1dB (A) Increase In Noise Will Reduce Deep Sleep By 4%
Every 2dB (A) Increase In Noise Is Equivalent To One Month Less
Sleep In A Year
The Effect Of Noise On Concentration
Noise Reduced By 10dB (A), Concentration Increased By 10-20%



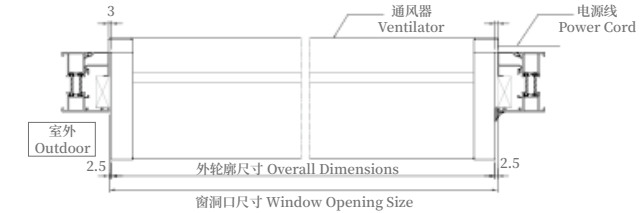
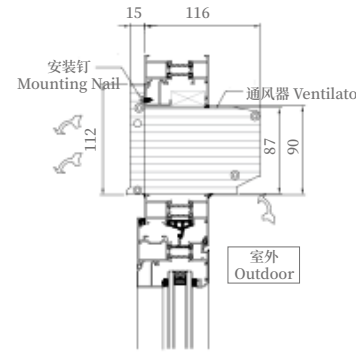
关窗不通风 开窗噪音大

该如何解决室内噪音 & 空气质量问题?

No Ventilation When Closing The Window, Loud When Opening The Window
How To Solve The Problem Of Indoor Noise&air Quality?



新风隔声窗 Fresh Air Sound Insulation Window



技术参数 Technical Parameter			
截面尺寸 Section Size	W116XH87mm 长度尺寸定制 W116XH87mm Length Customized	水密性能 Water Tightness	≥ 500Pa
通风量 Ventilation Rate	25-75m ³ /H	气密性能 Air Tightness	1.5m ³ /(m.h)
运行噪声 Running Noise	32-38dB(A)	保温性能 Thermal Insulation Performance	
过滤等级 Filtering Grade	活性炭网 +F7 等级滤网 Activated Carbon Screen+F7 Filter Screen	抗风压性能 Wind Pressure Resistance	2500Pa
一次过滤效率 Primary Filtration Efficiency	95.5%	隔音性能 Sound Insulation Performance	开启 28 关闭 32dB(A) Open 28 Close 32dB (A)
功率 Power	20W(风机数量增加会相应变化) 20W (The Number Of Fans Will Change Accordingly)		

适用场所 Applicable Places



体育馆设计规范 Gymnasium design standard

参考《体育馆建筑设计规范》(JGJ31-2003; J265-2003)
Refer to 《Gymnasium Building Design Code》(JGJ31-2003; J265-2003)

随着体育、文化事业的发展,全国各地已经或将要建造大量的体育馆。在这些体育馆中,绝大多数是综合性多用途体育馆,除体育比赛和训练外,还可用于大型文艺演出、举行会议、时装表演、放映电影及举办杂技、马戏演出等。这些体育馆其实就是多功能体育馆。为了满足体育馆的多功能使用要求,就必须对其进行专业的声学设计。体育馆的最大特点就是容积较大,致使比赛大厅的混响时间过长。首先,过长的混响时间会降低比赛大厅的音质清晰度,使观众的听音混浊,影响演出的效果和口碑。对于运动员则可能由于馆中音质问题而大失水平。其次,过长的混响时间还会使扩声系统产生啸叫。另外,比赛池的平行墙和过大的自由声程会产生颤动回声和多重回声的音质缺陷。会使运动员运球脚步声和撞击声更加激烈,甚至演变成强烈的嘈杂声。当代体育馆的构型愈趋于多样化,建筑设计师们已不满足过去矩形的设计。圆形,椭圆形,多边形等层出不穷。而这些弧形墙面和穹形顶面往往会产生声聚焦。

With the development of sports and cultural undertakings, a large number of gymnasiums have been or will be built throughout the country. Most of these gyms are comprehensive multi-purpose gyms. In addition to sports competitions and training, they can also be used for large-scale cultural performances, conferences, fashion shows, film screenings, and acrobatics and circus performances. These stadiums are actually multifunctional stadiums. In order to meet the multifunctional use requirements of the gymnasium, professional acoustic design must be carried out. The configuration of contemporary gymnasiums is becoming more and more diversified, and architectural designers are no longer satisfied with the rectangular design of the past. Circles, ellipses, and polygons emerge in endlessly. And these curved walls and dome-shaped top surfaces often produce acoustic focusing.

