

Light gauge modular house





NO.1 light gauge modular house

saving energy and protecting environment



Light steel is 100% recycled steel

Good performance

excellent thermal insulation,
sound insulation,
waterproof ,

Compared with the traditional brick structure
energy consumption reduced by 65%.

Can control air pollution,
soil pollution,
water pollution

effectively reduce the generation of waste



3、Light weight, saving material

Structural material with high intensity, thickness thin, (Usually low-rise housing total steel quantity within 30 kg/m², multi-storey building is 40 kg/m²), the whole weight of the building is only about 1/4 of the traditional brick structure. Structure light weight reduce the cost of transportation, hoisting, and foundation cost. Low requirement to the foundation, especially suitable for mountain and the beach, sand, island and so on.

4、Safe and durable

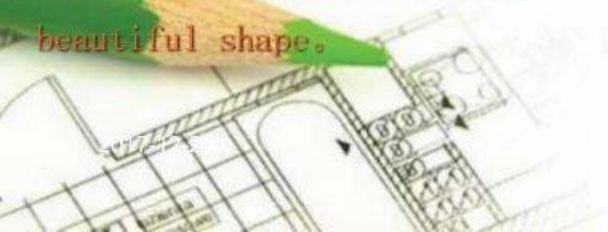
Wall&roof structure and the internal&external wall, Ability to resist horizontal load and vertical load is greatly increased, so the seismic and wind resistance performance is good. After tests showing that, can resist 9 ° earthquake, resist hurricane of 70 m/s. Components are all made of hot dipped zinc (aluminum) steel plate, assembly by the self tapping screw, need 't to welding, So it's excellent corrosion resistance, The service life of the building more than 70 years.

5、 Practical, comfortable to live

Due to the use of the excellent heat preservation, sound insulation energy-saving structure and material, make its indoor comfort level greatly increased.

Pipeline internal and wall thinning improve the use of housing area increased (about 10%).

Combined with the plasticity of the steel structure , making the house complex, diverse, beautiful shape.



●The performance parameters

- Vibration resistance: can be earthquake resistance to 9, a suitable to the area for more than 8 seismic intensity
- Wind resistance: can resist hurricane of 70 m/s, wind loading for 12 above
- Durability: the main structure life can reach more than 70
- Room utilization: compared with the traditional architecture can be increased by 5% - 13% of the usable area.
- Fire retardancy: according to different design, refractory time is up to 1-4 hours.
- Sound insulation: Exterior wall sound insulation can reach 65 db, interior wall is 45 db.
- Heat preservation: the thermal resistance of 200 mm composite wall can reach 3.2 m², K/W, 11 times that of brick wall
- Environmental protection: steel structure materials can be 100% recovery, most other supporting material also can be recycled
- Energy-saving: the new building materials with heat preservation and heat insulation than conventional building energy efficiency is about 65%
- construction time: the assembly of light steel is simple and quick, than traditional construction period shortened 2/3

The construction process 1

foundation
construction



the assembled



floor installed



metope installed

The construction process

compartment piping



assembly on the second floor



stair assembly



The construction process

roof installation



Insulation & waterproof installation



complete the installation



engineering appearance

Integrated housing: comprised by the structure systems , ground system, floor system, wall&roofing system, each system consists of several unit modules, unit module built in the factory.

Light steel integrated housing: in cold rolled galvanized or SGLC steel as the main load-bearing structure, combined thermal insulation, sound insulation, waterproof, fire prevention. etc, built a functional diversity, energy conservation and environmental protection housing . The housing components can be all produced in factory , only assembly at the scene, is one of the more mature system of an integrated building, Also the developing direction of future residential construction.



●Light steel integrated housing system



Light steel integrated housing system

basic module

light steel structure module

metope module

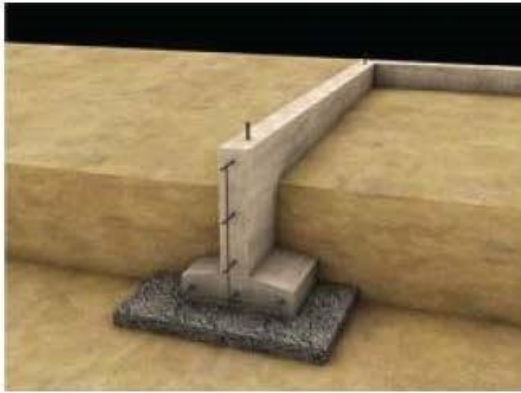
Floor modules

Roof module

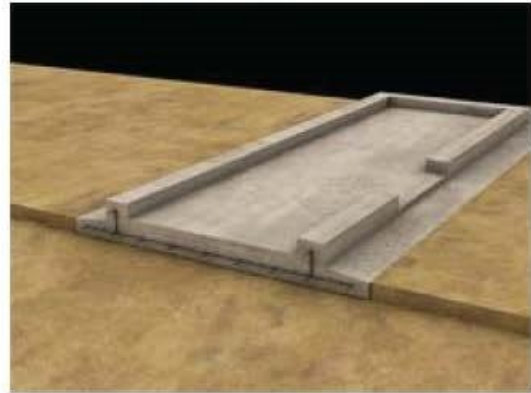


Basic module

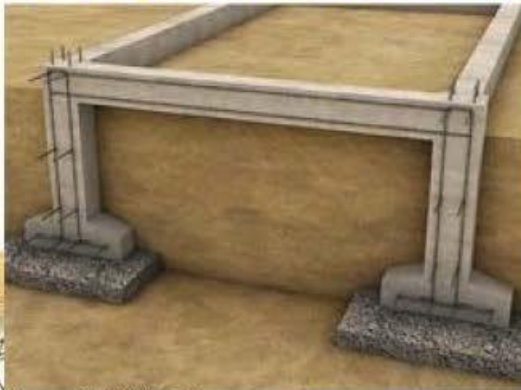
strip foundation



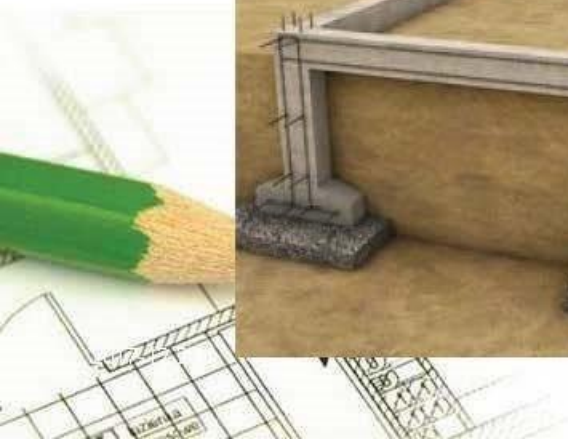
raft foundation

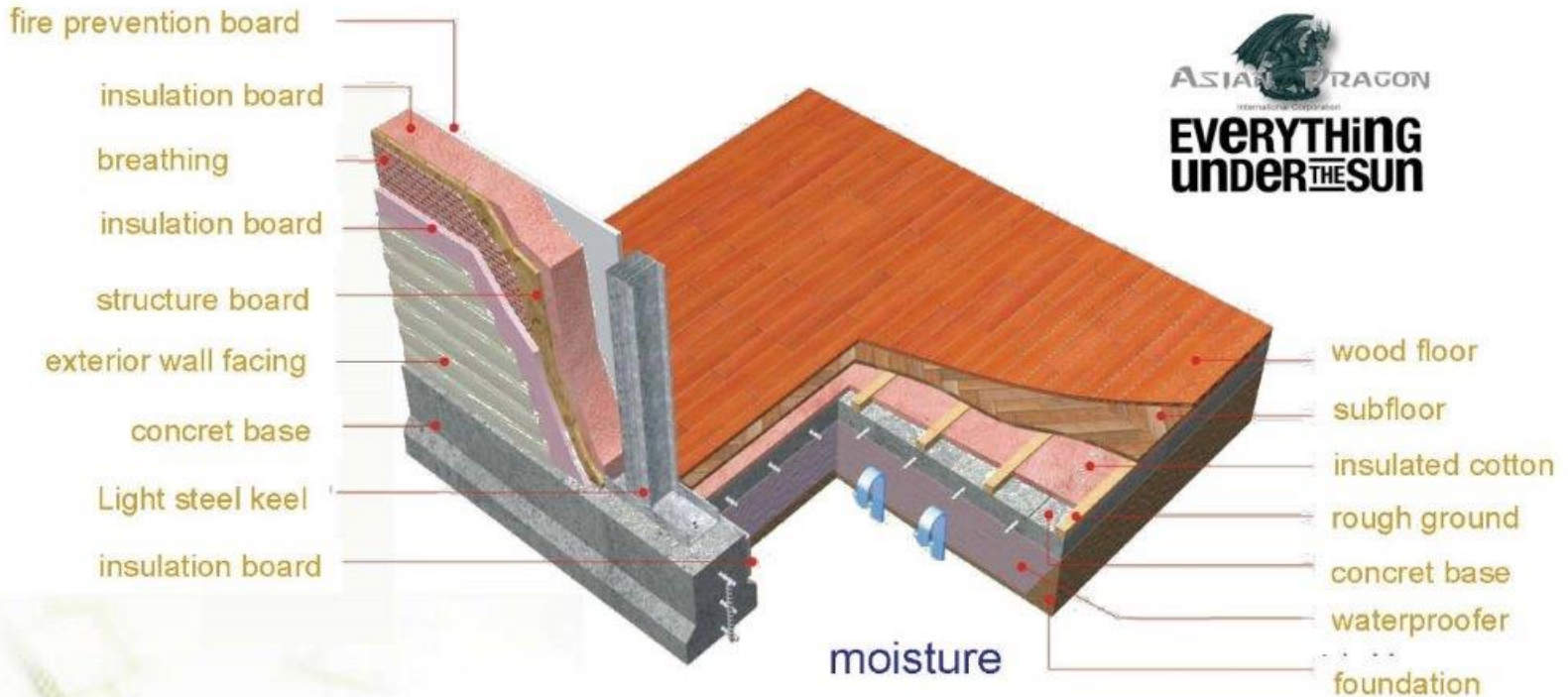


Independent foundation



pile foundation





- a. Light steel structure is light weight, can greatly reduce the cost of engineering
- b. Basis of moistureproof design, effectively prevent moisture and harmful gas leaking
- c. Reasonable anchoring way, to ensure the reliable foundation and the main body of the connection

Expansion Bolt



Ordinary bolts: STANDARD ANCHOR

Texture: Q235

Intension: 4.8

Surface treatment: Blue and white plating

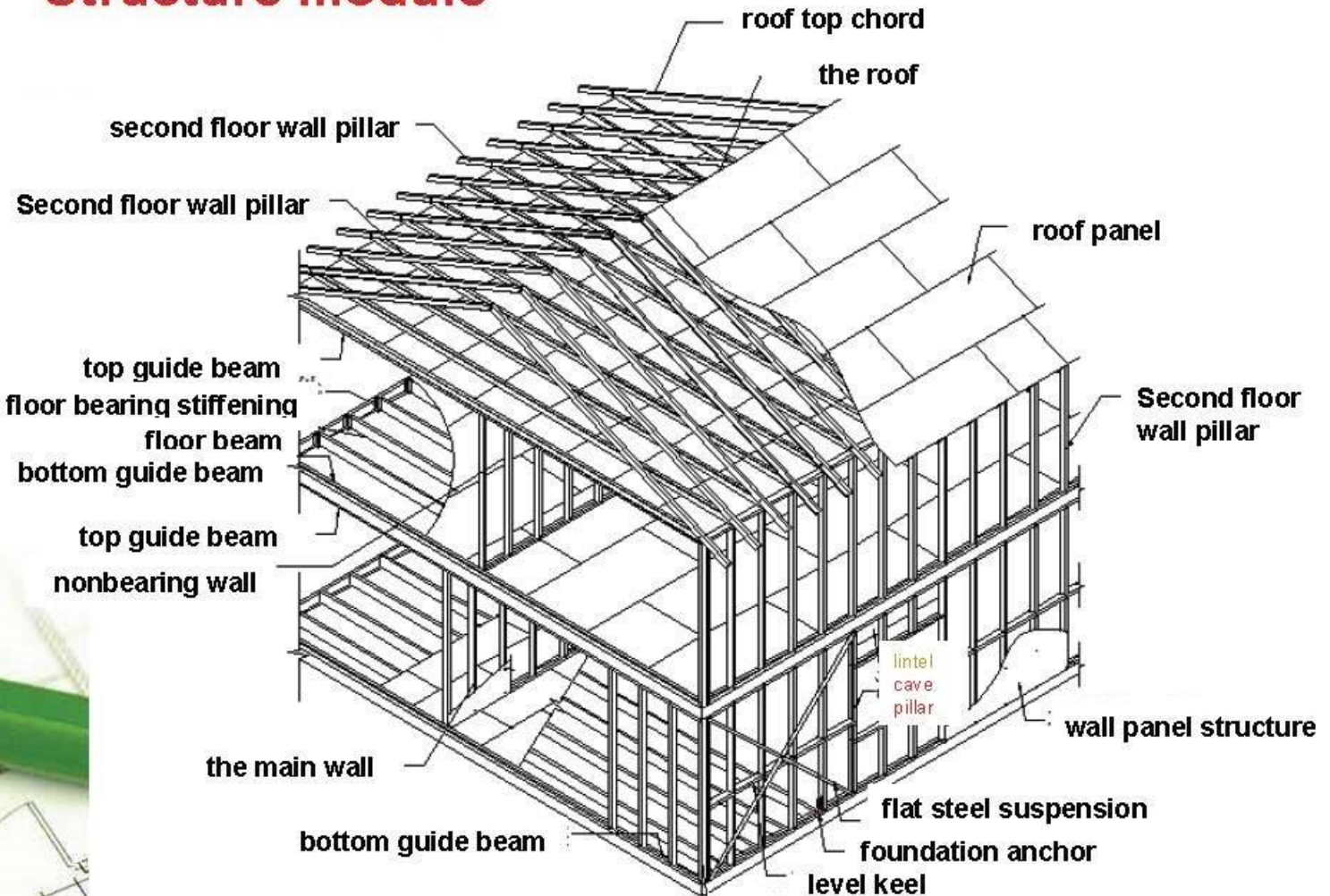
Product features : big load, wide application, instead of the foundation bolt, cancel the embedded parts and shorten the construction period.

Scope of application: suitable for all kinds of steel structure, keel, railings, stents, orbit, machinery and equipment, etc.

Notice: in the concrete strength is $< C25$ or use on a brick wall , please choose thicken casing .

M6	01-1	50-100	Q235	10	2.5	6
M8	01-1	60-200	Q235	12	5.0	10
M10	01-1	60-200	Q235	14	12	15
M12	01-1	80-300	Q235	16	16	20
M14	01-1	100-300	Q235	18	24	29
M16	01-1	100-380	Q235	20	28	38
M16大管径	01-1	120-350	Q235	22	30	36
M18	01-1	150-380	Q235	22	32	51
M20	01-1	150-380	Q235	25	50	70
M22	01-1	150-380	Q235	28	52	78

Structure module



1. structures

Structures is mainly composed of type C, U, Ω cold bending steel etc, material thickness is 0.55 1.5 mm, the yield strength 300-550 MPA, hot dip galvanized content Z180 - Z275 or aluminized zinc AZ100 - AZ150.

SECTION SIZE	SERVICE HOLES	SIZE				SECTION
		h	b	d	t	
		mm	mm	mm	mm	
C7008	YES	70	35	11	0.8	
C7012	YES	70	35	11	1.2	
C7015	YES	70	35	11	1.5	
C9008	YES	90	35	11	0.8	
C9012	YES	90	35	11	1.2	
C9015	YES	90	35	11	1.5	
C14008	YES	140	50	11	0.8	
C14012	YES	140	50	11	1.2	
C14015	YES	140	50	11	1.5	
P7008	NO	72	42	/	0.8	
P7012	NO	72	42	/	1.2	
P7015	NO	72	42	/	1.5	
P9008	NO	92	42	/	0.8	
P9012	NO	92	42	/	1.2	
P9015	NO	92	42	/	1.5	
P14008	NO	142	56	/	0.8	
P14012	NO	142	56	/	1.2	
P14015	NO	142	56	/	1.5	
Ω 22	NO	22	30	13	0.5 0.8 1.2	
Ω 38	NO	38	32	13	0.5 0.8 1.2	
Ω 61	NO	61	36.5	14	0.5 0.8 1.2	

Adapting piece

Mature node, standardized fittings to ensure ease of installation, fittings also USES the high strength zinc galvanized plate processing, to ensure that the structural corrosion resistance.



Butterfly Connector

GR340 | 1.2mm | Z275



Girden Truss Bracket

GR340 | 1.5mm | Z275



Triple Grip

GR340 | 1.2mm | Z275



Holddown HD8

GR340 | 2.0mm | Z275



Floor Joist Support

GR340 | 1.5mm | Z275



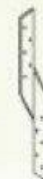
Brace Tensioner

GR340 | 1.5mm | Z275



Wall Connection Bracket

GR340 | 1.5mm | Z275



Two Way Strip

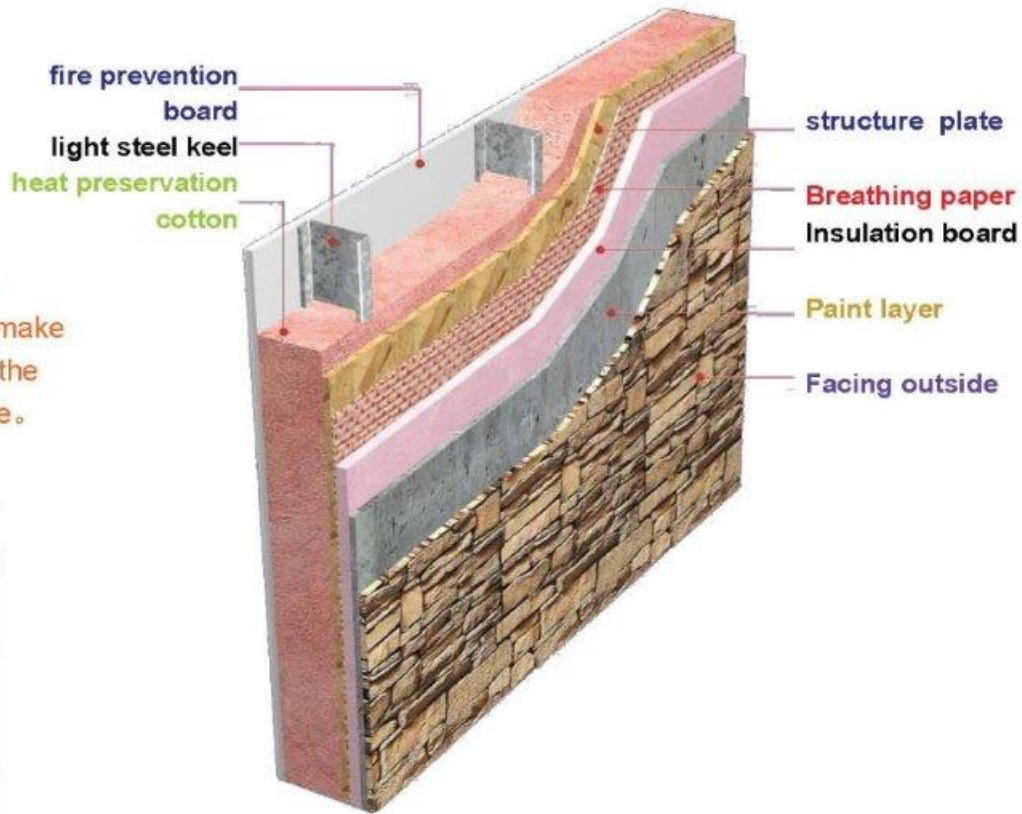
GR340 | 1.2mm | Z275

Metope module

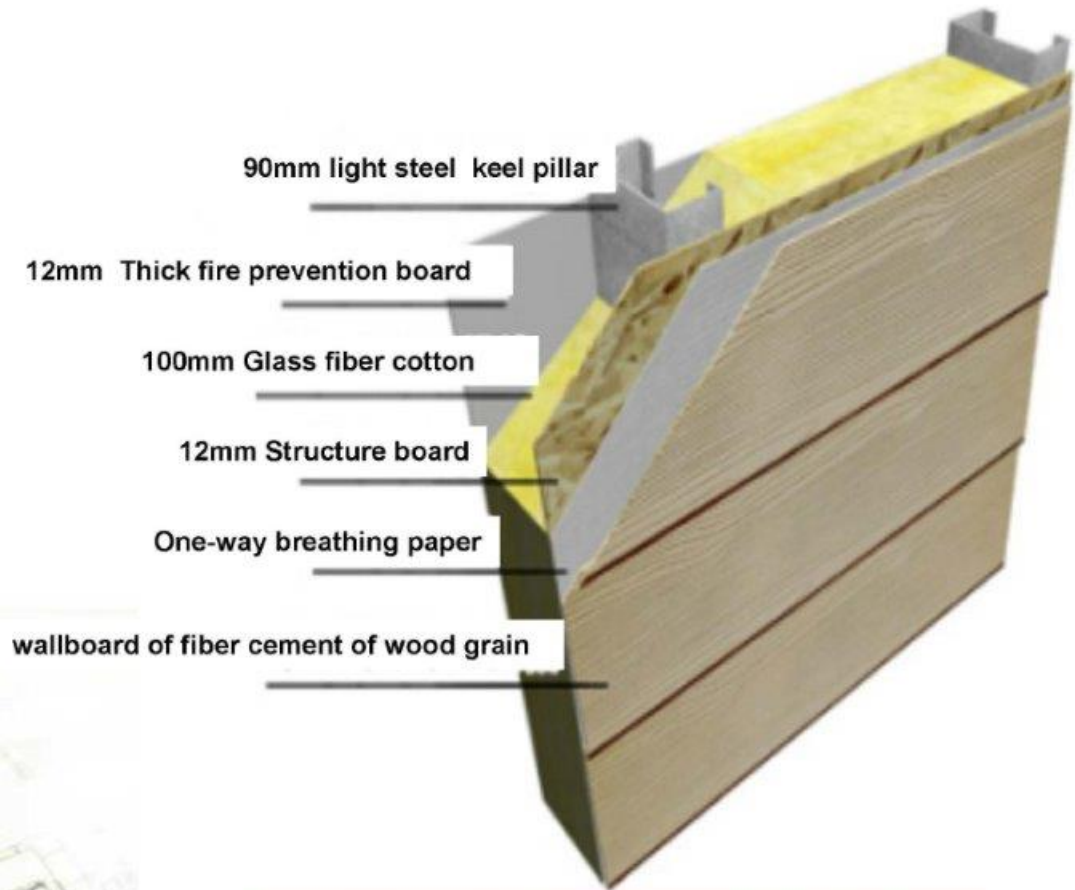
a. Wall filled with glass fiber cotton, exterior wall covering insulation board, has a good heat preservation, heat insulation, sound insulation performance

b. Breathing paper waterproof steam, can effectively adjust the air humidity indoor, make live more comfortable, effectively prevent the wall internal cause mould at the same time.

