

SUPPORTING STRUCTURES AND FACADE CONSTRUCTION

THERMO PROFILES

**KOOLARI® -FLOOR
AND FACADE PROFILES**

MODULAR HOUSE MODELS

**INTERNAL STRUCTURE
SYSTEMS**

**SUSPENDED CEILING
PROFILES**

PARTITION WALL PROFILES

**LIUNE DOOR AND
LIUNE SPACE**

**HOUSE PYÖRRE —
REWARD JACKPOT
IN 2021 HOUSE
EXHIBITION!**

Read more on pp. 44–45.



AULIS LUNDELL LTD

STEEL PROFILES



The products are
suitable for both
new and renovation
construction.

Welcome on
a journey through
the steel world!
www.aulislundell.fi

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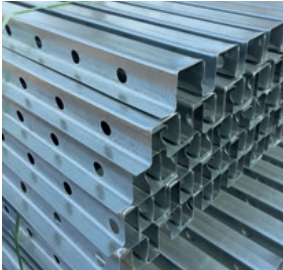


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Lundell-Profile steel profiles are made of
hot-dip galvanized steel sheet using roll
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General Delivery Terms

These terms and conditions apply, unless otherwise
agreed in writing.

Prices
Deliveries will be invoiced according to the valid price
list and a valid VAT will be added. Mini-surcharges will
be charged in accordance with the applicable terms
and conditions for each product group.

Delivery Time
Profile deliveries according to order confirmation.

Online Store
Unit prices are RRP prices. Key customers log in with
their own IDs and transact directly at contract prices
24 hours a day, including orders. Order confirmations
from the online store immediately also on the day of
delivery.

Delivery Condition
EXW, Freely at Saukkola factory.

Delivery Charge
Deliveries in the Helsinki metropolitan area 148 eur
/ lot includes crane unloading on the site, the rest of
Finland under the supplier's freight contract. Crane
unloading elsewhere in Finland is 95 eur / delivery.

Packaging
Included free of charge; truck bundles packed with
washers and rim mounts and product bundles are
marked on a package-by-package basis. The profiles
are always delivered as complete. Charges apply for
FIN and EUR pallets, reel, web and sheet pallets and
special packaging.

Minisurcharge
For special lengths, such as partition frames
<1000mm 1.50 € / piece, thermal frames and
lightweight Purlins 700-1700mm 2.00 € / piece,
<700mm 3.00 € / piece. Delivery batch <400 linear
meter are always invoiced at RRP prices without
discounts.

Special Profiles
The customer must always submit a product drawing
of the customer-specific special profiles when order-
ing, otherwise the supplier is not responsible for the
correctness of the profile.

Billing
According to the delivery date. Interest on arrears in
accordance with the Interest Act will be added to late
payments.

Transportation
The customer is responsible for the freight charge
of the delivery batch and unloading the cargo at the
delivery site. Transport damage is the responsibility
of the transport operator, although transport damage
must always be recorded in the consignment note.

Pickup Fee
If the ordered products are picked up by the customer
using equipment other than the carrier's, we charge a
collection fee of € 80.

Pickup Orders
If the pick-up order has not been picked up within
eight (8) days of the confirmed delivery date, we re-
serve the right to invoice the customer on the agreed
pick-up date, unless otherwise agreed in writing.

Storage
Care must be taken during storage and product-spe-
cific instructions must be followed. KOOLARI® floor
profile bundles should be protected on site. Profiles
can usually be stored temporarily outdoors without
protection.

Returns
Returns will not be accepted unless specifically
agreed. Customer is responsible for return costs. Up
to 30% of the purchase value of the agreed products
will be refunded.

Other Conditions in Accordance With RYHT-2000.

Roll Forming



LUNDELL-PROFILE products are made of hot-dip galvanized steel plate using roll forming technology. We have developed thousands of profile formats for over 40 years and our production technology is our own know-how. Some of our products are patented, protected and we also manufacture products under license. Our know-how and innovation meet at www.pyörre-talo.fi and we can offer you low-carbon construction alternatives to challenges and goals of construction.

Our production process begins with the processing of 10 t hot-dip galvanized coils. The steel coil is cut to the required smaller widths and the cut setting can be used to produce steel strips of different widths at the same time. The steel strip is rolled into the desired steel profile shape at the production line. Usually the steel profiles are shaped as open profiles, such as L,U,C,Z and H profiles. Profile heights 15-450 mm, flange width 15-150 mm and maximum length 17,000 mm. Roll forming is a cold shaping method and does not change the wall thickness of the profile, standard SFS-EN 10162.

In roll forming technology, the production line includes successive tool stations, where each workstation adds one additional shape at a time, and during the same process the product gets different properties such as perforations, cutting to the required size and CE product labels. There are 5-30 workstations in one production line. With one line, a profile is produced in an average of 30-80 m per minute.