体育建筑等级:
Sports architect class:

等级 Class	主要使用要求 Main use requirements
特级 Special class	举办奥运会、亚运会及世界级比赛主场 The Olympics, Asian Games and World Class sports events
甲级 Class A	举办全国性和单项国际比赛 The national and individual international competitions
乙级 Class B	举办地区性和全国单项比赛 The regional and national individual competitions
丙级 Class C	举办地方性、群众性运动会 Hold local and mass sports competition

游泳馆比赛大厅满场 500 ~ 1000Hz 混响时间:

Full reverberation time of 500 ~ 1000Hz in the competition hall of the swimming pool:

游泳馆等级 Swimming class	游泳馆按等级在不同容积 (m ³) 下的混响时间 (s) Reverberation time (s) of swimming pools at different volumes (m ³)	
	<25m ³ /座 seat	>25m ³ /座 seat
特级、甲级 Special class, class A	<2.0	<2.5
乙级、丙级 class B.class C	<2.5	<3.0

各频率混响时间相对于 500 ~ 1000Hz 混响时间的比值:

Ratio of reverberation time of each frequency to reverberation time of 500 ~ 1000Hz:

频率 Frequency (Hz)	125	250	2000	4000
比值 Ratio	1.0 ~ 1.2	1.0 ~ 1.1	0.9 ~ 1.0	0.8 ~ 0.9

参考《体育场馆声学设计及测量规程》(JGJ/T131 - 2012)

Refer to 《Regulations for acoustic design and measurement of stadiums》(JGJ/T131 - 2012)

表 2.2.1-1 不同容积比赛大厅 500 ~ 1000Hz 满场混响时间
Table 2.2.1-1 RT of 500 ~ 1000Hz for Different Volume of Competition Hall (roomful)

容积 (m ³) Volume	< 40000	4000 ~ 80000	80000 ~ 160000	> 160000
混响时间 (s) Reverberation Time	1.3 ~ 1.4	1.4 ~ 1.6	1.6 ~ 1.8	1.9 ~ 2.1

表 2.2.2 游泳馆比赛厅 500 ~ 1000Hz 满场混响时间
Table 2.2.2 RT of 500 ~ 1000Hz Swimming Pool Competition Hall (roomful)

每座容积 (m ³ /座) Volume for each seat	≤ 25	> 25
混响时间 (s) Reverberation Time	≤ 2.0	≤ 2.5



综合体育馆比赛大厅满场 500 ~ 1000Hz 混响时间:

Reverberation time of 500 ~ 1000Hz in the full hall of the general gymnasium:

综合体育馆等级 Comprehensive stadium class	体育馆按等级在不同容积 (m ³) 下的混响时间 (s) Reverberation time (s) of gymnasium under different volume (m ³)		
	> 80000m ³	40000-80000m ³	<40000m ³
特级、甲级 Special class, Class A	1.7	1.4	1.3
乙级 Class B	1.9	1.5	1.4
丙级 Class C	2.1	1.7	1.5

注: 所规定的混响时间指标允许 ±0.15s 的变动范围。
Note: The specified reverberation time index allows a range of ± 0.15s.

注: 有花样滑冰表演的溜冰馆, 其比赛厅混响时间可按表内容积大于 80000m³ 的综合体育馆比赛大厅的混响时间设计。冰球馆、速滑馆、网球场、田径馆等专项体育馆比赛混响时间可按游泳馆比赛厅的混响时间设计。

Note: As for skating halls with figure skating performances, the reverberation time of the competition hall can be designed according to the reverberation time of the comprehensive gymnasium's competition hall with cubage greater than 80000m³. The reverberation time of special stadiums such as ice hockey hall, speed skating hall, tennis hall, track and field hall, etc. can be designed according to the reverberation time of the natatorium's competition hall.