c. Pipeline buried in the wall, not on the interior space

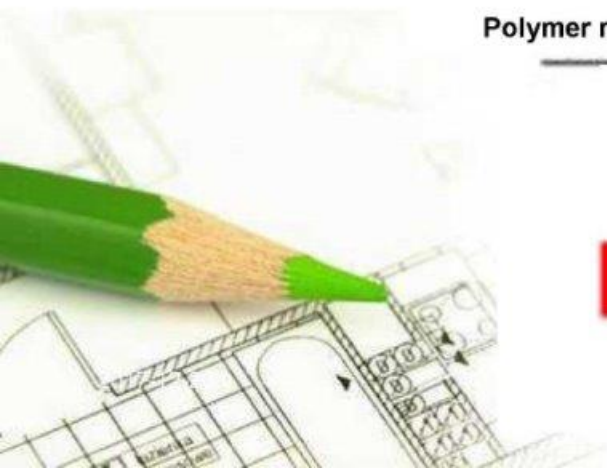
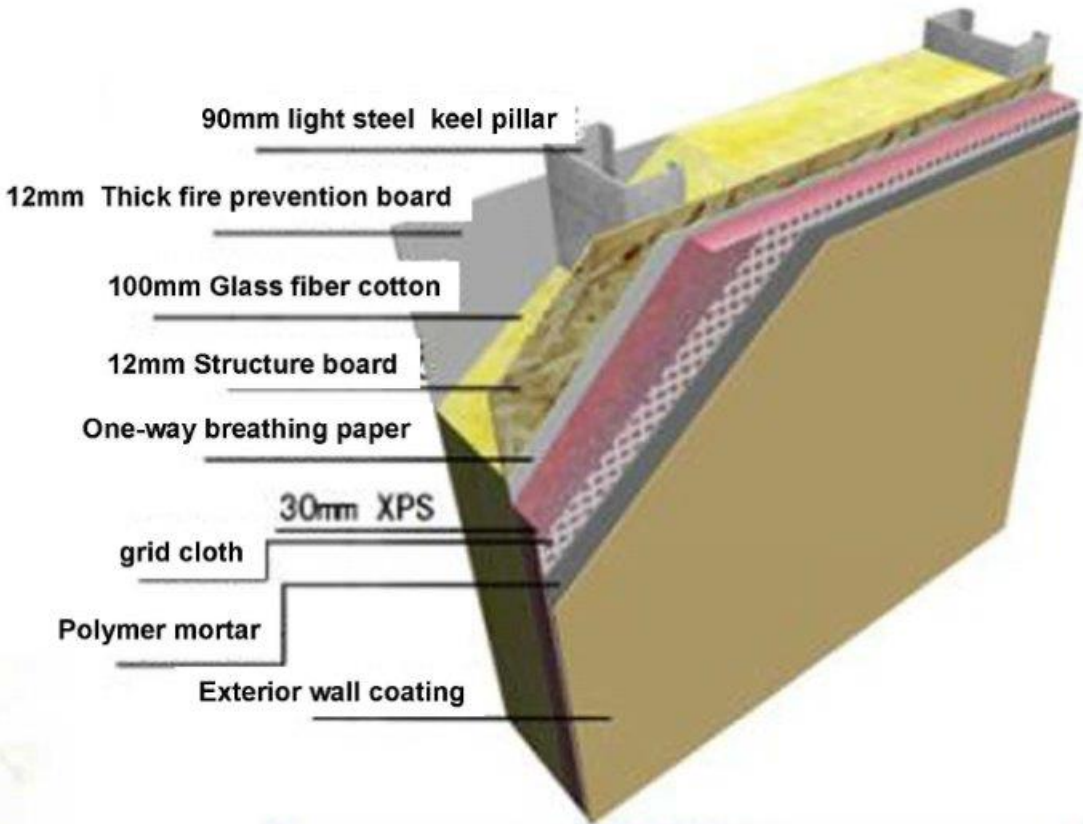