表 2.2.1-2 各频率混响时间相对于 500 ~ 1000Hz 混响时间的比值
Table 2.2.1-2 The ratio of each frequency RT comparing with RT of 500 ~ 1000Hz

率 (Hz) Frequency	125	250	2000	4000
比值 Ratio	1.0 ~ 1.3	1.0 ~ 1.2	0.9 ~ 1.0	0.8 ~ 1.0

剧场设计规范 Theater Design Standard

参考《剧场建筑设计规范》(JGJ57-2016)
Refer to 《Theater Building Design Code》(JGJ57-2016)

现代剧场的功能是综合表演戏剧、话剧、歌剧、歌舞、曲艺、音乐等于一体的。同时满足剧场的多功能用途,建筑声学设计要求尤为重要。剧院建筑声学设计涉及结构、形体设计、音质设计与隔声等。对于自然声演出的演艺建筑,从建筑方案设计开始阶段就应同时考虑声学设计。声学设计者应参与土建和装修设计全过程。在工程设计各阶段应与有关设计专业同步进行,密切配合。

The function of a modern theater is a comprehensive performance of drama, opera, song and dance, music and so on. At the same time to meet the multi-purpose use of the theater, architectural acoustic design requirements are particularly important. The acoustic design of theater architecture involves structure, figure design, sound quality design and sound insulation. For performing arts buildings with natural sound performance, acoustic design should be considered from the beginning of architectural design. Acoustic designers should participate in the whole process of building construction and decoration design.

以自然声为主的剧场观众厅容量:

Capacity of theater auditorium with natural Sound following

剧场用途 Theater usage	座位数 Seats number
话剧场、戏剧场 Drama theater, theater	不宜 > 1000 座 Not suitable > 1000 seats
歌舞剧场 Cabaret theater	不宜 > 1400 座 Not suitable > 1400 seats

观众厅每座容积应符合下列规定:

Each volume of the auditorium should meet the requirements:

剧场用途 Theater usage	每座容积 m ³ /座 Each volume m ³ /seat
歌舞剧场 Cabaret theater	5.0 ~ 8.0m ³
话剧场、戏剧场 Drama theater, theater	4.0 ~ 6.0m ³
多用途 Multipurpose	4.0 ~ 7.0m ³

600-1600 座观众厅混响时间频率特性比值:

600-1600 seat auditorium time-frequency characteristic ratio:

使用条件 Conditions of Use	125Hz	250Hz	2000Hz	4000Hz	8000Hz
歌舞 Song and dance	1.0 ~ 1.3	1.0 ~ 1.15	0.9 ~ 1.0	0.80 ~ 1.0	0.70 ~ 1.0
话剧 Opera	1.0 ~ 1.2	1.0 ~ 1.1			
戏曲 Drama					
多用途、会议 Multipurpose, meeting					

剧院辅助用房声学要求:

Acoustic requirements for theater auxiliary rooms:

房间名称 Room name	声学特性 Acoustic characteristic					
	房间要求 Room requirements			混响时间 (s) T60Reverberation time	噪声 (dB) noise	
净高 height (m)	每席 (间) 面积 Each seat (room) area (m2)	每席体积 Volume per seat (m3)	背景噪声 Background noise (NR)		隔声 Sound insulation (Rw)	
声控室 Sound control room	净高 height ≥ 2.8	10 ~ 12/ 间 room	—	0.4 (平直) (Straight)	≤ 30	≥ 40
排练厅 rehearsal hall	—	—	—	—	≤ 35	≥ 45
乐队排练厅 Band Rehearsal Hall	净高 height ≥ 6.0	2.0 ~ 2.4/ 席 seat	8 ~ 10	1.0 ~ 1.2	≤ 30	≥ 45
合唱排练厅 Choral Rehearsal Hall	—	1.2 ~ 1.4/ 席 seat	5 ~ 7	—	≤ 35	—
琴房、调音室 Piano room, tuning room	净高 height ≥ 2.8	≥ 10/ 间 room	—	0.4 (平直) (Straight)	≤ 30	≥ 45
同声传译室 Simultaneous interpretation room	—	5 ~ 6/ 间 room	—	—	≤ 35	≥ 45