Typical practice



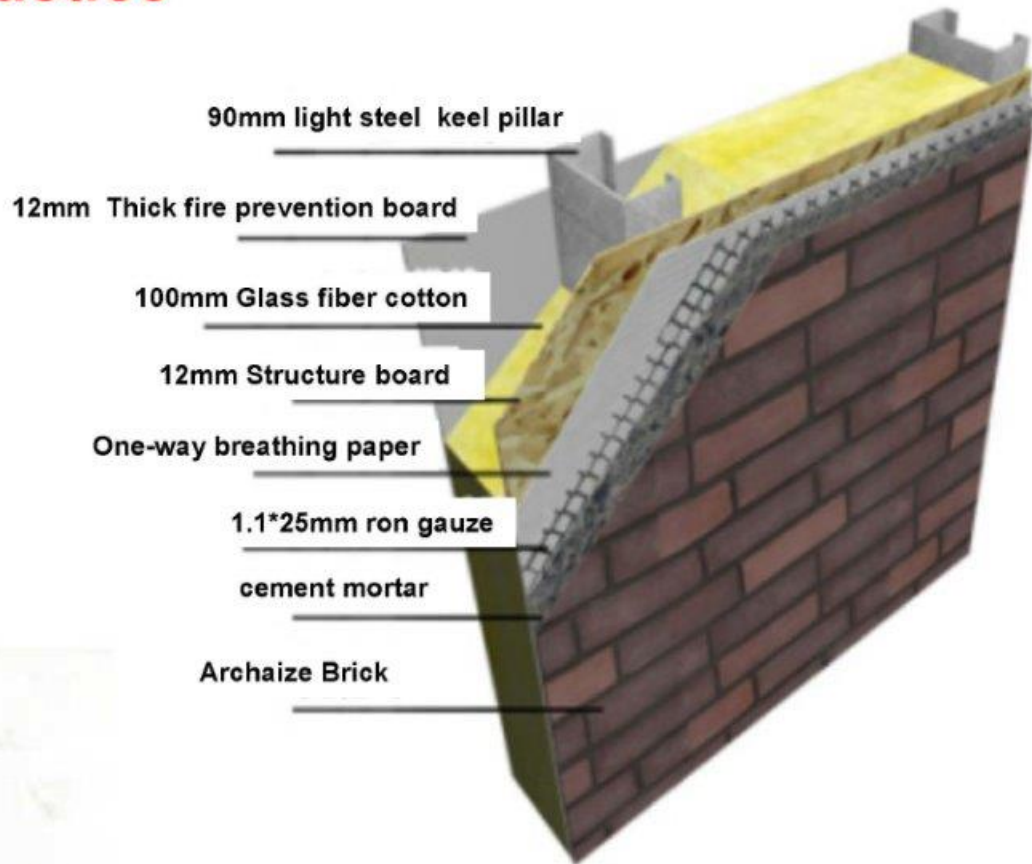
The practice of exterior wall 1

Typical practice



The practice of exterior wall 2

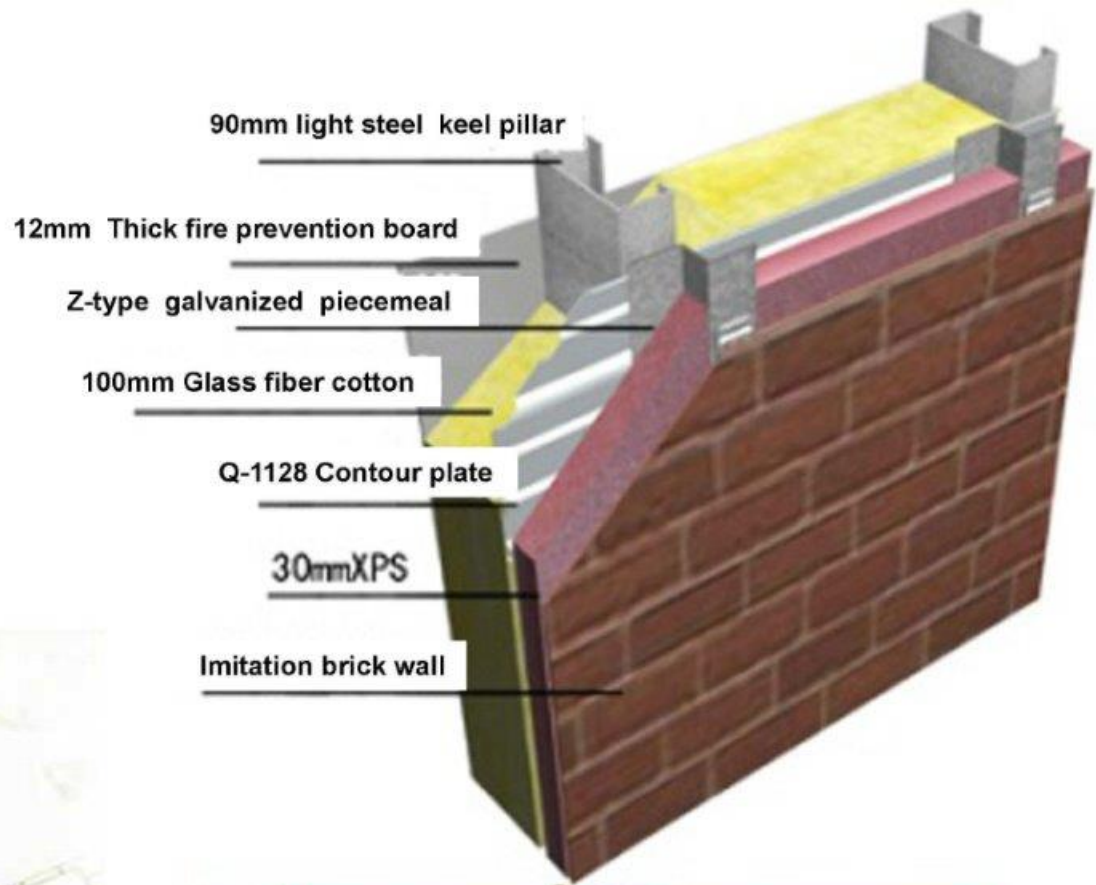
Typical practice



The practice of exterior wall 3

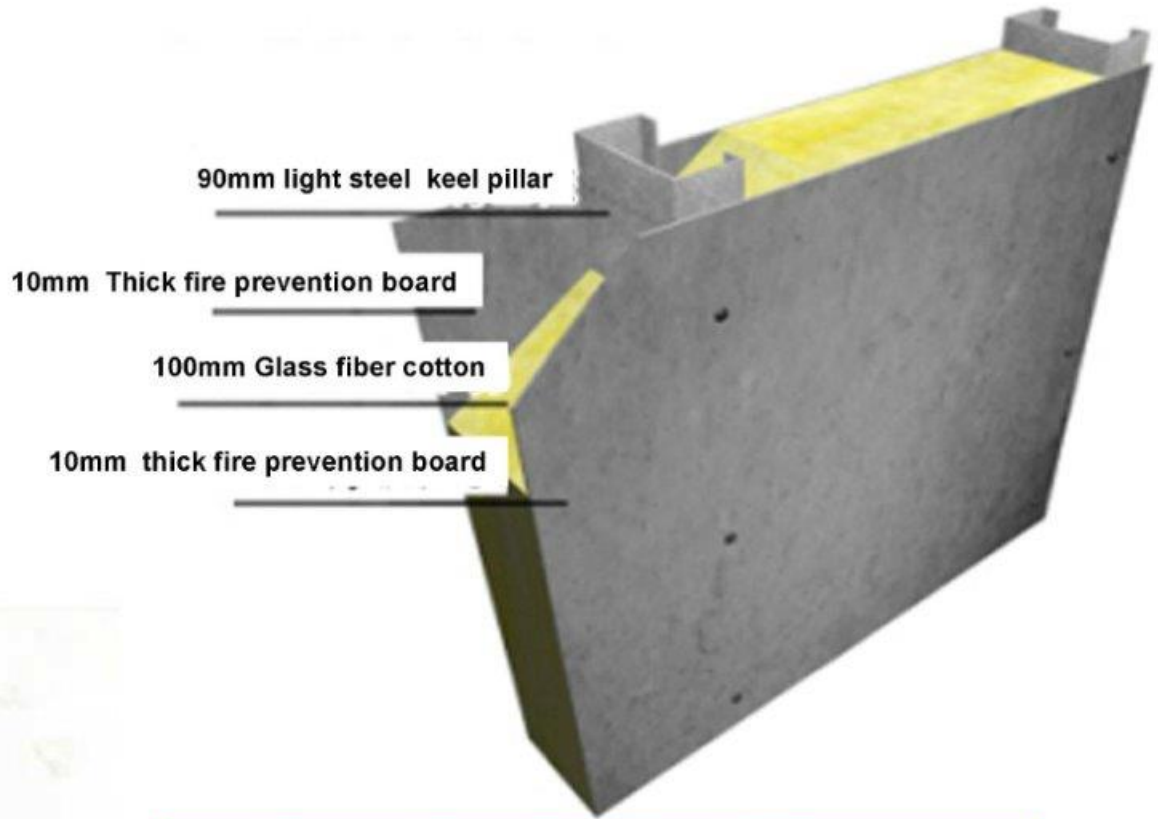


Typical practice



The practice of exterior wall 4

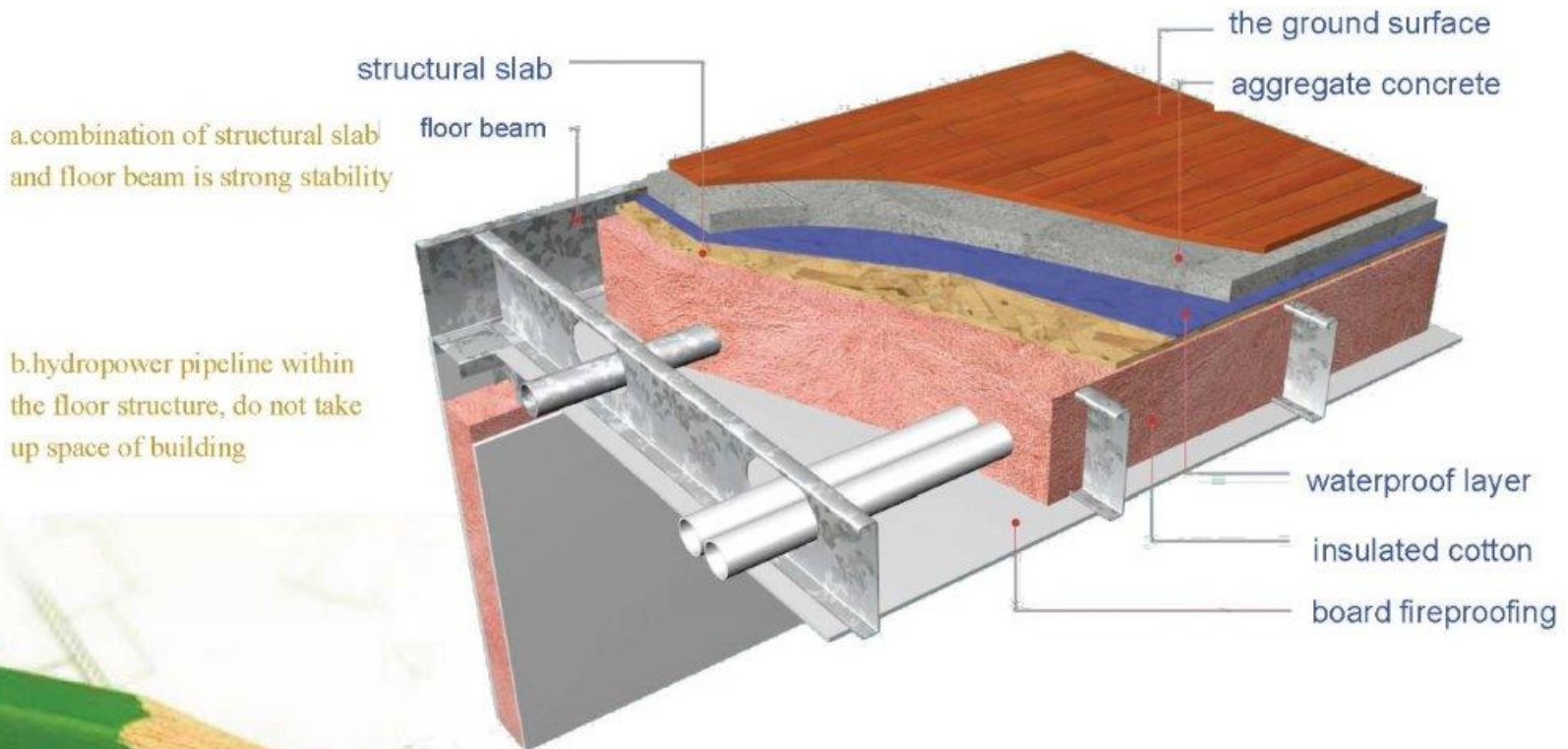
Typical practice of interior wall



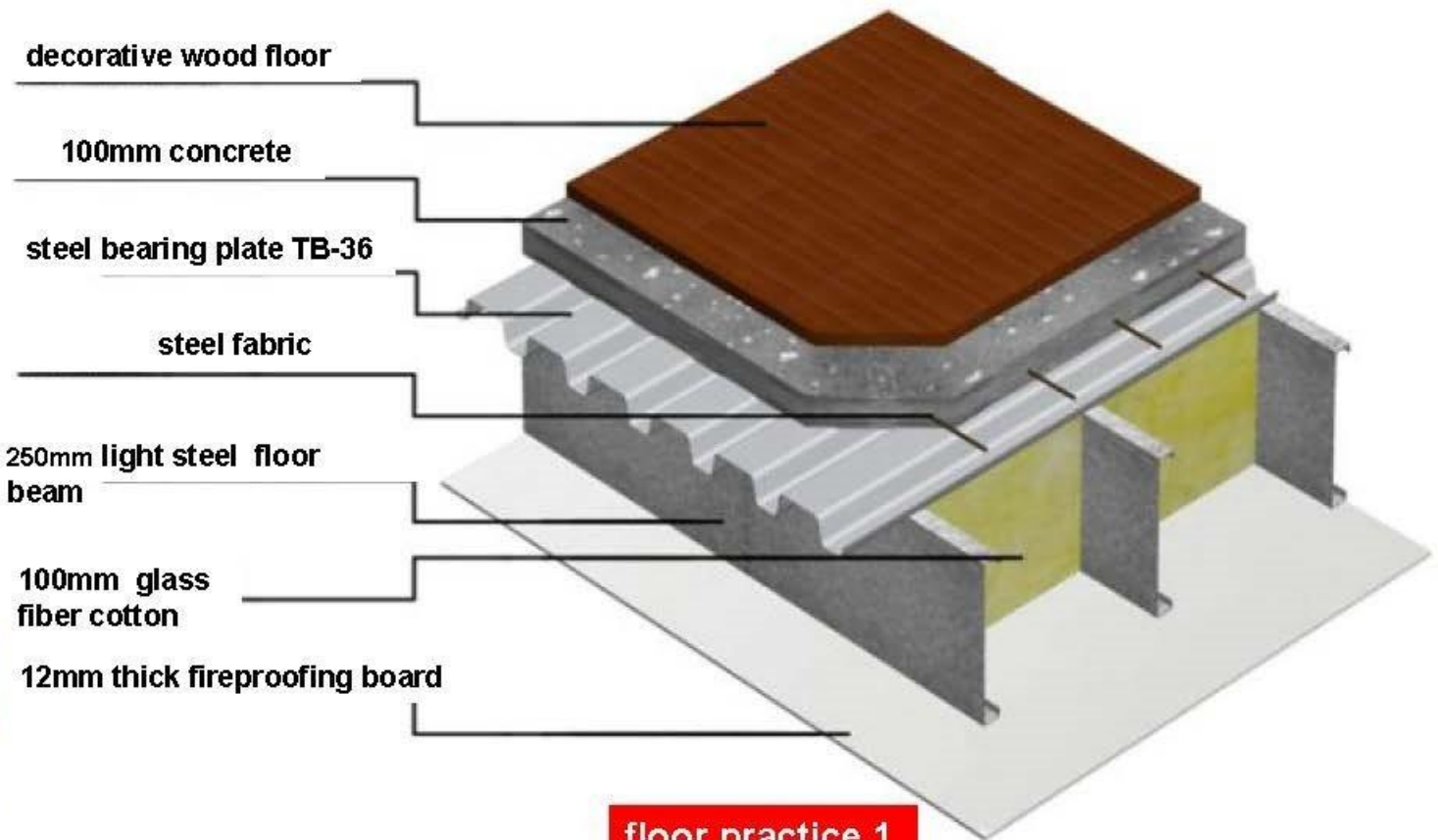
The practice of interior wall 1



(4) Floor modules

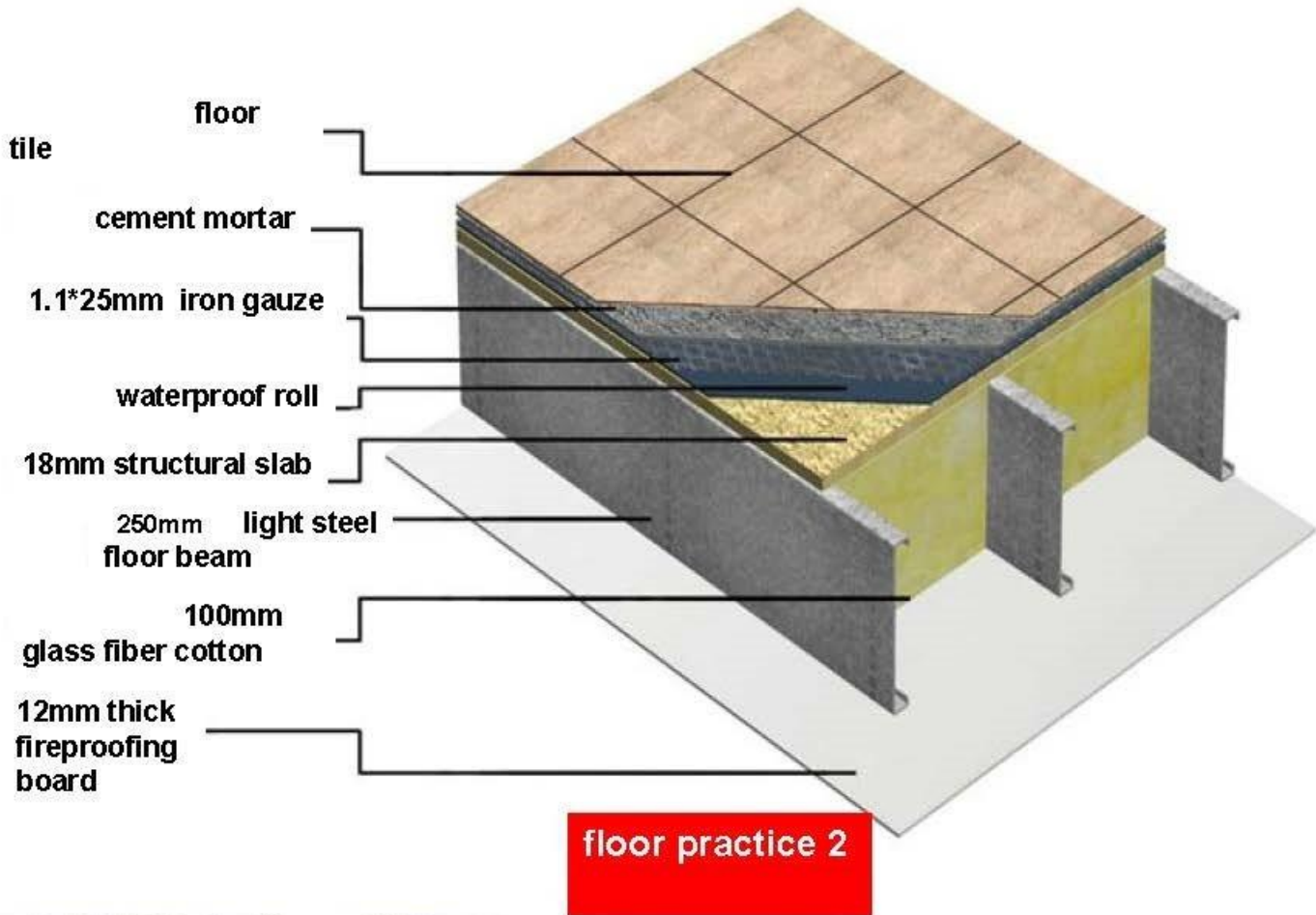


Typical floor practice

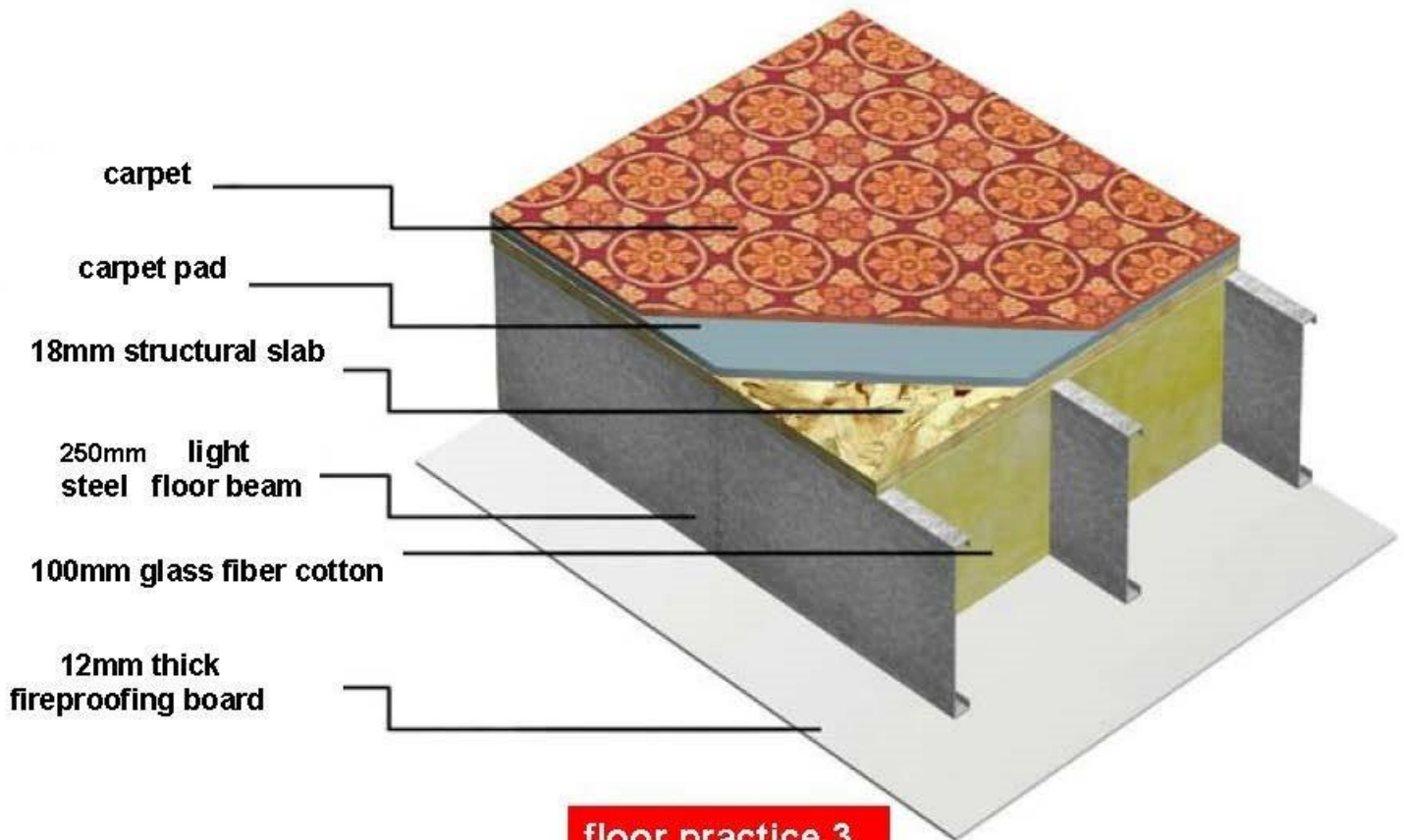


floor practice 1

Typical floor practice——kitchen & toilet



Typical floor practice— sitting room & bedroom



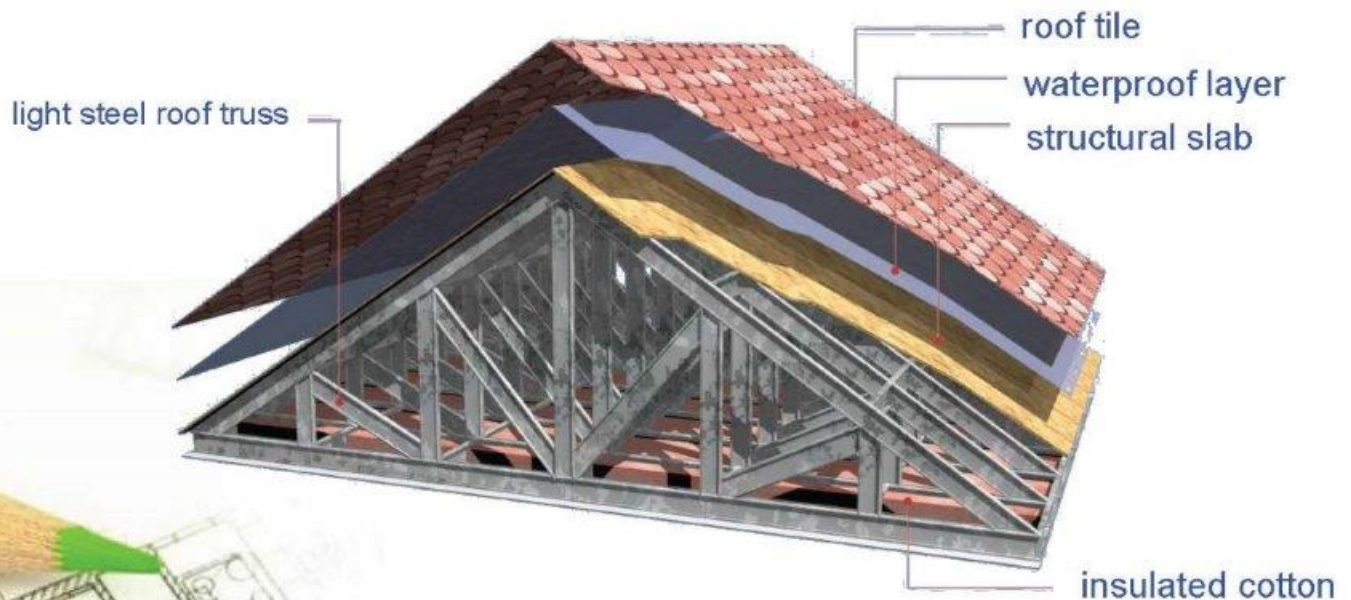
Anatomy of the floor heating process



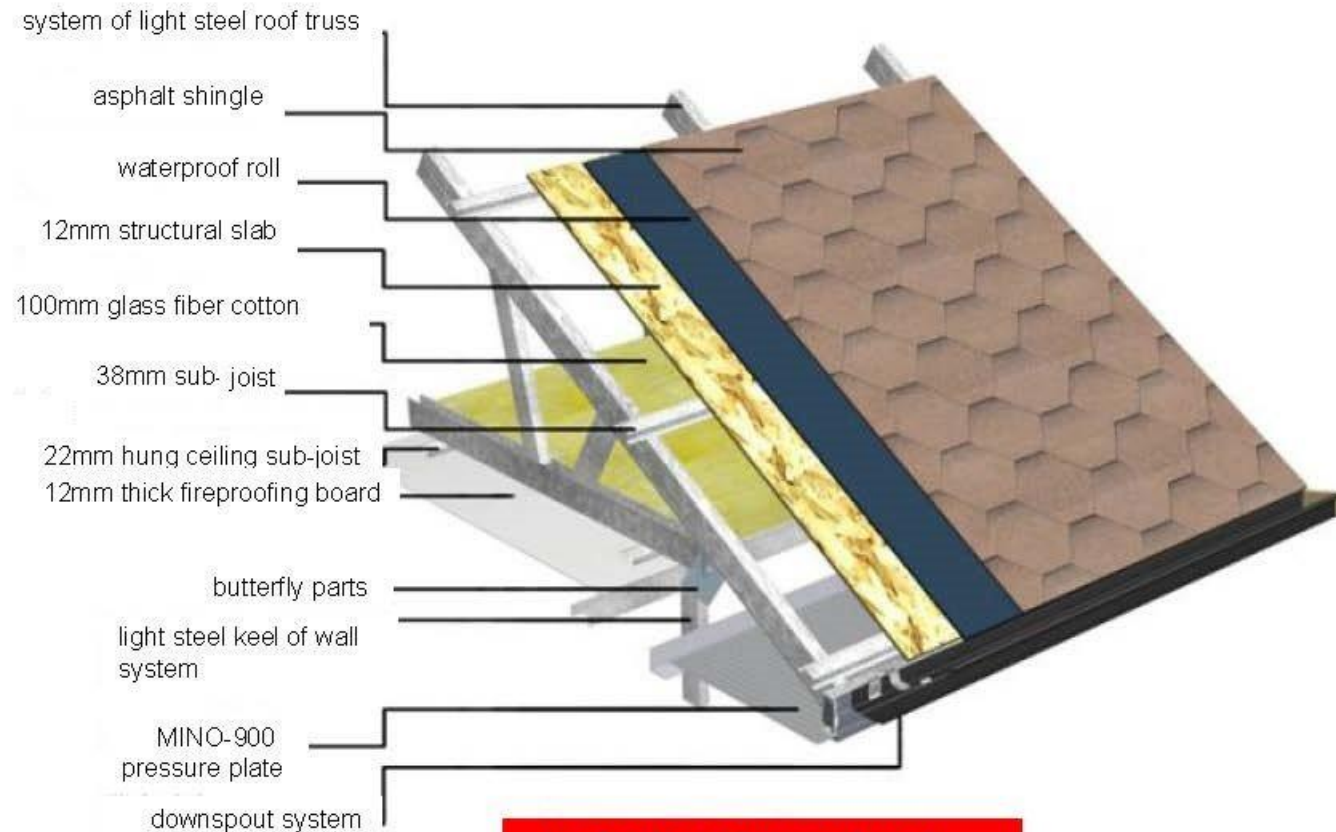
Roof module

a. Composite roof have rain, weather resistance, heat insulation, and other functions, can realize the rich variety of shapes;

b. Ventilation design can keep the air fresh



Typical roof practice——asphalt shingle



typical roof practice 1

Typical roof practice—pressure plate



typical roof practice 2

Typical roof practice—metal- tile



typical roof practice 2

Typical roof practice—colored stone tile



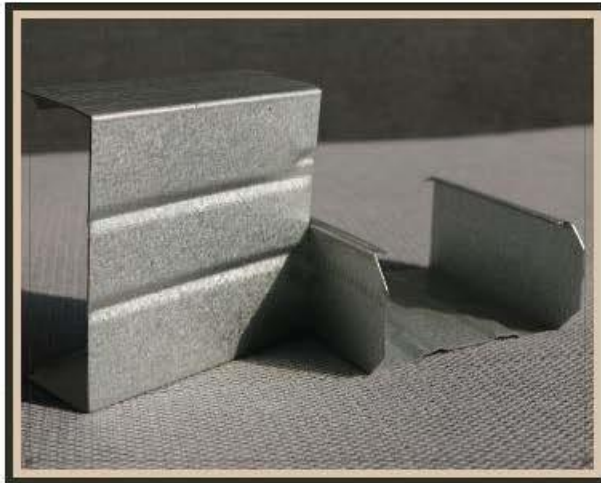
typical roof practice 2

Light steel integrated building materials



- light steel structure
- structural panel
- thermal insulation & fire prevention materials
- waterproof material
- internal & external decoration materials
- roofing materials
- roof gutter system
- fastening

(1) structural panel



keel

- DWELLING uses G550, AZ150 aluminized zinc as raw materials processed into the light steel keel, keel specifications for 89 mm, 0.7–0.9 mm in thickness

OSB board

OSB board: directional particieboard is by the thinning wood, wood core as raw materials processed into, is made of the deoiling, drying, sizing, directional paving, hot-press molding process etc. Uniform texture, good stability, easy processing, high bending strength and high grip force of screw, formaldehyde-free .

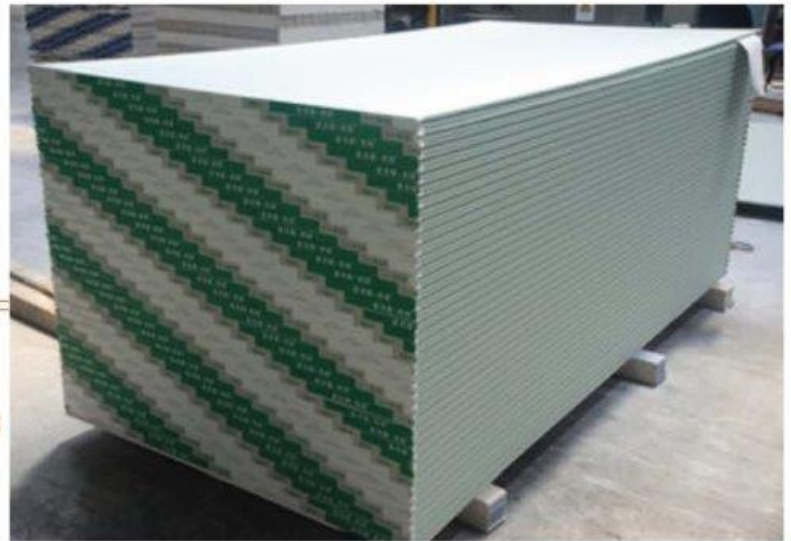
type	suitable conditions
OSB/ 1	under the condition of dry state is commonly used in the unbearing plate
OSB/ 2	under the condition of dry state is commonly used in



Gypsum Board

Building gypsum is main raw materials, mixed with proper light aggregate, fiber reinforced material and additive core material, and with the protective paper firmly bonded together.

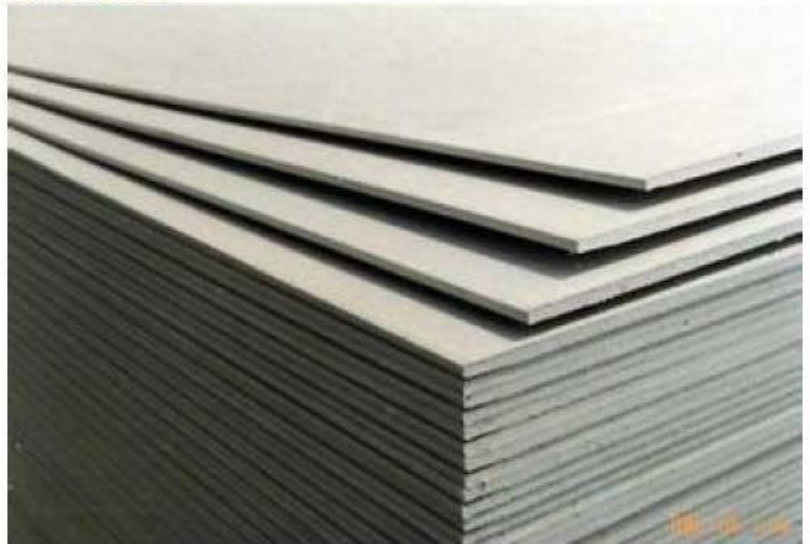
- Combustion performance: B1 level flame retardant.
- Density: $\rho = 1000\text{kg/m}^3$
- Thermal conductivity: $\lambda =$
- Heat storage coefficient:



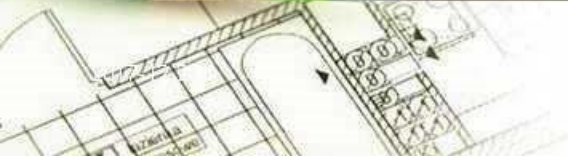
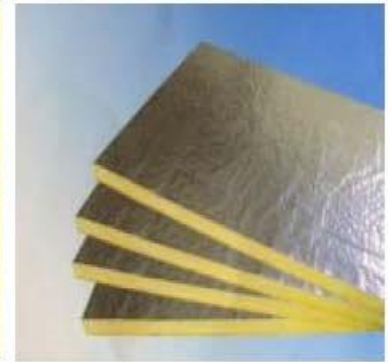
Cement fiberboard

A building board taking the siliceous and calcareous material as main, adding the plant fiber, after pulping, extraction, pressure and curing. so it's fire insulation, waterproof, heat & sound insulation and long service life

- non-combustible is A
- flexural strength ≥ 20 MPa
- fibrous rate ≤ 40 %
- moisture content ≤ 12 %
- apparent density ≤ 1.2 t/m³
- halogen-resistanced and moistureproof
- 25 freeze-thaw cycle, no broken, no delamination



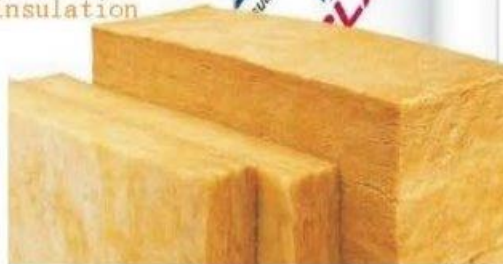
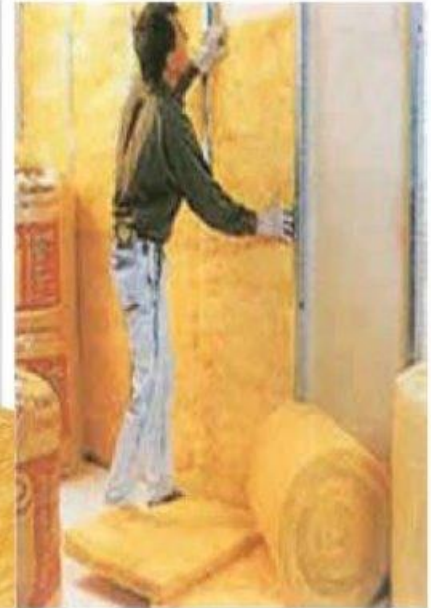
Heat preservation, sound insulation and fire prevention materials



Rock wool

The use of natural rocks and minerals etc as matrix materials, after high temperature melting and fibrosis, adding suitable amount of binder.

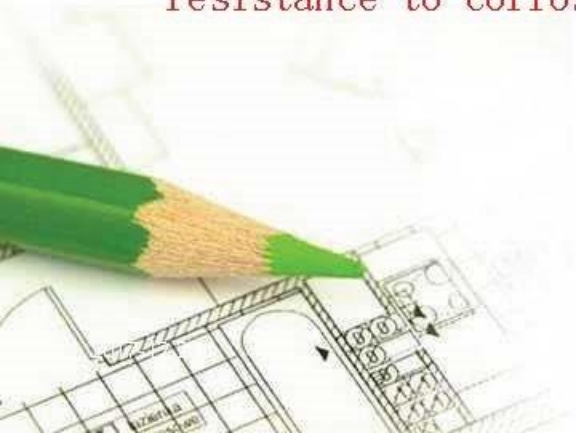
- non-combustible is A
- density: $\rho = 80 \sim 110 \text{ kg/m}^3$
- thermal conductivity $\leq 0.044 \text{ W/(m} \cdot \text{K)}$
- heat resistance $\geq 650^\circ\text{C}$
- Excellent performance of sound insulation



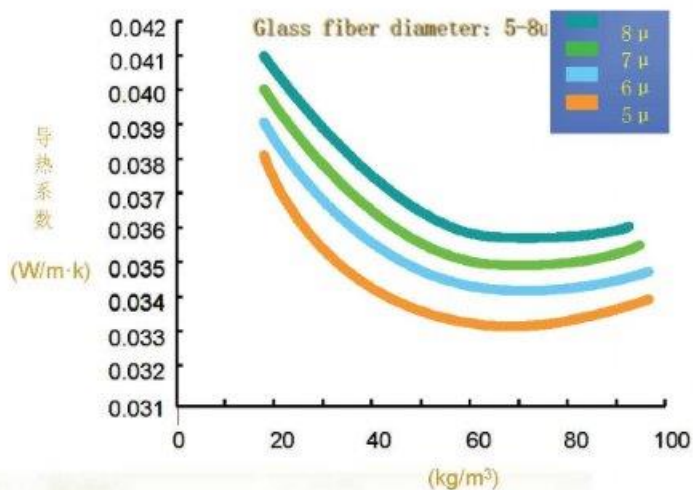
Glass fiber cotton

Glass fiber cotton is the wire-material in the molten state of the glass with centrifugal injection process to fibrosis, spraying thermosetting resin, then produced after heat curing.

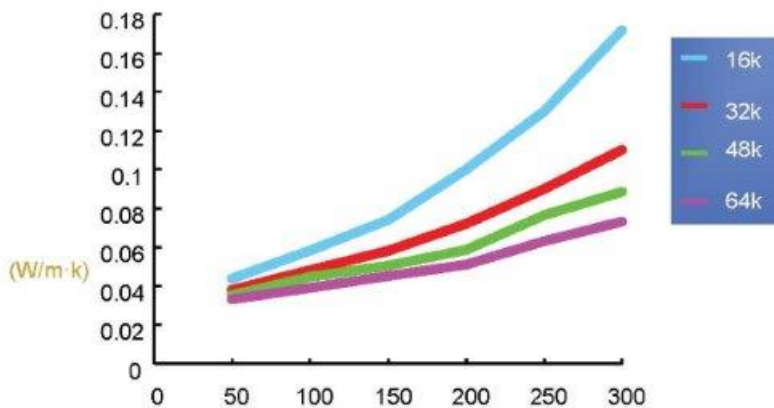
- Heat resistance, heat insulation, sound insulation
- Non-combustible is A
- Stability, ageing resistance, resistance to corrosion



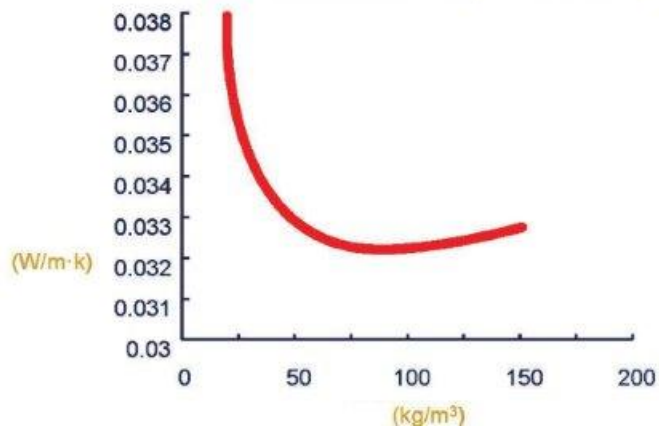
a. factors influencing the glass wool thermal conductivity—fiber diameter



b. factors influencing the glass wool thermal conductivity—temperature



c. factors influencing the glass wool thermal conductivity—density



W/m·k = heat conductivity coefficient
kg/m³ = density

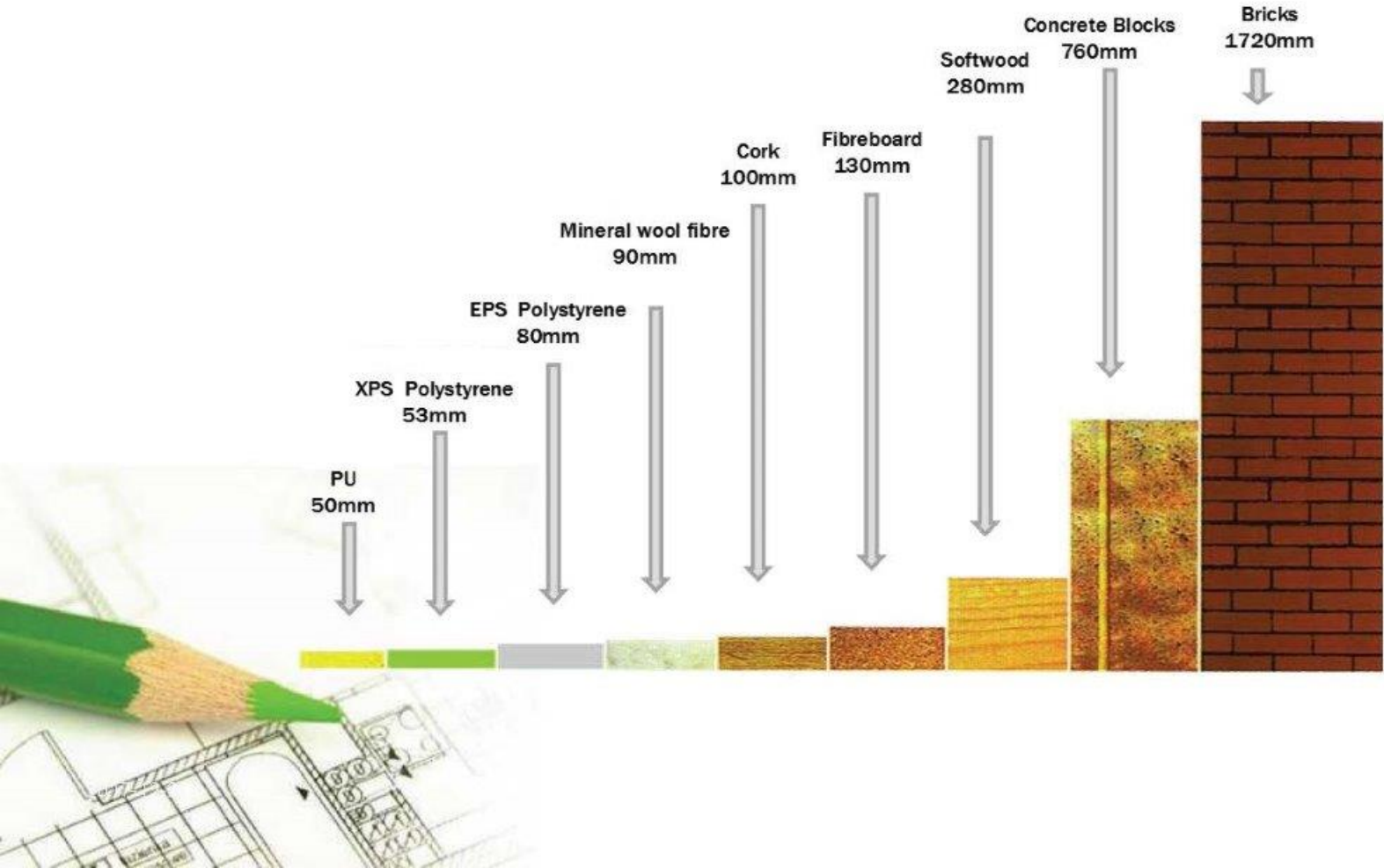


Polystyrene

XPS extruded sheet: extruded polystyrene plastic insulation board, polystyrene resin as raw materials and other accessories, inject catalyst by heating at the same time, and then extruded formed plastic board of rigid foam, has a perfect obturator honeycomb structure, let the XPS board has low water absorption, low thermal conductivity coefficient, high pressure resistance and aging resistance.



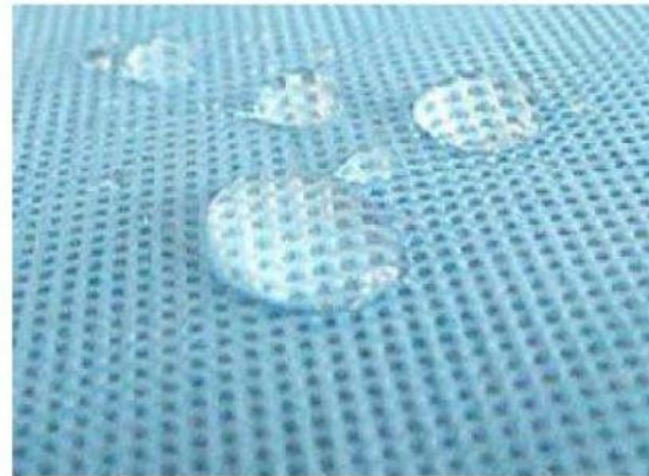
materials required thickness contrast under the same heat preservation effect



Waterproof material waterproof membrane

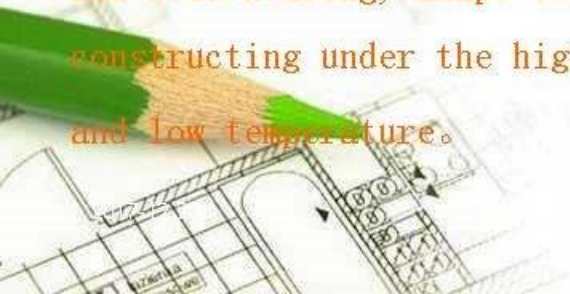
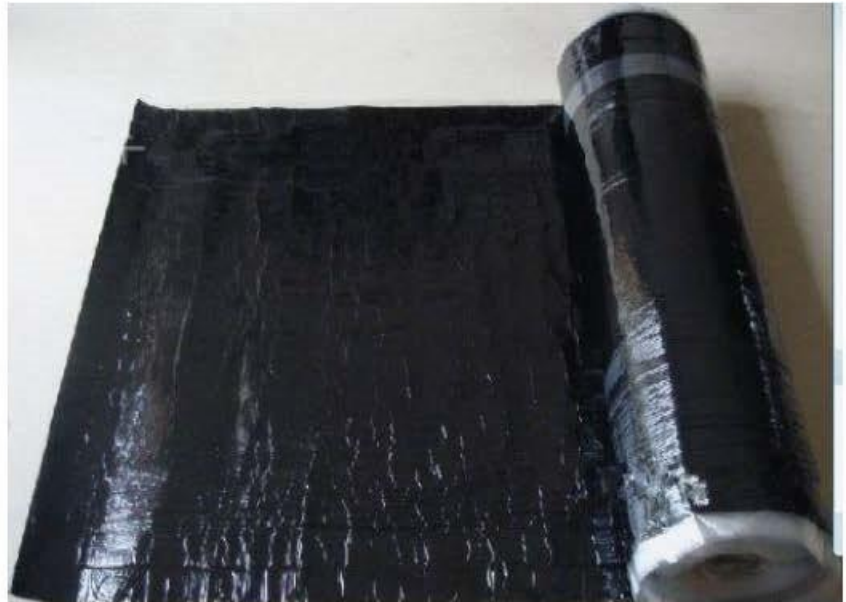
The middle layer of polyethylene microporous membrane and two layers of non-woven fabric composite forming by hot melt direct pressure technology, polyethylene resin as the main waterproof layer, compound non-woven fabric of double surface as enhancement layer.

Water vapour is gaseous water, particles are very small, through the microporous membrane, steam phenomenon occurs by the principle of proliferation, liquid water or water cannot pass because the surface tension, also to prevent the infiltration of water, making steam through membrane had the function of waterproof.



Waterproofing coiled materials of self-adhesion

Based on high polymer resin, quality asphalt, with polyethylene film, aluminum foil as the surface material, using the waterproof coiled material of isolation layer of adhesive. Products with a strong bonding performance and self-healing, adapt to constructing under the high and low temperature.



Waterproof coating

Waterproof coating is a kind of solvent modified asphalt, asphalt base makings, add fillers, solvents and so on after full mixing and construction to be waterproof coating of cold construction . Construction is convenient, easy use, suitable for all kinds of basic construction, and laid evenly no dead Angle, color variety, the surface coating is bright and clean.

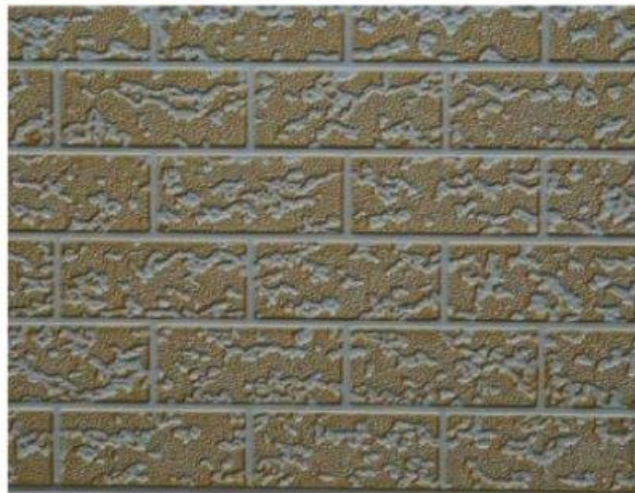
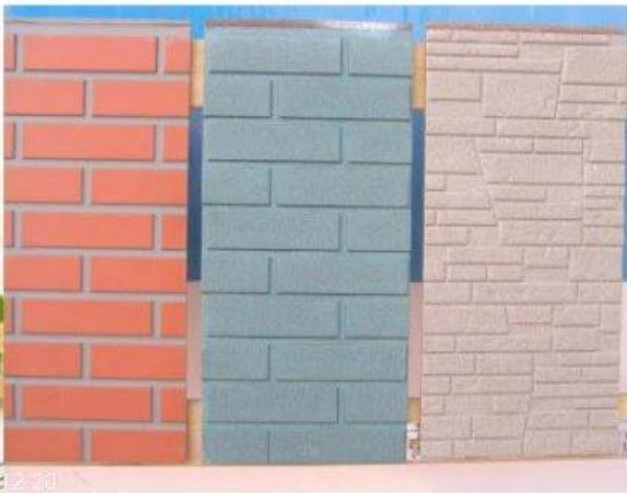
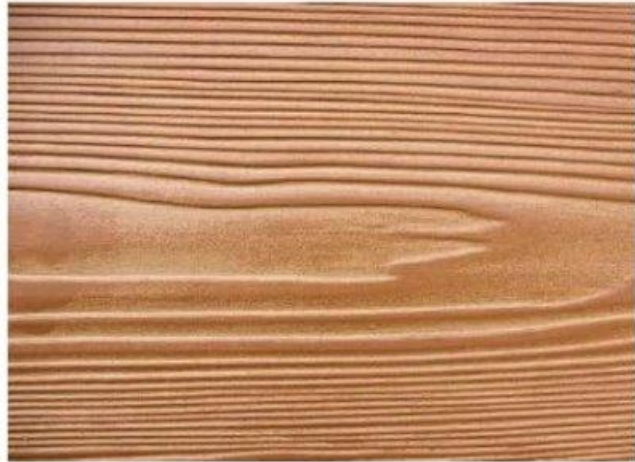


Interior & exterior decorating plate

DWELLING's metal interior&exterior decorating plate, collecting heat preservation and decoration functions in an whole, is a new type popularly on the market in recent years , adopt the keel dry hanging.Surface is metal plate of colorful embossment by specially disposed layer , the middle is faulting heat layer through high-density polyurethane insulation coating , the ground is the protective aluminum foil layer ,having the effort of heat insulation and moistureproof .



Exterior decorating plate



Exterior decorating plate



Interior decorating plate



A



A-001



aventurine



marble jade



phoenix



Interior decorating plate



hetian jade



gold wire



golden exquisite jade



european big flower



picturesque scenery

Interior decorating plate



rock grain



water lily



cloud



silver exquisite jade



tulip

materials of exterior wall decoration

PVC exterior wall cladding

The external wall plate is processed by PVC, stabilizer and other auxiliary materials, having antioxidant, corrosion resistance, low cost, energy conservation, environmental protection, convenient construction little affected by the seasonal change.



cement fiberboard with wood grain

With cement as adhesive

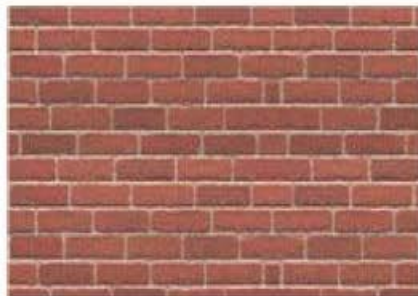
composition, by adding the right amount of plant fiber, the surface of cement fiberboard with wood grain, make the appearance of the laminated more natural, more beautiful, with a durable, light weight, thermal insulation, antifreeze, sound absorption, fire prevention, mouldproof, antproof,

etc.



cement fiberboard

Cement-based as base material, compound fiber as reinforcing material, a certain formula mixed into plate, by the high temperature and high pressure maintenance, is top cladding combing the functional with decoration. The product is light weight fire prevention, waterproof, mouldproof, rat and ant proof, heat insulation, sound insulation, impact resistant, acid and alkali resistance, ageing resistance, frost resistance, green environmental protection and other characteristics. widely used in all kinds of civil buildings, public buildings, etc.