参考《广播电视录(播)音室、演播室声学设计规范》(GYT5086-2012)
Refer to 《Broadcasting and Television Recording (Broadcasting) Studios Acoustic Design Code》(GYT5086-2012)

录音棚又叫录音室,它是人们为了创造特定的录音环境声学条件而建造的专用录音场所,是录制电影、歌曲、音乐等的录音场所,录音室的声学特性对于录音制作及其制品的质量起着十分重要的作用。人们可以根据需要对其进行分类,例如:可以按声场的基本特点划分为自然混响录音棚、强吸声(短混响)录音棚、以及活跃端--寂静端(LEDE)型录音棚,也可以从用途角度划分为白录音棚、音乐录音室、音响录音室、混合录音室等等。

Recording studio is a special recording place built to create better recording condition. It is a special place for recording movies, songs, music, etc. The acoustic condition of the recording studio is very important to the quality of recording production.

技术指标:

声学设计规范要求录音棚的音质主要是“语言清晰度、可懂度高,其次是良好的丰满度”,在主要使用条件下,具有相应于拾音要求的混响时间频率特性,抑制影响拾音频率的声缺陷,如回声、颤动回声、低频嗡声等,根据上述要求;录音棚的设计标准为:录音棚用短混响,根据室内容积选择合适的混响时间,混响时间的频率特性要求平直。

Technical Standard:

Acoustic design specification requires that the sound quality of the recording studio is mainly "language intelligibility and understand ability, followed by good fullness". the design standard of the studio is: short reverberation for the studio, select the appropriate reverberation time according to the room volume, and require straight frequency of the reverberation time features.

录音室声学指标

Acoustic standard for Recording Studio

房间名称 Room	混响时间 Reverberation time	隔声门隔声量 (插入损失 dB) (STC for insulation door) (Insertion Loss dB)	噪声评价曲 (NR) noise rating number	隔声窗隔声量 (传声损失 dB) (STC for insulation window) (Transmission Loss dB)	快速语言传递 指数 Fast Language Transfer Index
录音棚 Recording Studio	0.4+0.1	>35	NR-30	>50	>0.65

声学缺陷处理:

- 1、噪声的产生:录音棚的噪声来自多方面。既有来自录音棚外的噪声,主要可分为两类,一类是来自录音棚建筑之外,例如过往车辆、飞机等所产生的交通噪声;另一类来自建筑物之内,但又在录音棚之外的噪声,例如大声交谈声,上下班时的喧哗声;也有来自录音棚的内部噪声,主要来自空调系统,灯光控制系统和录音棚工作时,摄像机的移动噪声和工作人员的走动噪声等。
- 2、噪声的传播噪声传入录音棚主要通过三种途径,一是噪声作用于墙壁、地板、天花板而产生振动,把声能辐射进录音棚;二是通过施工时留下的缝隙、没有密封的孔洞等经过空气传声传入录音棚;三是通过录音棚的墙面、顶面、或地面与外界的刚性连接通过固体传声而进入录音棚。
- 3、噪声控制录音棚的隔声问题主要是四周的墙以及窗户和进出的门。对于上述问题的隔声主要用下面方法:主要在于采用不同隔声量的多材质复合隔声墙(多阻尼轻质墙隔声)及对外的窗密封,这样处理基本可以隔绝外界噪声对录音棚的影响;将进出的门宜采用复合材料的国标隔声门。

Acoustic defect treatment:

1. Noise generation: the noise generation of the recording studio comes from many aspects. Existing noise from outside the studio, such as traffic noise generated by passing vehicles, aircraft etc. The other is from inside the building, the air conditioning system, lighting control system and noise during camera movement and staff walking, etc.
2. The propagation of noise: The noise is transferred into the recording studio mainly through three ways. One is that the noise acts on the wall, floor and ceiling to generate vibration. The second is through the gaps or seams left during construction; the third is to enter the recording studio through solid sound transmission through the rigid connection of the wall.
3. Noise control: The main sound insulation problem of the recording studio is related to surrounding walls, windows and doors. For the sound insulation of above problems, the following methods are mainly used: It mainly adopts multi material composite sound insulation wall (multi-damped lightweight wall sound insulation) and external window seal, which can basically insulate the influence of external noise on the recording studio.



参考《民用建筑隔声设计规范》(GB50118-2010)
Refer to 《Design Standards for Sound Insulation of Civil Buildings》(GB50118-2010)

KTV 场所分类:A.量贩式 KTV 朋友聚会,家庭团聚,同学 party,生日庆祝,消费平民化。
B.高级娱乐会所装修豪华,适合商务应酬,注重私密性。消费高。C.夜总会小包房设计面积在 8~11 平米,中包房设计在 15~18 平米,大包房在 24~30 平米,特大包房在 55 平米以上为宜。我国是世界上卡拉 OK 最多的国家,其装修风格各有千秋,但是普遍存在声学效果差的问题。即使 KTV 内部装修的多豪华,音响系统多高级,当人们去唱歌的时候还会发现唱起歌来很吃力,或者有声染色现象。有些地方还会串音严重,有些 KTV 还会由于排放的噪声影响了附近居民的正常生活而投诉不断,不能正常营业。为了能保证 KTV 的正常营业,KTV 声学效果不能仅依赖高端的音响系统,而且也不实际,还要为好的音响系统制造优良的声学环境,使音响水准发挥得淋漓尽致。这就需要建筑声学设计,并且至始至终渗透于 KTV 的装修之中。

Classification of KTV:A. KTV at wholesale price, which is for friends gathering, family reunion, classmate party, birthday celebration. Common consumption standard.
B. High-end entertainment club with luxury decoration, which is suitable for business entertainment, and pay attention to privacy. High consumption standard.
C. Nightclub: The design area of small private rooms is 8-11 square meters, In order to ensure the normal operation of KTV, the acoustics of KTV cannot only depend on high-end sound systems, and it is also not practical. It is also necessary to create an excellent acoustic environment for good sound systems so that the sound level can be played. It must be incisive. This requires architectural acoustics design, and is involved in the decoration and decoration of KTV from beginning to end.



商业建筑各房间内空场时的噪声限值

Noise limits for empty spaces in each room of a commercial building

房间名称 name of Room	等效声级 $L_{Acq,T}$ (dB) Equivalent sound level	
	高要求标准 High Standard	低限标准 Low standard
商场、商店、购物中心、会展中心 Supermarket, shopping malls, convention centers	50	55
餐厅 Restaurant	45	55
员工休息室 Staff lounge	40	45
走廊 corridor	50	60

噪声敏感房间与产生噪声房间之间的隔墙、楼板的空气声隔声标准:

Standards for airborne sound insulation of partition walls and floor slabs between noise-sensitive rooms and rooms where noise is generated:

围护结构部位 Enclosure structure	计权隔声量+交通噪声频谱修正量 $R_w + C_{tr}$ (dB) Weighted transmission loss + Traffic noise spectrum correction	
	高要求标准 high standard	低限标准 low standard
健身中心、娱乐场所等与噪声敏感房间之间的隔墙、楼板 Partition walls and floor slabs between fitness centers, entertainment venues and noise-sensitive rooms	>60	>55
购物中心、餐厅、会展中心等与噪声敏感房间之间的隔墙、楼板 Partition walls and floors between shopping centers, restaurants, convention centers, etc. and noise-sensitive rooms	>50	>45

噪声敏感房间顶部楼板的撞击声隔声标准:

Standard of sound insulation for impact sound on the top floor of noise-sensitive rooms:

楼板部位 Floor parts	撞击声隔声单值评价量 (dB) Single-value evaluation of impact sound insulation			
	高要求标准 High standards		低限标准 Low standards	
	计权规范化撞击声压级 $L_{n,w}$ (实验室测量) Weighted normalization impact sound pressure level	计权标准化撞击声压级 $L'_{nT,w}$ (现场测量) Weighted standardized impact sound pressure level	计权规范化撞击声压级 $L_{n,w}$ (实验室测量) Weighted normalization impact sound pressure level	计权标准化撞击声压级 $L'_{nT,w}$ (现场测量) Weighted standardized impact sound pressure level
健身中心、娱乐场所等与噪声敏感房间之间的楼板 Floors between fitness centers, entertainment venues and noise-sensitive rooms	<45	≤45	<50	≤50