Artificial culture stone

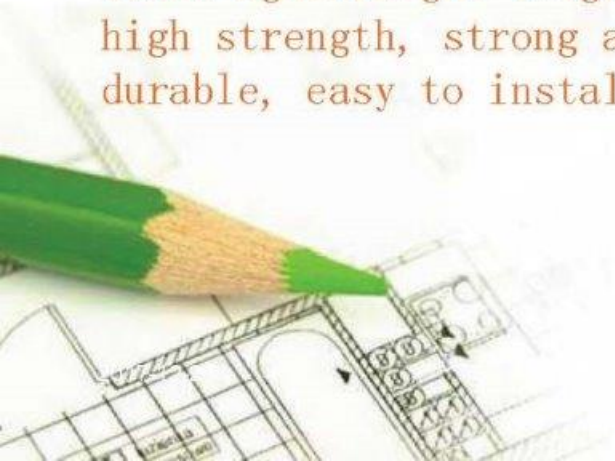
Using artificial method to upgrade the texture, colour and lustre of the natural stone, effect is extremely primitive, natural, charm of primitive simplicity .High-grade artificial culture stone with environmental protection and energy saving, light texture,rich color, no mildew, non-combustible, good freezing resistance, easy to install, etc



Roofing materials

Colored stone surface of the metal

In aluminium zinc steel plate as the base board, through the front and back protective film processing, the surface uses the non-toxic and harmless adhesives, covering the natural color stone again. Light weight, high strength, strong and durable, easy to install.



Clay tile

Wet embryo is made of clay and other composite, Then high temperature burning after drying, color is gorgeous and no running, fire protection and long life, compact enamel surface, can prevent bacteria and dirt, no peculiar smell and no releasing harmful material, easy to clean and need't maintenance。



French Roman tile



Italian Roman tile



French Leon tile



German Rhine tile



French Giverny tile



Capa lars tile KS40



Capa lars tile KJ40



Marseille tile



Caster tile



Tuscan tile



Simplify tile



British flat tile



Thai flat tile



Fish-scale tile



Versailles tile

Asphalt tile

With glass fiber mat for padding , after dip-coating of high-quality asphalt, one side covered colorful mineral grains, the other applies tile-shaped waterproof sheet made of isolate material, is a kind of roof material having the function of adornment and waterproof function. Rich colors, a variety of forms, light thin, easy constructing etc



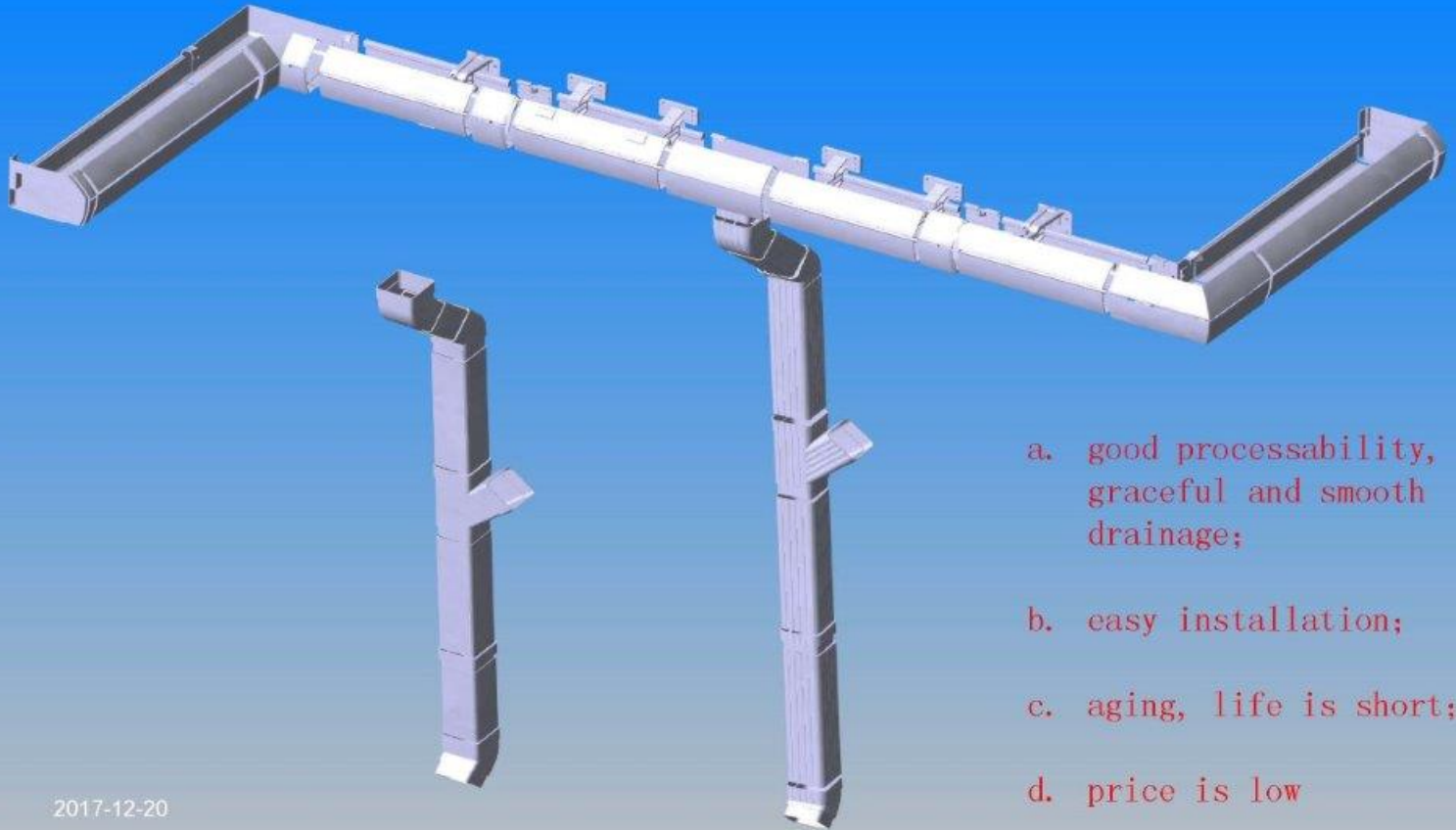
color-pressured steel roofboard

adopt to color coated steel plate, through roller of cold bending into various waveform, is qualitative light, high strength, waterproof, long service life, rich colours, construction convenient and quick, maintenance free, now has been widely applied。



Roof gutter system

1. PVC system of roof gutter



- a. good processability, graceful and smooth drainage;
- b. easy installation;
- c. aging, life is short;
- d. price is low

PVC components of gutter



rain pipe



The storm sewer drainage device



diverter



gutter



gutters card connector



suspended joint



storm sewer water butt



Storm sewer locator



Storm sewer slanting tee



roof drain of gutter



90 external corner



90 internal corner



reducer tee



rotary joint



cambered roof drain



135 external corner



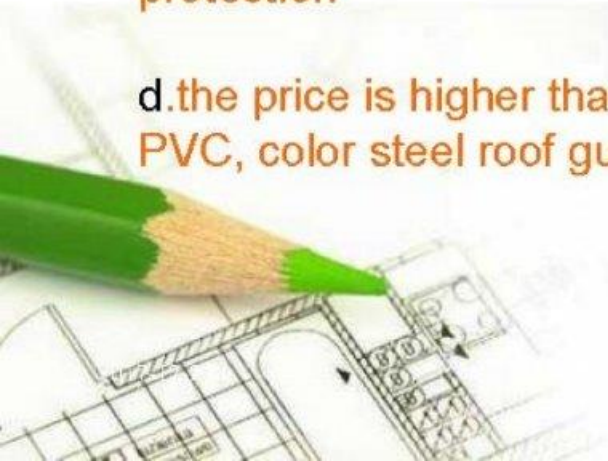
left gland



right gland

2. Roof gutter system of color aluminum

- a.corrosion resistance, long service life
- b.light weight , moderate intensity
- c.easy installation
- d.green environmental protection
- d.the price is higher than PVC, color steel roof gutter



Components of color-aluminum gutter



diverter



round to square



Storm sewer interface unit



independent roof drain



positioner



suspended joint



storm sewer



right gland



drainage apparatus



color-aluminum storm sewer



color-aluminum gutter



135 internal corner



eaves gutter



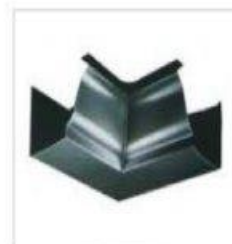
lateral tee



square waterlet



135 external corner



90 internal corner

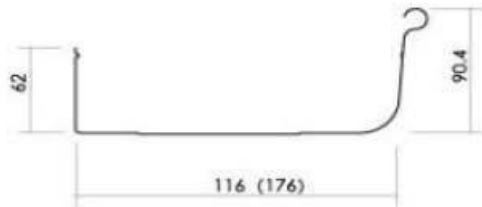


90 external corner

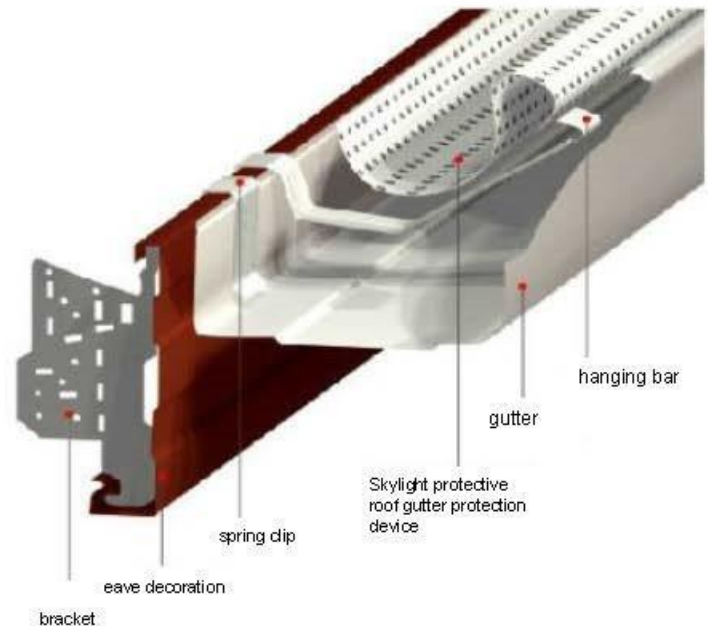
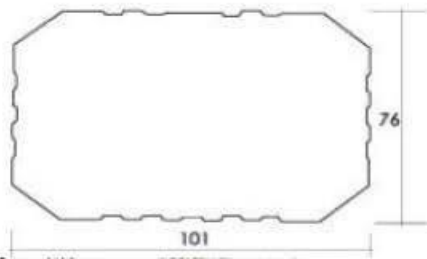
3. Roof gutter system of color aluminum

- a. Choose high strength PVDF color-coated sheet of aluminium zinc , service life can be up to 35 years ;
- b. High strength, it is suitable for larger ice and snow ;
- c. Color diversity, installation is convenient.
- d. Green environmental protection

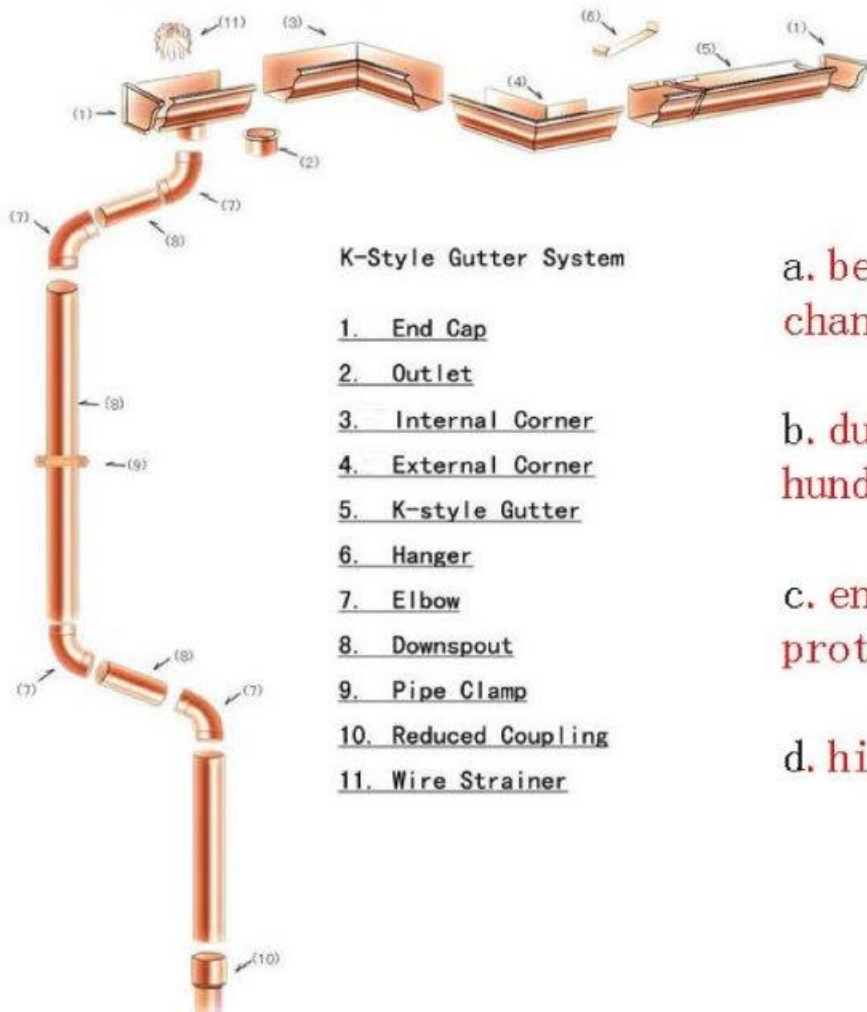
gutter



RS-101-76 downspouts



Copper roof gutter system



K-Style Gutter System

1. End Cap
2. Outlet
3. Internal Corner
4. External Corner
5. K-style Gutter
6. Hanger
7. Elbow
8. Downspout
9. Pipe Clamp
10. Reduced Coupling
11. Wire Strainer

a. beautiful and changeful

b. durable, Up to one hundred years

c. environmental protection, recycling

d. high cost

(6) The series of floor

tile

using classify: external tile, internal tile
floor tile, square brick, industry brick
etc.

ingredient classify: dry pressing tile,
extrusion forming, plastic making.

sintering classify: oxidability tile,
reducibility tile.

enamelling classify: glazed tile, unglazed
tile.

water absorption classify: porcelain tile,
vitrified tile, west urn-shaped tile,
stoneware tile, ceramic tile.

variety tile: polished tile, archaized brick,
plaques, full polish, polished crystal tile,
microlite tile, split tiles, square brick
(cultrue brick) .

manufacturing classify: printing
tile, polished tile, brindled tile, crystal
brick, unglazed tile.

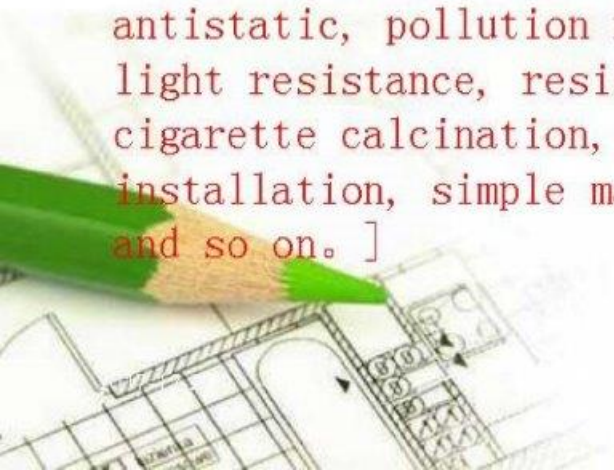


Composite floor

wear-resisting: about 10 to 30 times more than ordinary paint decoration floor.

blazonry: completely break the original wood, destroyed the anisotropic and characteristics of swell-shrinking, size stability, especially suitable for have a floor of heating system.

[In addition, impact resistant, antistatic, pollution resistance, light resistance, resistance of cigarette calcination, easy installation, simple maintenance and so on.]



Doors and Windows series



steel wooden door

advantage: energy saving, environmental protection, economy, practical, convenient, beautiful
disadvantage: higher requirements to the jamb and hinges (heavy itself), prone to depression after by external impact, and it is not easy to repair.



Wood Door

advantage: has the very strong integral feeling and stereo feeling;no deformation, corrosion resistance, no seams and good heat insulation and other characteristics; and it was mostly lignin, can absorb ultraviolet ray, is the most top-grade products.



Sliding door



character: whether it is a square meters of toilet, or irregular store room, as long as the sliding door, then narrow space will not be wasted, the sliding door can even 100% open, does not occupy a space.

From the point view of use, rational push-pull type design can meet the exquisite compact order and rhythm of modern life.

Say from interest, push-pull type door can make the bedroom appears more lightsome, segmentation, cover, and so on of them is simple yet change.

Toilet door

The toilet is wet, ventilation not very good, so it is not same as ordinary bedroom door

Toilet door mainly has the following features:
moisture resistance and prevent deformation;
permeability and privacy



Aluminum alloy doors and Windows



Classify of aluminum alloy doors and Windows:

- ① Ordinary aluminum alloy doors and Windows and
- ② Broken bridge aluminum alloy doors and Windows.

Aluminium alloy window with a beautiful, sealing, high strength, widely used in construction engineering field. Commonly used in home decoration, used for encapsulating the balcony.



plastics-steel doors and windows

Based on the UPVC as the main raw material, is extrusion profiles by plussing a proportion of stabilizers, colorants, fillers, uv absorber, etc., and then door window frame through the way of cutting, welding or bolt connection made , equipped with sealing strip, tops, hardware, etc

Advantage: heat preservation, sound insulation, impact resistance, good air tightness, water tightness, good fire prevention, anti-theft performance is good, maintenance free, easy to design



Decorative materials series

Polyurethane (PU) indoor and outdoor decorative materials

PU material can produce the indoor and outdoor decorative products such as european-style decorative moulding (CarvedCorner, PlainCorner, CarvedPanel, PlainPanel) , Roman column, plane column, lamp panel, light pools, arc line, the decorative flower, bracket, TV setting wall, european-style mural, culture stone and so on. Company product is beautiful, blending in different country styles, throughout the eastern and western cultural essence. All practical, widely used.

Material properties: environmental protection, lightweight, diversity, ageing resistance, waterproof and flame retardant .



Aluminum composite panel

Aluminum composite panel has unique properties, determines its widespread use: It can be used for building exterior wall, curtain wall plate, old building renovation , interior wall and ceiling decoration, advertising signs, display stand, purify dust engineering. Belongs to a kind of new building decoration materials.



Suspended ceiling series

PVC suspended ceiling



advantage: Varieties of design, material light weight, easy installation, waterproof and moistureproof, prevent moths, and resistance to pollution, easy cleaning, good performance of sound insulation, heat insulation, especially adding flame retardant material in new craft to quenching away from the fire, using more secure;

disadvantage: Physical performance is not stable (even if no water, after a long time will be deformation); Aging fast, easy color changing , short service life, generally 3 to 5 years is a long time; Environmental protection is low, wasted PVC gusset plate is difficult to handle, damage to the environment, if there's strong pungent odor, be harmful to the body.



Integrated suspended roof

advantage: Long life (can use 50 years); Good fire prevention, moistureproof, antistatic effect; Easy to clean; Good texture, high grade.

disadvantage: high installation requirements; piecing is inferior to plastic gusset plate, also the design type and style.



(10) auxiliaries



PPR water pipe

The PPR pipe is updated products of alvanized pipe, UPVC feed pipe, aluminum-plastic pipe, PE tubes, PE - X pipe, PE - RT .

Because it uses random copolymerization technology, make the strength of the polypropylene, high temperature resistance good guarantee, so become the main force of the pipe material.



Circuit accessories



Domestic outfit circuit with the copper wire is 2.5 and 4.0.

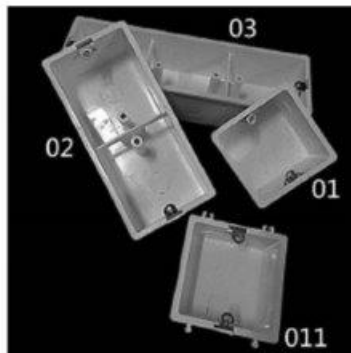
Cables with 99.99% content of bronze, the performance of product is better than the national standard, smaller resistance, higher conductivity, low carbon and energy saving.



The specifications inside the wall of PVC pipe is 16 medium-sized threading pipe, 20 medium-sized threading pipe and 25 threading pipe.



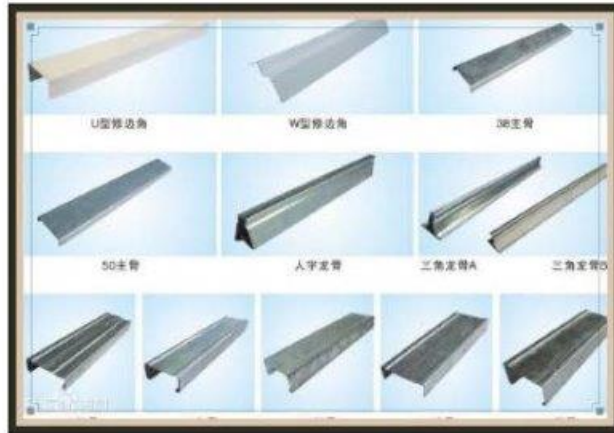
Box is concealed installation, choosing model for type 86 (Cassette size about 80mm*80mm, Panel size about 86mm*86mm); 120size (120 Wiring coincides with 120/60 and 120/120); 120/60型 (Cassette size about 114mm*54mm, Panel size about 120mm*60mm); 120/120型 (Cassette size about 114mm*114mm, Panel size about 120mm*120mm)





Building keel

light steel keel



Light steel keel has light weight, high strength, waterproof, shockproof, dustproof, sound insulation, sound-absorbing, constant temperature and so on, at the same time also has the advantages of short construction period and convenient construction.