参考《电影院建筑设计规范》(JGJ58-2008) Refer to 《Cinema Building Design Code》(JGJ58-2008)

电影院是为观众放映电影的场所。是由观众厅,公共区域,放映机房,和其他用房(包括贵宾接待室、建筑设备用房、智能化系统机房等)组成。消除观众厅声聚焦、颤动回声,多重回声,减少噪声对扩声系统的声干扰,营造一个良好的视听效果,电影院的建筑声学设计是必不可少的一部分。电影院的声学设计主要包括混响控制、隔声设计、噪声控制等方面的内容和要求。电影院按声道可分为:普通声道、立体声道、四声道、六声道电影院规模按容量可分为:特大型、大型中型和小型。

Theater is composed of audience hall, public area, projection room, and other rooms (including VIP reception room, building equipment room, intelligent system room, etc.). To eliminate acoustic focusing, tremor echo, and multiple echoes in the auditorium, reduce the noise interference of the sound reinforcement system, and create a good audio-visual effect. The architectural acoustic design of the movie theater is an indispensable part. The acoustic design of theaters mainly includes the requirements of reverberation control, sound insulation design and noise control.

特、甲、乙级电影院观众厅混响时间表的频率特性:

Reverberation time table of Standard A B C size Theater:

频率 frequency	63	125	250	500	1000	2000	4000	8000
比值 Ratio	1.00~1.75	1.00~1.50	1.00~1.25	1	0.85~1.00	0.70~1.00	0.55~1.00	0.40~0.90

电影院观众厅 500~1000Hz 混响时间:

Reverberation of auditorium in Theater:

容积 (m³) Volume	中频混响时间 medium frequency(S)	
	普通 Normal changel	立体声 stereo channels
<1000	0.6~0.8	0.48~0.65
1000~6000	0.7~1.1	0.52~0.85
6000~10000	0.85~1.15	0.63~0.9

电影院观众厅各频率混响时间相对 500-1000Hz 的比值:

Ratio of reverberation time of each frequency in auditorium to 500-1000Hz:

频率 Frequency (Hz)	混响时间比值 reverberation time/s
125	1.0~1.2
250	1.0~1.1
2000	0.9~1.0
4000	0.8~1.0



参考《民用建筑隔声设计标准》GB 50118-2010 同时参考 2020 的修订版

Refer to 《the Standard for Sound Insulation Design in Civil Buildings》GB 50118-2010 and the revised version of 2020

4.1 允许噪声级 Allow noise level

4.1.1 卧室、起居室内的噪声,不应大于表 4.1.1 所列限值。

The noise in the bedroom and living room shall not be higher than the limit in Table 4.1.1

表 4.1.1 卧室、起居室内的噪声限值 Noise limits in bedrooms and living rooms

房间名称 room name	等效声级 $L_{Aeq,T}$ (dB) equivalent sound level	
	昼间 daytime	夜间 night time
卧室 bedroom	45	35
起居室 living room	45	

4.1.2 卧室、起居室内的建筑设备结构噪声,不应大于表 4.1.2 所列限值。

The structural noise of the building equipment in the bedroom and living room shall not be higher than the limits listed in Table 4.1.2

表 4.1.2 卧室、起居室内的建筑设备结构噪声限值

Noise limit for construction equipment in bedroom and living room

房间名称 Room name	时段 time	倍频带等效声压级 $L_{eq,1/1}$ (dB) Frequency band equivalent sound pressure level				低频等效声级 $L_{Aeq,T,L}$ (dB) Low frequency equivalent sound level
		31.5Hz	63Hz	125Hz	250Hz	
卧室 bedroom	昼间 daytime	79	63	52	44	40
	夜间 nighttime	74	57	45	37	32
起居室 living room	全天 whole day	79	63	52	44	40