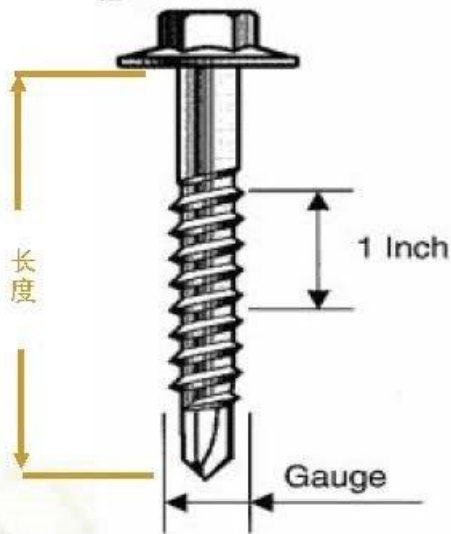
wood keel

Be easy modelling, strong nail-holding power , easy to install, especially suitable for connecting with other wood products. But because the shortcomings are obvious: not moisture-proof, easy deformation, not fire, insect and moldy easily etc.



Fastener

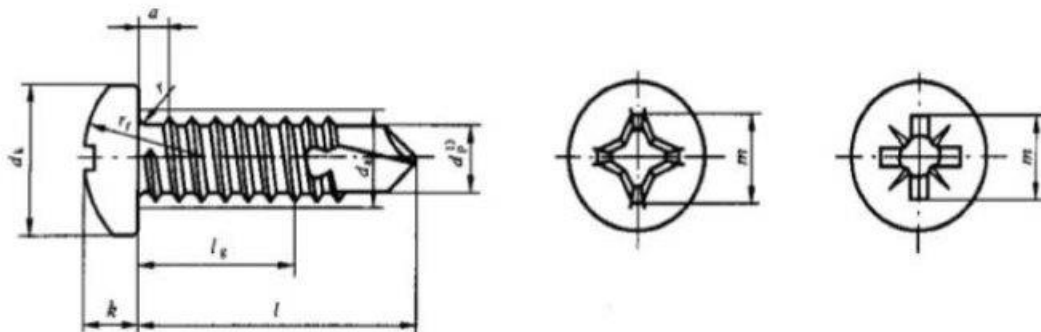
Hexagon head self tapping screw



type	Corresponding model	nominal diameter mm
No. 6	ST3.5	3.5
No. 8	ST 4.2	4.2
No. 10	ST 4.8	4.8
No. 12	ST 5.5	5.5
No. 14	ST 6.3	6.3

for example: 12-14×45 means: the length is 45mm, thread count is 14 per inch of the NO.12. the nail head and point according different manufacturers to difference.

Cross pan head self tapping screw

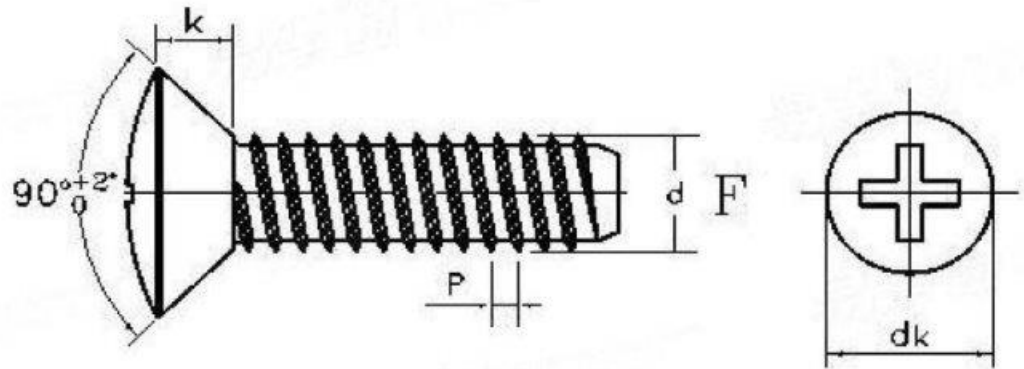


size

mm

		ST2.9	ST3.5	ST4.2	ST4.8	ST5.5	ST6.3
$P^{(1)}$		1.1	1.3	1.4	1.6	1.8	1.8
$a^{(1)}$	max	1.1	1.3	1.4	1.6	1.8	1.8
d_e	max	3.5	4.1	4.9	5.6	6.3	7.3
d_k	max	5.6	7.00	8.00	9.50	11.00	12.00
	min	5.3	6.64	7.64	9.14	10.57	11.57
k	max	2.40	2.60	3.1	3.7	4.0	4.6
	min	2.15	2.35	2.8	3.4	3.7	4.3
r	min	0.1	0.1	0.2	0.2	0.25	0.25
r_t	\approx	5	6	6.5	8	9	10

Cross countersunk head scraping drill nail



unit mm

d	P	dk		k	slot number
		max	min	max	
ST2.9	1.1	5.5	5.2	1.7	2
ST3.5	1.3	7.3	6.9	2.35	
ST4.2	1.4	8.4	8	2.6	
ST4.8	1.6	9.3	8.9	2.8	3
ST5.5	1.8	10.3	9.9	3	
ST6.3	1.8	11.3	10.9	3.15	

sample Tag Number

ST3.5, L=16, cross oval head self-drilling screw with galvanized passivation

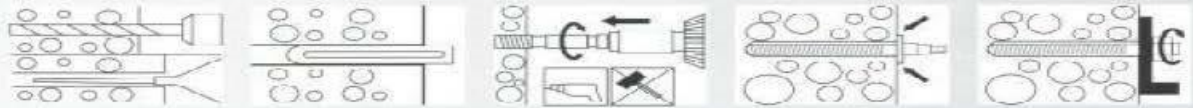
Chemical anchoring bolts



HIGH INTENSITY CHEMICAL ANCHOR BOLTS

Is suitable for the natural stone material and concrete , used in high strength fix such as curtain wall fixed, machinery, building frame,dragging plate steel structure base .etc

INSTALLATION SCHEMES



single anchor design load

高强度 化学锚栓 拉力C30 砼	M6	M10	M12	M14	M16	M18	M20	M22	M24	M30
镀锌钢 不锈钢	7.4	10.9	16.2	16.0	23.1	32.9	42.7	52	59.0	76.6
高强度 化学锚栓 拉力C30 砼	7.7	12.1	17.7	24	33	42	51.4	62	74.2	117.6
镀锌钢 不锈钢	8.3	13.1	19.0	26	35.3	42	55.2	62	74.2	

single anchor failure load average

高强度 化学锚栓 拉力C30 砼	M6	M10	M12	M14	M16	M18	M20	M22	M24	M30
镀锌钢 不锈钢	19	30.2	43.0	50	70.9	86	127.4	140	160.6	245.0
高强度 化学锚栓 拉力C30 砼	11.4	18.1	26.3	32	49.0	60	76.4	88	110.1	175.0
镀锌钢 不锈钢	15.4	24.4	35.4	45	65.9	86	102.9	104	105.6	

Installation parameter table

TH化学锚 管型号	TH锚杆或洋钢/不锈钢 规格(mm)	钻孔直径d mm	钻孔深度H mm	最大锚固厚度L mm
6	6X110	10	80	13
10	10X130	12	90	20
12	12X160	14	110	25
14	14X180	16	125	30
16	16X190	18	125	35
18	18X230	22	150	45
20	20X260	25	170	55
22	22X280	26	190	65
24	24X300	28	210	80
30	30X380	35	260	110

curing time

温度	25℃-	25℃-	10℃-	5℃-	0℃-	-5℃-
	30℃:	25℃:	20℃:	10℃:	5℃:	0℃:
时间	15	20	45	1	2	5
	m	m	m	h	h	h

(11) Common tools and usage in structure assembly



Screw gun



Locking clamp



Tape



Spanner



Percussion drill



Fix screw



Assemble



Measure



Fix the roof bolt



Fix expansion bolt

1

•fireproofing

- Premises security for comfort

2

sound insulation

Reasonable sound environment

moistureproof

Comfortable humidity environment

4

energy conservation

Comfortable thermal environment

3



To make the minimum standards of national norms

《Residential building codes》

《acoustic design
specification of civil
building》

《thermal design code of civil
building》

《standards of residential building energy
efficiency design in spring, summer,
autumn and winter》

《fire protection design
specification》

《energy saving standards》

《standards of residential building energy
efficiency design in hot summer and
warm winter zone》

Building
Function

Synthetically considering the building function
design of minimum standards





EVERYTHING UNDER THE SUN

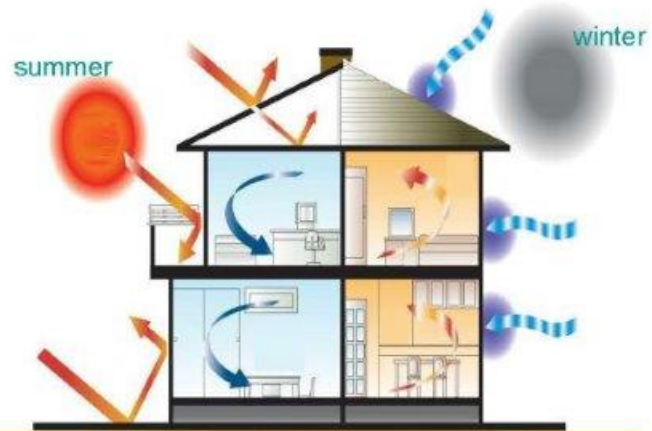
Designers according to the specifications of the customer's requirements combining with the characteristics of light steel structure function-design,

The main function design:

Fire-protection design

Sound insulation design

Energy saving design



Function design and economic



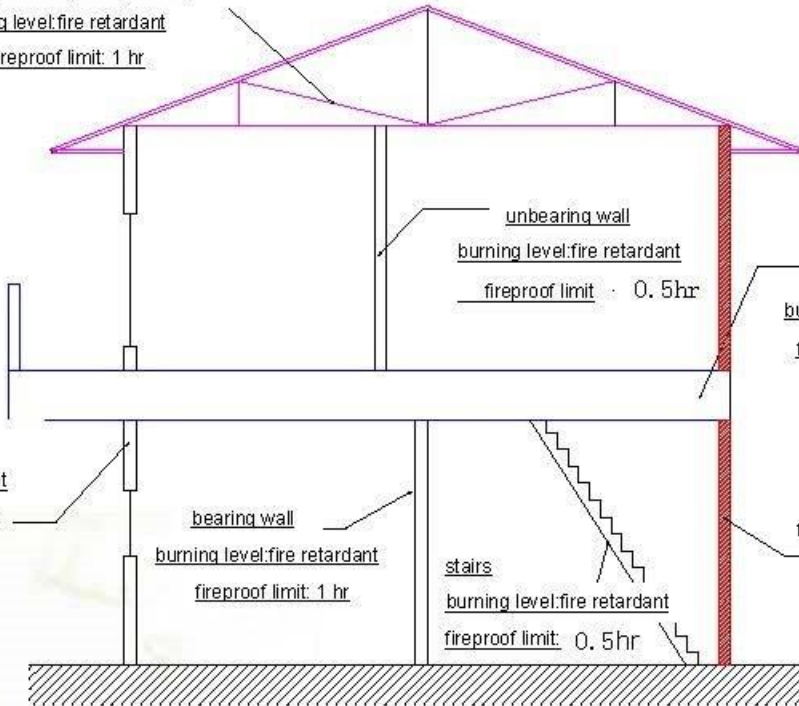
Fire-proofing



Housing bearing component

burning level: fire retardant

fireproof limit: 1 hr



unbearing wall

burning level: fire retardant

fireproof limit: 0.5 hr

floor

burning level: fire retardant

fireproof limit: 1 hr

exterior wall

burning level: fire retardant

fireproof limit: 1 hr

bearing wall

burning level: fire retardant

fireproof limit: 1 hr

stairs

burning level: fire retardant

fireproof limit: 0.5 hr

firewall (requirements set according to the building)

burning level: non-ignitable

fireproof limit: 3 hr



Fire prevention materials used at present

fire-proof material 's basic requirements:

- non-combustible material (A)
- little shrinkage at high temperature
- don't burst by the fire, not cracked
- have a product's identification

commonly fire materials used:

- rock wool, glass wool
- fire prevention board used commonly: fiber cement board, vermiculite fire prevention board, calcium silicate fire prevention board, glass magnesium board
- the general fire prevention board: gypsum board







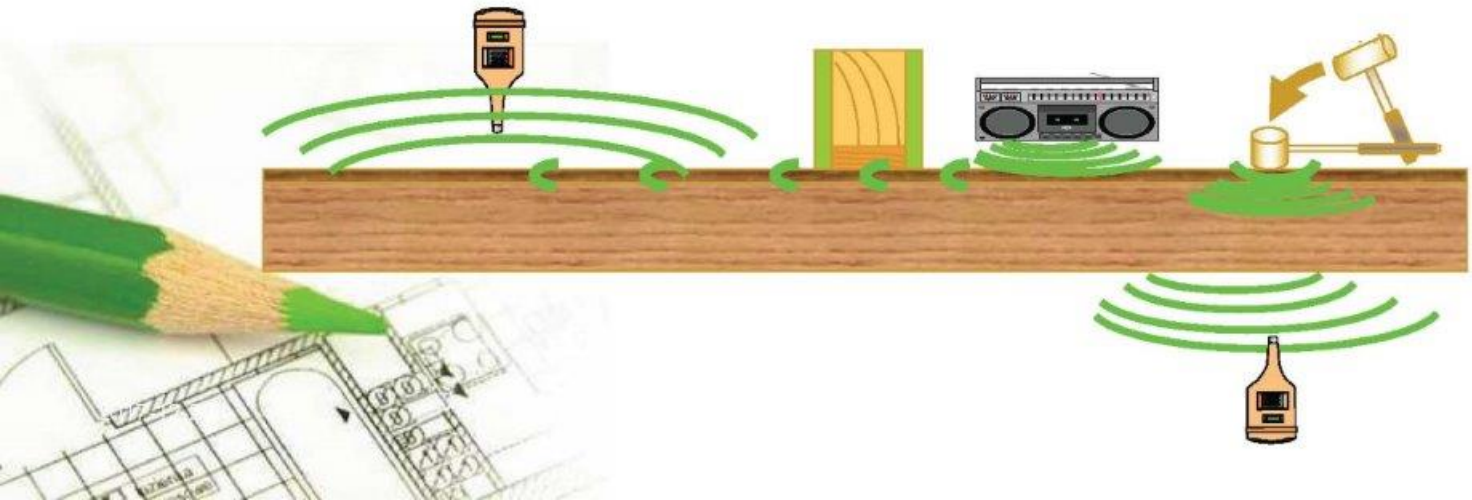
EVERYTHING under THE SUN

Acoustic design is comfort requirements of sound environment

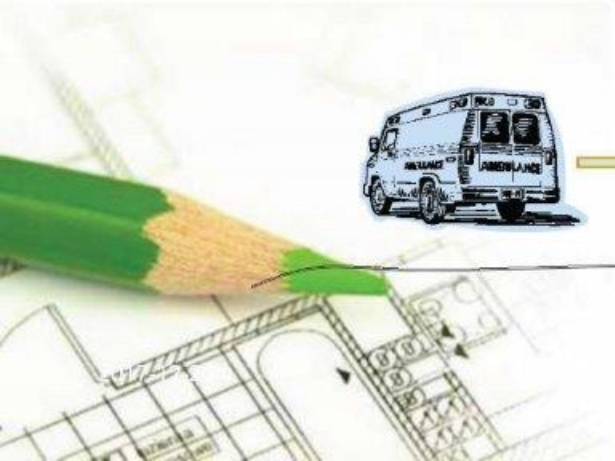
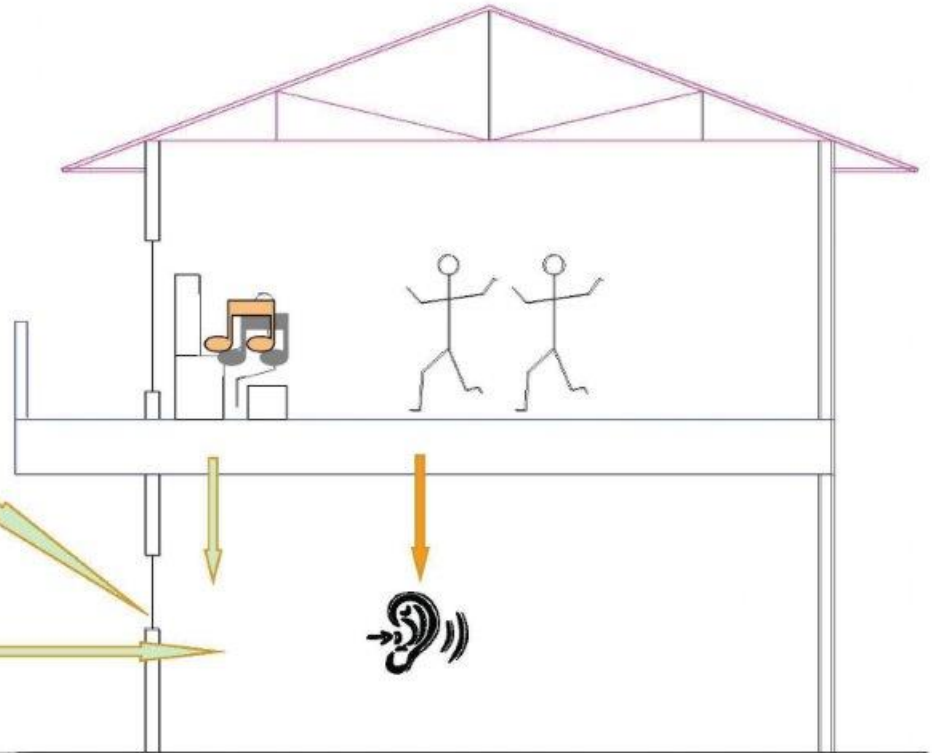
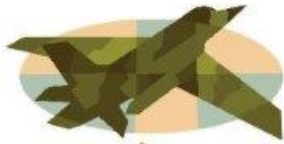


Sound propagation path

- spread directly by air  airborne sound
- spread by palisade structure  solid-borne noise
- impact or vibration, making the palisade structure vibrative and sound



Sound wave transmission in buildings



The basic principle of sound propagation

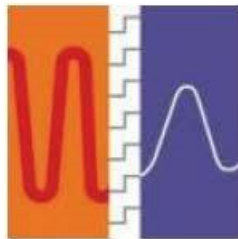
- the source of voice is vibration
- reflection, absorption and transmission



absorb



reflect



transfer

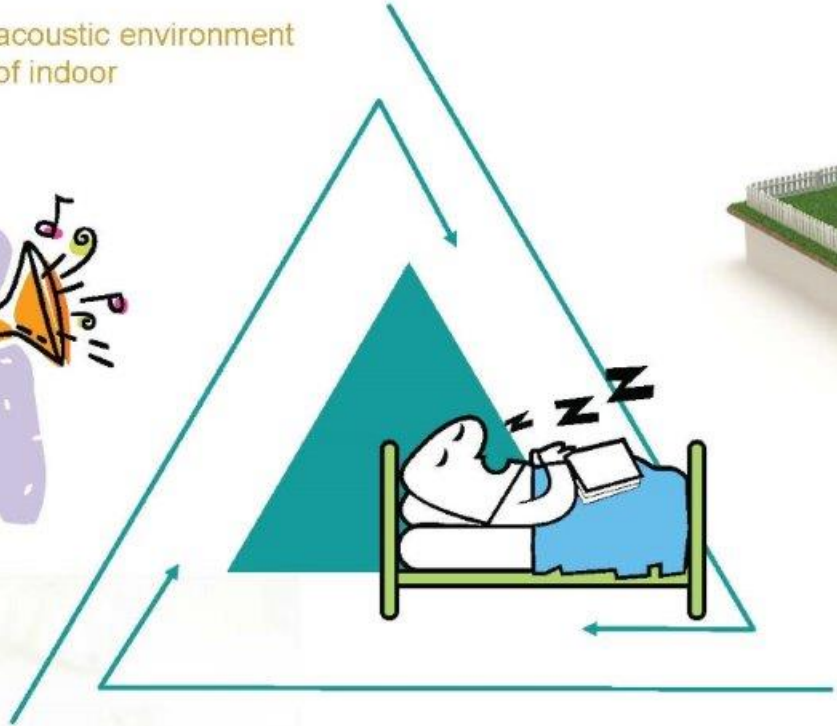
solid-borne noise transfer



Air acoustic transfer



• acoustic environment of indoor



• acoustic environment of outdoor

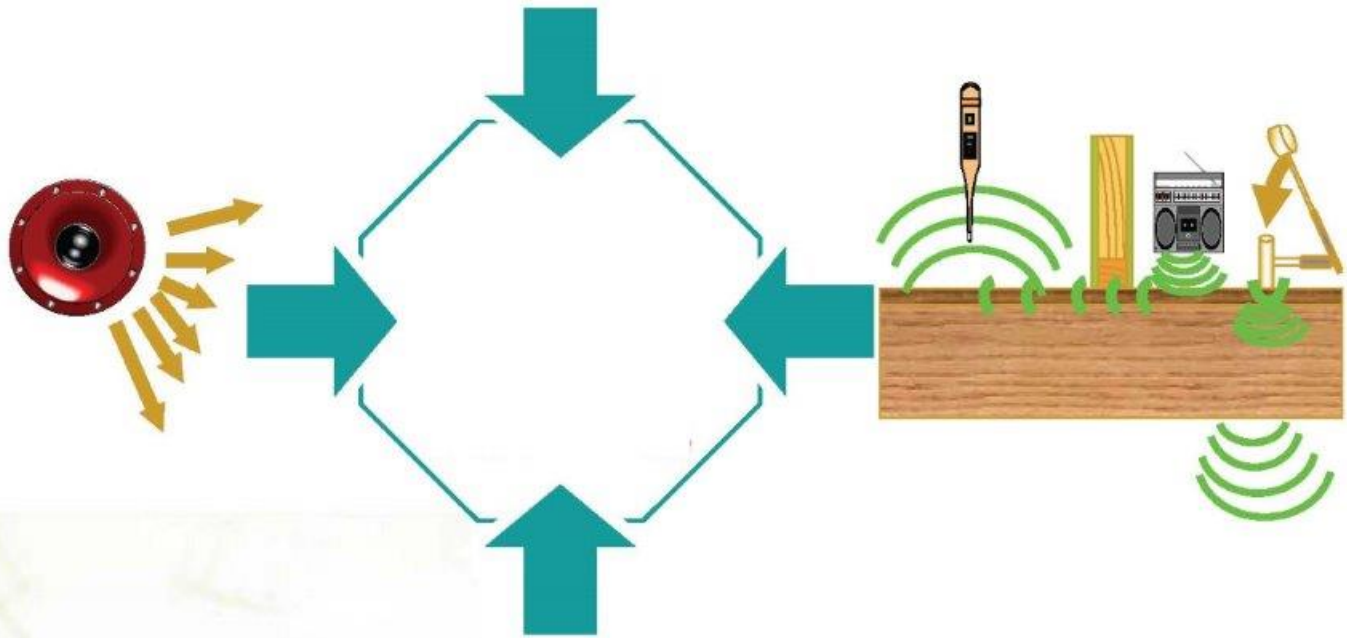


• sound insulation, sound absorption system



Three factors of indoor sound environment

The main way to control indoor sound environment



The basic concepts of the sound-proofing design

- the basic theory of sound insulation is mass law.
- the basic measure of the sound: (dB) , the average sound energy of per unit time through unit area.
- the representation of a component sound insulation.

Main principles of sound insulation measures of lightweight construction

- adopt sound insulation materials
- Using sound-absorbing material
- necessary measures



Sound-proof improvement of diffrent layers and having filling material or not (dB)

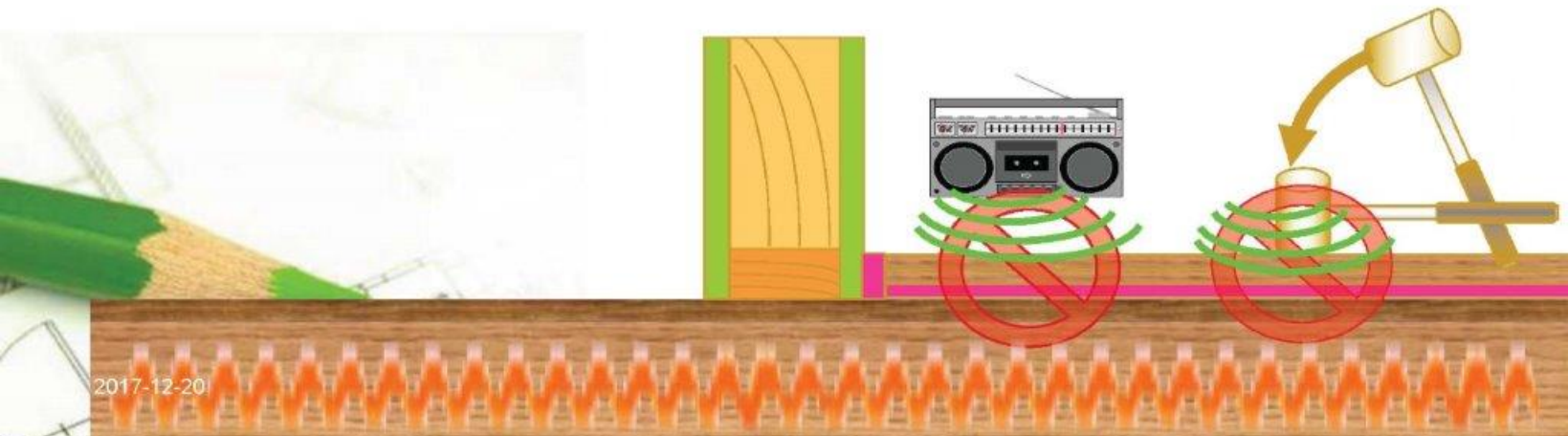
filling material	1-1 layer			2-2 layer		
	lows frequency	medium frequency	high frequency	lows frequency	medium frequency	high frequency
no	0	0	0	9~11	6~8	9~11
25mm glass wool	6~8	6~8	6~8	12~14	12~14	12~14
50mm glass wool	6~8	9~11	9~11	>15	>15	>15
75mm glass wool	9~11	12~14	12~14	>15	>15	>15

注：纸面石膏板12mm



Whomp-isolation measures

- Elastic surface processing—Sound isolation measures weaken sound energy.
- Elastic cushion processing—make vibration reduced between the surface layer and structure layer .
- suspended ceiling processing—when vibration resulting from the whole floor been hitted, reducing solid sound by the method air isolation .





**EVERYTHING
under THE SUN**

Energy-saving design



Energy-saving design is the process of integrated design

four aspects:

1. the concept of energy saving
2. relevant base of thermal knowledge
3. heat preservation, heat insulation, moistureproof design
4. energy-saving design and the basic experiences



◎Energy consumption of society: Industry , building, transportation, etc

◎Energy consumption of building: the energy in the process of building , such as air conditioning, heating, lighting, hot water supply, electric energy, cooking, etc.

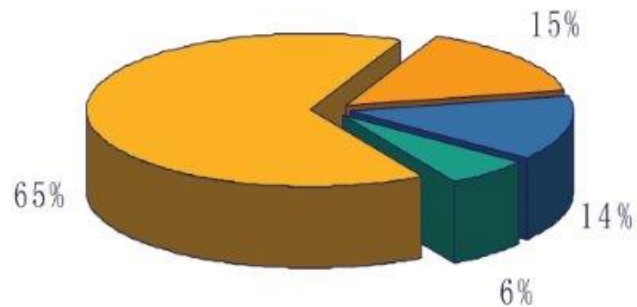
◎Energy consumption of industry: the energy consumption in the process of building materials and construction.



The meaning of building energy efficiency

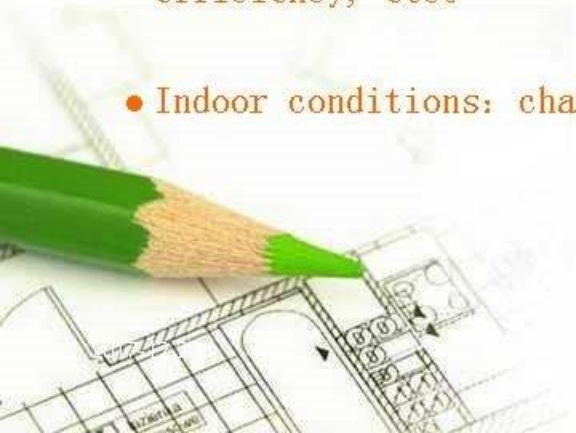
- Building energy efficiency: on the premise of ensuring comfortable indoor-environment, improve the energy efficiency of heating, ventilation, air conditioning, lighting, kitchen, home appliances and hot water supply .etc. Key: improve the energy efficiency of heating, air conditioning system.
- Mistakes: Energy saving cannot simply think that just can use less, but on the premise of ensuring comfortable indoor-environment .

The core is to improve the efficiency of energy saving, and more higher comfort .

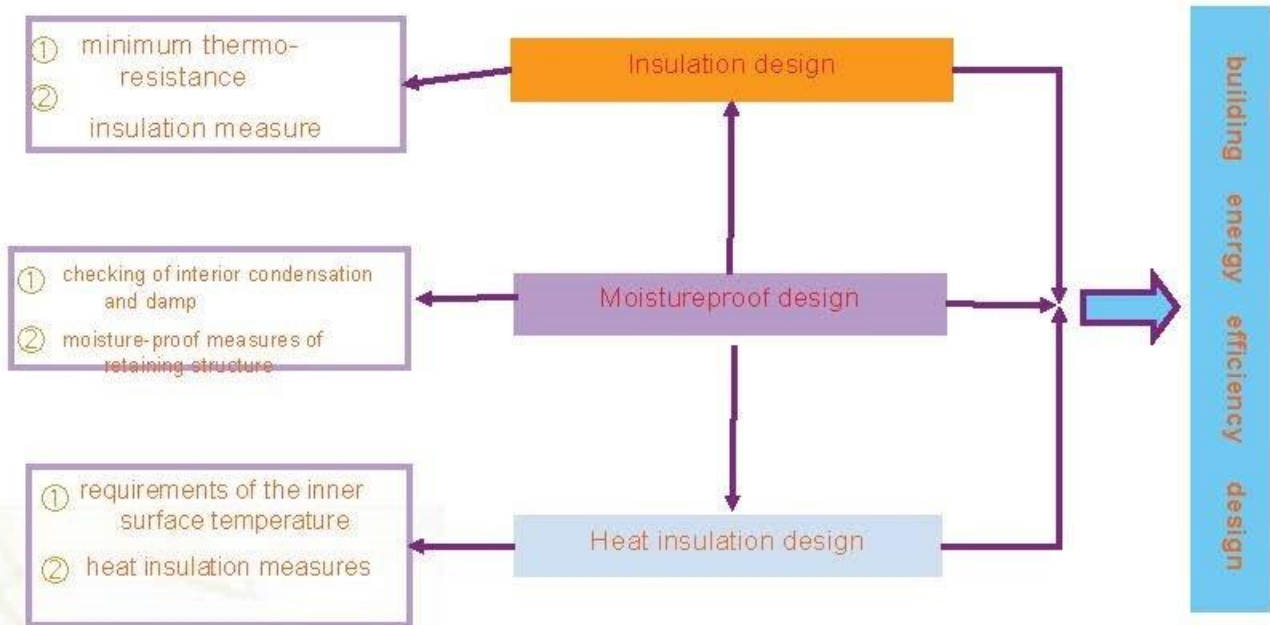


Three influence factors of building energy efficiency

- External conditions: as the meteorological external environment to main, it is not to change by people's will, such as the changes of temperature, humidity, wind speed, sunshine.etc.
- Building's ontology and equipment: building energy consumption is different by different building envelope, can be man-made changed, such as heat insulation, airtight performance, covering performance of sunlight, heat capacity, air-conditioning energy efficiency, etc.
- Indoor conditions: changed by different life behavior.

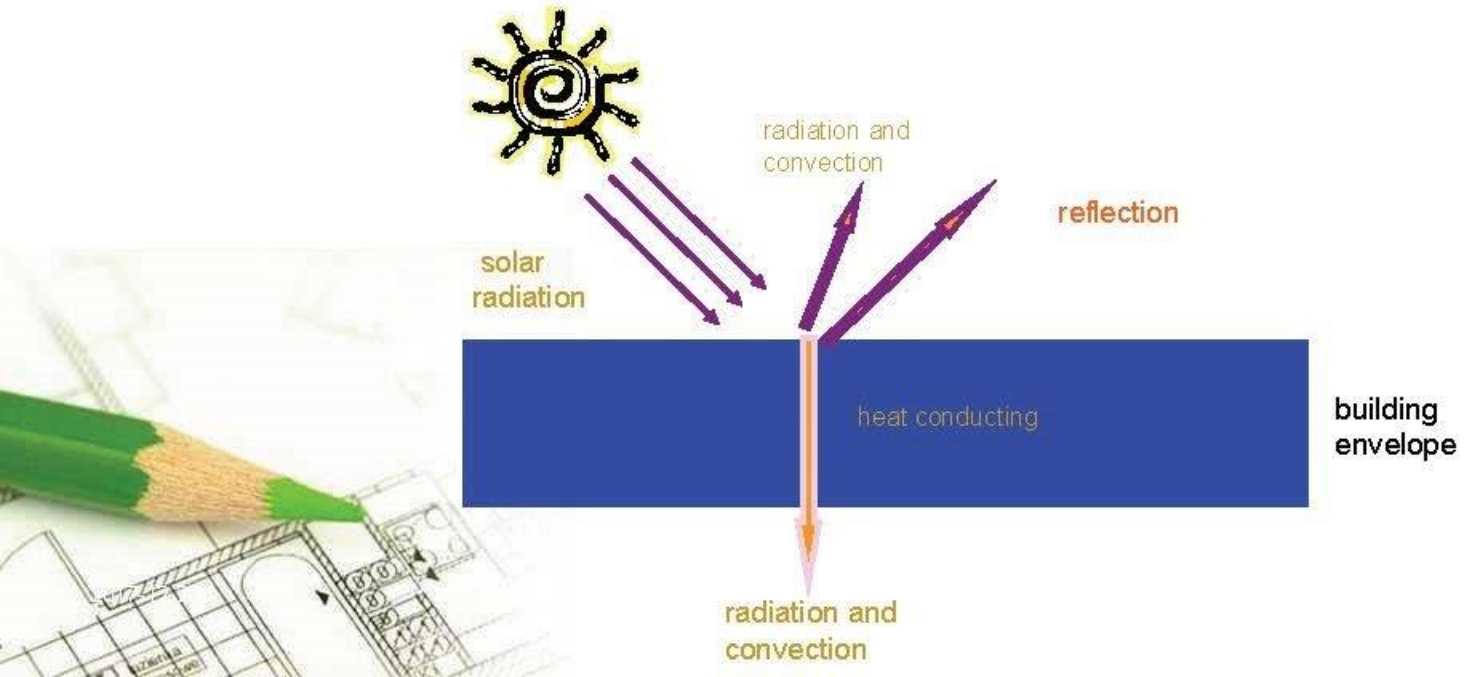


the thermal calculation of external retaining structure and energy efficiency design



Basic knowledge of thermal engineering— the three basic ways of heat transfer

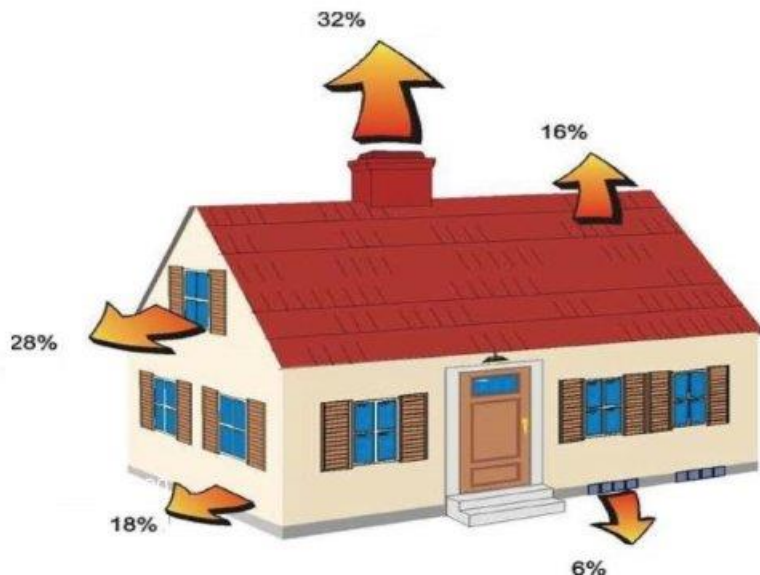
- heat conduction—heat transfer process of thermal motion
- convection—transfer heat process in convection
- radiation—thermal conversion process



Basic knowledge of thermal engineering

—Three important factors

- Coefficient of thermal conductivity: λ (W/m • K)
- Heat transfer coefficient: K (W / m² • K)
- thermal resistance: R (m² • K/ W)



ways of heatproofing

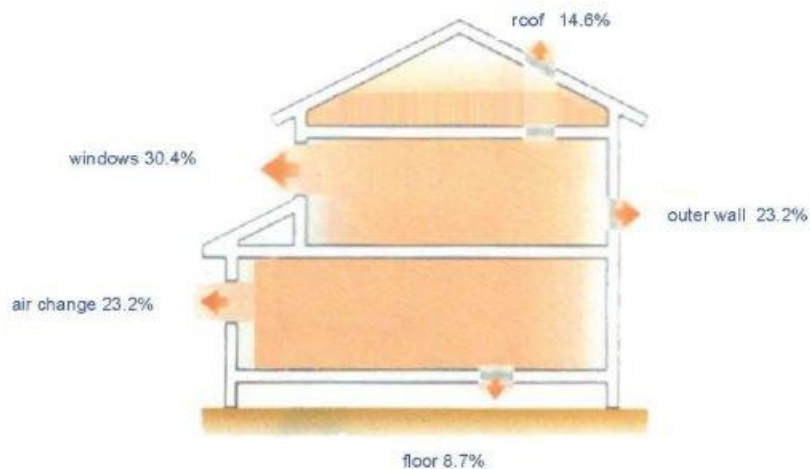
- reduce outdoor's heat effect
- heat insulation of the envelope
- Natural ventilation of room
- The window sunshade
- use natural energy



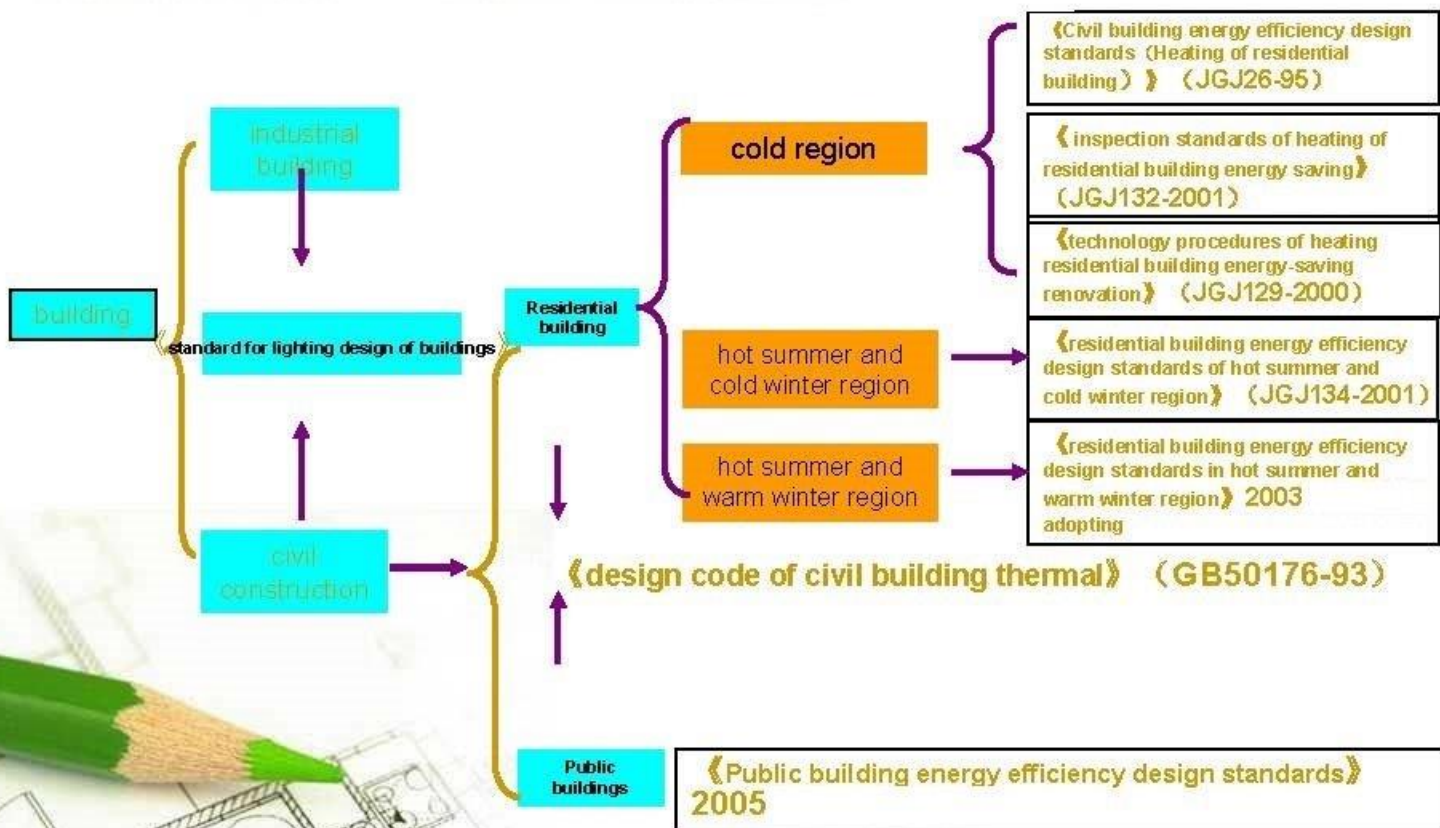
The influencing factors of building energy saving

How to effectively
control the heat is
one of the main
conditions
reflecting house
warm and comfort.