4.1.3 卧室、起居室内噪声的高要求标准,不应大于表 4.1.3 所列限值。

The high standard for noise in bedrooms and living rooms should not be greater than the limit in Table 4.1.3

表 4.1.3 卧室、起居室内噪声的高要求标准限值

High Standard Limit for Noise in Bedroom and Living Room

房间名称 room name	等效声级 $L_{Aeq,T}$ (dB) equivalent sound level	
	昼间 day time	夜间 night time
卧室 bedroom	40	30
起居室 living room	40	

4.2.7 卧室、起居室分户楼板的撞击声隔声性能,应符合表 4.2.7 的规定。The sound isolation performance of the bedroom and living room floors shall be in accordance with Table 4.2.7

表 4.2.7 分户楼板撞击声隔声标准 Standard for sound insulation from floor impact

构件名称 name	撞击声隔声单值评价量 (dB) Evaluation of sound insulation from impact	
卧室、起居室的分户楼板 Bedroom, living room Separate floors	计权规范化撞击声压级 $L_{n,w}$ (实验室测量) Quantified impact sound pressure level	<70
	计权标准化撞击声压级 $L'_{nT,w}$ (现场测量) Weighted standardized impact sound pressure level	≤70

4.2.8 卧室、起居室分户楼板的撞击声隔声性能高要求标准,应符合表 4.2.8 的规定.High standard for sound isolation performance of the bedroom and living room floors shall comply with Table 4.2.8

表 4.2.8 卧室、起居室分户楼板的撞击声隔声性能高要求标准 Standard for sound insulation performance of bedroom and living room floors

构件名称 name	撞击声隔声单值评价量 (dB) Evaluation of sound insulation from impact	
卧室、起居室的分户楼板 Bedroom, living room Separate floors	计权规范化撞击声压级 $L_{n,w}$ (实验室测量) Quantified impact sound pressure level	<60
	计权标准化撞击声压级 $L'_{nT,w}$ (现场测量) Weighted standardized impact sound pressure level	≤60



参考《民用建筑隔声设计标准》GB 50118-2010 同时参考 2020 的修订版

Refer to 《Standard for Sound Insulation Design in Civil Buildings》GB 50118-2010 and the revised version of 2020

医院主要房间内的噪声限值: Noise limits in the main room of the hospital

房间名称 Name of the Room	等效声级 $L_{Aeq,T}$ (dB) Equivalent sound level				注: 病房、医护人员值班室在开窗条件下等效声级不应超过表中限值 5dB。2、表中听力测听室噪声限值的数值,适用于采用纯音气导听阈测听法的听力测听室。采用纯音骨导听阈测听法和声场测听法的听力测听室的噪声限值另有规定。 Note: The equivalent sound level of wards and medical staff on duty should not exceed the limit of 5dB in the table under the condition of window opening.
	高要求标准 high standard		低限标准 Low standard		
	昼间 Day	夜间 Night	昼间 Day	夜间 Night	
病房、医护人员值班室 Ward, medical staff on duty room	40	30	45	35	
重症监护室 ICU	40	35	45	35	
诊室 Clinic	40		45		
手术室、分娩室 Operating room, delivery room	40		45		
洁净手术室 Clean operating room	—		50		
人工生殖中心净化区 Purification area of artificial reproduction center	—		40		
听力测听室 Audiometric room	—		25 注 2		
化验室、分析实验室 Laboratory, analysis laboratory	—		40		
入口大厅、候诊厅 Entrance hall, waiting room	50		55		

学校建筑规范
School Building Code

参考《民用建筑隔声设计标准》GB 50118-2010 同时参考 2020 的修订版
Refer to 《the Standard for Sound Insulation Design in Civil Buildings》GB 50118-2010 and the revised version of 2020

5.1 允许噪声级 Allow noise level

5.1.1 教学用房内的噪声，不应大于表 5.1.1 所列限值。The noise in the teaching premises shall not be than the limit in Table 5.1.1
表 5.1.1 教学用房内的噪声限值