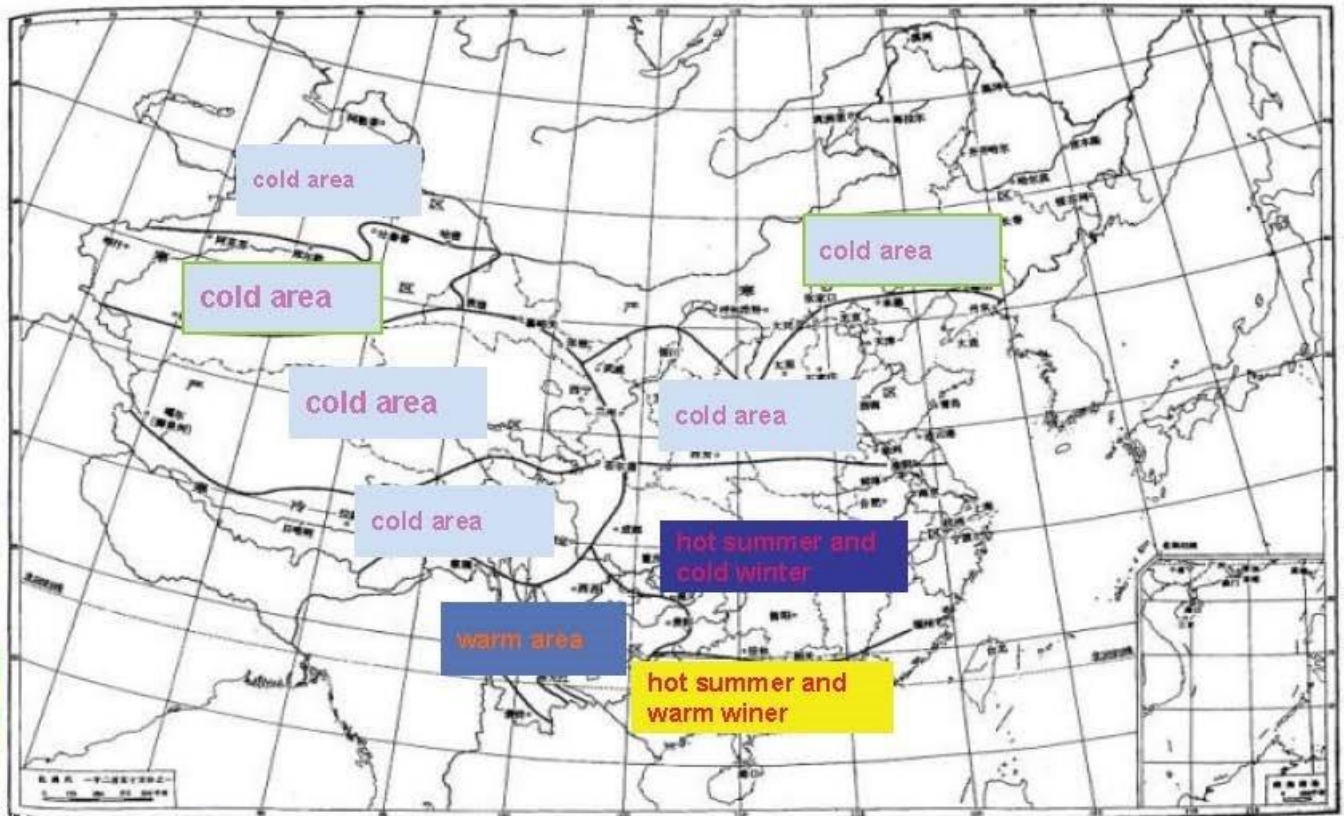
Residential heat loss situation



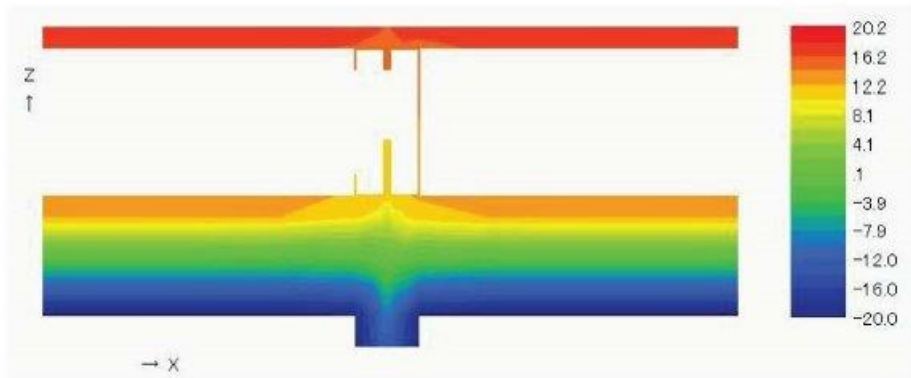
Building energy efficiency design standards—Five criteria



Different requirements of different climate conditions on the housing design, should adjust measures to local conditions .



The main measures in the design of single enclosure structure energy saving

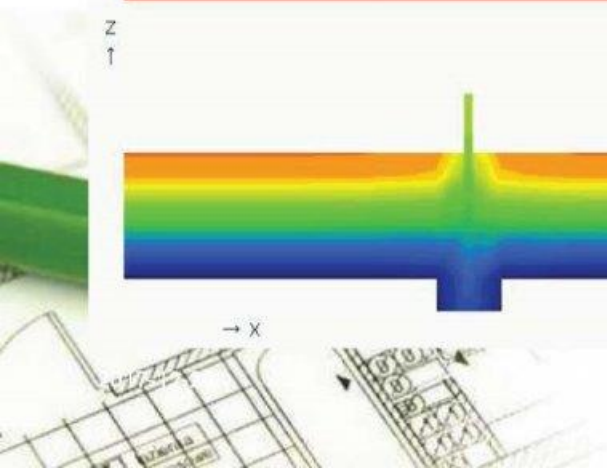


- "Thermal bridge" of the steel structure housing influence the whole building heat preservation and heat insulation , also has a harmful effect on the internal walls.

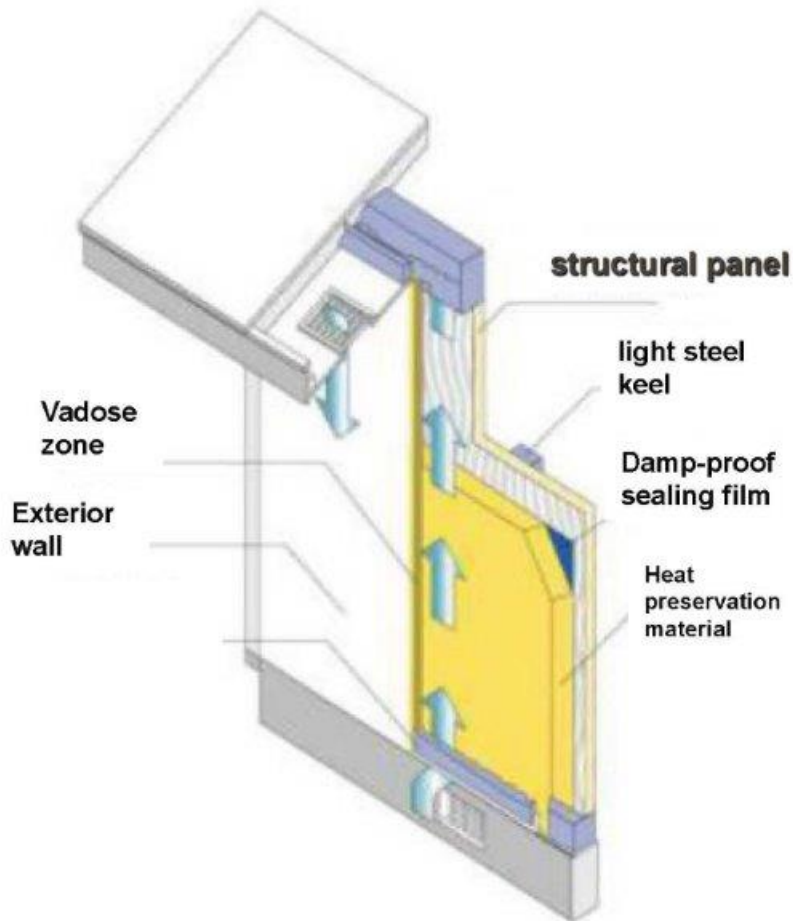
Residential exterior

Avoid hot bridge

problem



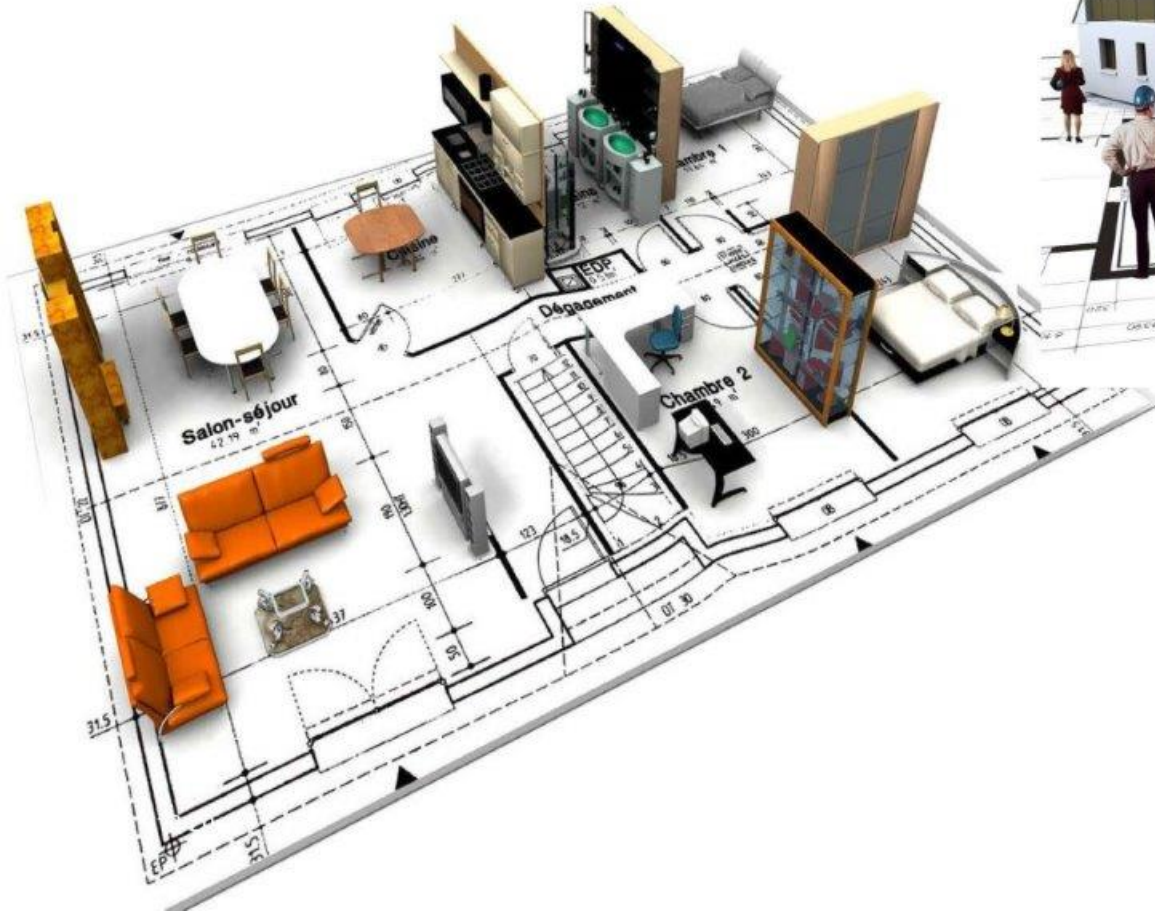
The main measures in the design of single enclosure structure energy saving



●The light steel integrated residential standards

light steel integrate residence have applied been 50 years in North America and many countries. At present, the various quality indexes accord with the following standards: Uniform building code of Canada-ICBO、Standard building codes-SBCCI、National building code-BOCA、South Florida's building codes in the USA、the miami-dade county hurricane resistant standards, the earthquake resistance has been approved by the KOBE OF JAPAN. All meet the Chinese national standard 《Building seismic design code》 (GB50011-2001)、《Load code for the design of building structure 》 (GB5009-2001) and the code for fire protection 。 At present, our country has also launched in light steel keel residential standards 《technical regulation of the lower cold bending light-gauge steel housing construction》 (JGJ227-2011) 。

Integrated light steel housing FAQ




ASIAN DRAGON
International Corporation
EVERYTHING
under THE SUN

1. question: service life of the light steel housing?

answer: From the reference of China steel structure design and construction norms to guarantee the service of life more than 70 years.

2. question: the building time of the light steel housing?

answer: Concrete build time according to house type, generally a 200 square super light steel house finished both inside and outside installation needing a month time, of which steel structure building only need a week's time.

3. question: it's difficult to install light steel integrated housing?

answer: Integrated light steel building installation is very simple, just require the workers using electric tool. We will provide the housing construction drawings and technical guidance, the customer can finish independent construction according to construction drawings.



4. question: does integrated light steel housing have any price advantage compared to the traditional architecture?

answer: compared with traditional building villas, light steel housing products have an absolute price advantage. Compared with the traditional apa naked decorate, our price is the quotation includes in-built. Traditional architecture if contains a in-built offer, actually no much difference with light steel housing cost. The price difference between integrated light steel housing and traditional building mainly depends on the use of materials, the starting point of traditional architecture is just built, building materials are used in the low price as the first principle. But light steel housing emphasize the comfort in the process of design and constructing, more using new types of moisture-proof, sound insulation and heat preservation materials.



5. question: the advantage of integrated light steel house compared with traditional architecture?

answer: the main advantage in comfort, energy conservation, environmental protection, appearance, time and energy saving, seismic and wind resistance. Light steel house strengthens the use of the materials of insulation, moisture-proof, sound insulation.etc in constructing process , overall comfort level high than traditional architecture . The use of new energy-saving materials and dry operation, have good embodies on the concept of energy conservation and environmental protection. The installation of light steel house is mosaic type, so saved in the human and the construction time . Light steel housing at the same time can achieve 9 magnitude earthquake, wind resistance level above 12.

The intelligent design system, not restricted by design on the selective appearance. There are absolute advantages than traditional on aesthetic measure .



6.question: is the steel corrosion resistant?

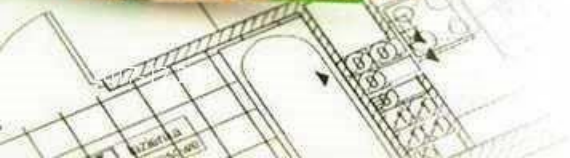
answer: the high strength steel in the hot dip aluminum and zinc coating, to protect the structure from corrosion a lifetime。 Life can be more than 70 years, but is not recommended in strong acid, strong alkali environment building。

7.question: is there any requirement on the foundation of integrated light steel building?

answer: no special requirements, the same with traditional architecture.You can choose the strip foundation or raft foundation and so on。 We offer a basic plane figure and acceptance in accordance with our construction standards, usually not responsible for foundation construction; If you need our construction, the price is another discussion。

8.question: integrated light steel house achieve the effect of energy conservation and environmental protection?

answer: Integrated light steel building's excellent heat preservation and heat insulation, greatly reduces the air conditioning running time, also saves the money.All of our materials are environmental protection, can be recycled, especially the steel。



9.question: how to embody intelligent and modular of integrated light steel house?

answer: uses the application of imported full automatic production systems of intelligent building design, drafting by computer-aided structure , automatic precision machining by CAM intelligent processing equipment , and DIY intelligent and quick assembly, realizing intelligent and modular construction in the fitting precision of millimeter。

10.question: what kind of service to provide?

answer: a professional design, production and construction team, to provide customers a full set of housing solutions。 services provided including: project design, steel structure design, production of the steel structure and palisade materials, construction, and materials of construction。



12. question: does company provide personal building services?

answer: yes. Our website has many standard model for your choice, is directed at the individual building services.

13. question: Is integrated light steel building Wind-Resistant or earthquake-resistant?

answer: can withstand wind to 12 magnitude, earthquake to 9. Reliable connection and the strength characteristics of steel make it having inherently defense to earthquake and hurricane. High toughness of the steel to make it become the best choice for building materials in the design of earthquake defense.



14. question: how to deal with building insulation of integrated light steel?

answer: we have 3 layers of insulation measures, high-density insulation board is used to exterior wall, glass fiber cotton used to interior wall , a layer of cavity wall can also be used to heat preservation. This is the standard to the north, we can make appropriate adjustments and special design according to the local temperature.

15. question: how to deal with water proofing of integrated light steel?

answer: waterproof is no problem in the integrated building, our waterproof measures: roof gutter design and roofing waterproof adhesive coil have protective effects. Exterior wall materials adopt new decorative waterproof processing

16. question: what's the fireproofing grade of integrated light steel?

answer: our housing fireproof is 4 grade, reaches the national fire protection standards

17. question: how to deal with dampproof of integrated light steel?

answer: our moistureproof measure is covering a layer of Uni and Bi-direction moistureproof breathing paper on the wall. To eliminate the moisture of the building, also can cut off the moisture of outside.

18. question: is the floor and stair firm?

answer: on the structure, we adopt truss beam structure to enhance firmness of the stairs and floor. On the construction, we using new material structure to strengthen the firmness of stairs and floor. So floor and stair is very strong.

19. question: how to deal with sound insulation of integrated light steel?

answer: we fill with glass fiber cotton or other sound insulation materials in the interlayer, using new material plate sealing wall also have a sound insulation effect in interior decoration. Exterior decorating plate also has sound insulation effect.

20. question: what's the decoration including?

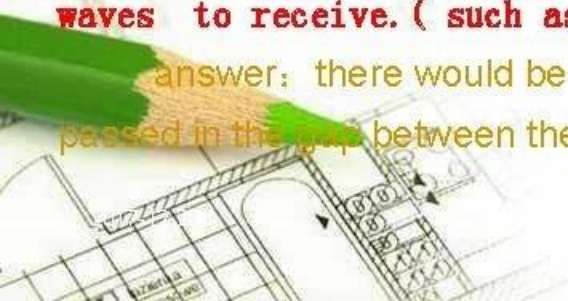
answer: indoor metope, ground, top face , the strong & weak electricity and lighting; the kitchen& toilet metope, ground, top face and kitchen&and bathing facilities; in addition to buy furniture, appliances and mobile production, other matters we all help you doing well. (If needing other configuration, another negotiation)

21. question: what's the difference of integrated light steel housing with other housing on appearance?

answer: no. The outside of the light steel housing can be exactly the same as with other residence, the company's all kinds of exterior wall decoration materials can be applied in the light steel, be made personalized.

22. question: Integrated light steel housing may interfere with radio waves to receive. (such as radio, television, mobile phone)?

answer: there would be no interference, because the radio signal can be passed in the gap between the keel.



23. question: is easy hanging portrait on the light steel wall ?

answer: very easy. lighter portraits can be screwed on the wall directly. The heavier frame are connected with the keel by self tapping screw, the keel' location can be confirmed by magnet.

24. question: whether the light steel housing safety for lightning?

answer: it's safe. In the case of a lightning, light steel members can be current of lightning strike directly into underground, thus its occupant protection. In addition, caused by lightning or fire explosion also greatly reduced accordingly; the roof is also equipped with lightning rod.

25. question: decoration and indoor transformation of light steel is convenient??

answer: very **convenient**. Light steel system is light weight, high strength, large span, thus to provide great flexibility and convenience for the interior decoration and modification.



26.question:light steel housing will have rust problems?

answer: no. Because using light steel keel of galvanized or aluminized zinc alloy and adopting closed system of moisture, so effectively control the corrosion of steel, to ensure the service life of the structure is longer than the residential life.

27.question:how many layers of light steel structure housing can be?

answer: the present domestic specification can be 3 layers, North America can build six floors of the hotel by successful application of the system .Light steel structure and other structures, such as hot rolled H section steel or reinforced concrete frame shear system are combined to form suitable for 12 layers of high-rise residential complex structure.

28.question:is the application of light steel system just limited to housing?

answer: no. Light steel structure is suitable for all kinds of buildings, such as hotels, commercial buildings, office buildings, schools, real estate development projects, tourism projects, entertainment facilities, and light industrial buildings, etc. Light steel wall and light steel roof truss in Canada have been widely used in high-rise buildings.

8、 North American style architecture