Noise limits in teaching rooms

房间名称 room name	等效声级 $L_{Aeq,T}$ (dB) equivalent sound level	
	高要求标准 High Standards	低限标准 Low Standard
语言教室、阅览室 Language classrooms, reading rooms	35	40
普通教室、实验室、多媒体教室 General classrooms, laboratories, multimedia classrooms	40	45
音乐教室、琴房 Music room, piano room	35	40
舞蹈教室 Dance classroom	45	50

5.3.4 各类教室内宜控制混响时间，避免不利反射声，提高语言清晰度。各类教室空场 500Hz~1000Hz 的混响时间宜符合表 5.3.4 的规定。
All kinds of classrooms should control reverberation time, avoid adverse reflection sound, improve language clarity. The reverberation time of 500 Hz~1000 Hz in each classroom space should be in accordance with Table 5.3.4

表 5.3.4 各类教室空场 500Hz~1000Hz 的混响时间

Reverberation time of 500 Hz-1000 Hz in various empty classroom spaces

房间名称 room name	房间容积 (m³) Room volume	混响时间 (s) Reverberation time
普通教室 General classroom	≤200	≤0.8
	>200	≤1.0
语言及多媒体教室 Language and ultimedia Classroom	≤300	≤0.6
	>300	≤0.8
音乐教室 Music classroom	≤250	≤0.6
	>250	≤0.8
琴房 Piano Room	≤50	≤0.4
	>50	≤0.6
健身房 Fitness Room	≤2000	≤1.2
	>2000	≤1.5
舞蹈教室 Dance classroom	≤1000	≤1.2
	>1000	≤1.5



5.1.2 教学辅助用房内的噪声，不应大于表 5.1.2 所列限值。Noise in teaching aids should not be higher than the limit in Table 5.1.2
表 5.1.2 教学辅助用房内的噪声限值

Noise limits in teaching aids

房间名称 room name	等效声级 $L_{Aeq,T}$ (dB) equivalent sound level	
	高要求标准 High Standards	低限标准 Low Standard
教师办公室、休息室、会议室 Teacher's Office, Lounge, Meeting Room	40	45
健身房 Fitness Room	45	50
教学楼中封闭的走廊、楼梯间 Closed corridors and stairways in teaching buildings	45	50

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旅馆（酒店）建筑规范
Building Code for Hotels (Hotels)

参考《民用建筑隔声设计标准》GB 50118-2010 同时参考 2020 的修订版
Refer to 《the Standard for Sound Insulation Design in Civil Buildings》GB 50118-2010 and the revised version of 2020

7.1 允许噪声级 Allow noise level

7.1.1 旅馆建筑各房间内的噪声，不应大于表 7.1.1 所列限值。Noise in all rooms of hotel buildings should not be greater than the limit set out in Table 7.1.1
表 7.1.1 旅馆建筑各房间内的噪声限值

Noise limits in rooms of hotel buildings

房间名称 room name	等效声级 $L_{Aeq,T}$ (dB) equivalent sound level			
	高要求标准 High Standard		低限标准 Low Standard	
	昼间 daytime	夜间 night time	昼间 day time	夜间 night time
客房 Guest Room	35	30	40	35
办公室、会议室 Office, conference room	35		40	
多用途厅 Multi-purpose Hall	40		45	
餐厅、宴会厅 Restaurant, Ballroom	45		50	
酒店大堂 Hotel Lobby	50		55	
游泳池、健身会所 Swimming pool, gym club	45		50	



7.1.2 旅馆建筑客房内的建筑设备结构噪声，不应大于表 7.1.2 所列数值。Construction noise in hotel building rooms should not be greater than the values listed in Table 7.1.2
表 7.1.2 旅馆建筑客房内的建筑设备结构噪声限值

Structural noise limits for building equipment in hotel building rooms

房间名称 room name	时段 time	倍频带等效声压级 $L_{eq,1/1}$ (dB) Frequency band equivalent sound pressure level				低频等效声级 $L_{Aeq,T,L}$ (dB) Low frequency equivalent sound level
		31.5Hz	63Hz	125Hz	250Hz	
客房 Guest Room	昼间 day time	77	61	50	42	37
	夜间 night time	74	57	45	37	32