Steel has good formability, and it is also possible to produce complex cross-sectional shapes with small bending radius. Manufacturing is also affected by the purity and microstructure of the steel, therefore materials used in rolling are specifically designed for cold forming.

Measuring Steel Structures

Steel is used for supporting and long-span structures and high building frames as well as thin plate

structures. The structural engineer uses limit state dimensioning (usage limit state dimensioning, fracture limit state dimensioning) when dimensioning the steel structure. The features taken into account are strength, structural displacements, fatigue, bending, noise, etc. The calculations also take into account different types of loads, such as permanent loads (the building itself), variable loads (during use) and accident loads (fire, etc.).

It is beneficial to plan roll-formed steel profiles for structures due to their fast manufacturing technology, although it is good for the designer to familiarize with the measurements of standard products, as manufacturing special measurements requires tools in which case the investment will be from 35000 to 150000€ depending on the shape of the profile and the required features.

Steel is of Standard Quality and Roll Formed Profiles are Dimensionally Accurate

About 30% of the world's steel is used in the construction industry. A thin plate is a cold-rolled steel sheet that is no more than 3 mm thick. Its surface is usually hot-dip galvanized. The plate can also be made of stainless or acid-resistant steel. The sheet metal products we manufacture are lightweight purlins, partition wall frames, suspended ceiling and floor systems, bent hat profiles / furrings and Koolari products, thermo profiles, thin metal sheet mouldings, special mouldings, internal wall door elements made of Lundell-Profile products.

Materials and Quality



The development of iron as a building material began 2,500 years ago from iron clamps used by the Greeks. Galvanized sheet metal was invented in 1840 and 140 years later Lundell-Profile began manufacturing sheet metal profiles in Finland. The steel is suitable for Finland's demanding weather conditions and will also respond to steel innovation's future regulations.

CE-Labeling and Declaration of Performance

According to the Construction Products Regulation (305/2011 / EU), the CE labeling is mandatory for construction products which are applied European harmonized product standards starting from 1 July 2013.

The Construction Products Regulation replaced the Construction Products Directive. By attaching the CE label to a product or delivery package, we guarantee that the product complies with all relevant regulations for health, safety and environmental protection. For each product line, you will find a DoP (Declaration of Performance DoP) for the construction product we manufacture, which is displayed on our product page; more information and DoP. You can always download a DoP to the sites files.

Steel as a Material

Steel is the main operating metal. High strength is a feature of steel that makes it different from other building materials such as brick, concrete and wood. The mechanical properties of steel are utilized by using different material qualities in the products. Base steels, climate-resistant steels and high-strength steels are used for construction.

Advantages of Steel as a Building Material

- Light and strong
- Easy joints and attachments
- Homogeneous material
- Easy later large-scale changes
- Possible to manufacture with desired properties
- Humidity fluctuations do not matter
- Non-flammable material
- Corrosion progresses slowly

Finland is committed to EN standardization, on the basis of which European standards have become integrated. The definition of a steel product essentially includes e.g.

- Tolerance standard EN 10143: 2006
- Material standard EN 10346: 2009
- Material certificate EN 10204.

Lundell-Profile Steel Qualities

Cold formable hot-dip galvanized roll forming

- Basic steel DX51D+Z
- Structural steel quality S350GD+Z

Applications

The world produces about 1,100 million tons of steel annually. About 30% of all steel is used in the construction industry. Steel is used in supporting structures, long spans and high building frames, as well as plate structures.

Steel life cycle

The finished steel structure does not burden nature and as a material steel lasts in use for a long time. Steel parts can be recycled as such thanks to their easy joints. Finland has a well-functioning recycling system that allows almost all discarded steel to be recycled. The steel is easy to separate and can be melted and reused many times, and if steel was left in nature, it would eventually return to the same minerals from which it was made of.

Recycling and Transportation

Steel is a fully recyclable material and about half of the raw material is recycled scrap. It is an important raw material for construction due to its good long-term durability and strength. Hot-dip galvanized construction products do not generate hazardous waste. Steel profiles are always made to order, so there will be no extra waste at the construction site. The waste materials generated in the processes are sorted and steel scrap will be



returned to the steel industry as recycled steel. Recycled steel has a strong market position: on average, 95% of the steel used in buildings that is removed at the end of its life cycle is utilized in the production of new material.

The steel material is not harmful to the environment and has Classification of Indoor Environment. All packaging materials for steel products are recyclable.

The steel mills comply with environmental legislation and agreements as well as the ISO 14001 environmental standard. Steel parts are light to carry compared to concrete, for example. The lighter and more finished the steel parts, the more efficient they are to transport and to use.

Long-term Durability and Life Cycle Quality

Steel products have a service life of >100 years from delivery to the customer, although the planned service life of the products requires regular inspection of the overall structure and a maintenance plan prepared by an approved designer, in which case the design takes into account environmental and operating conditions.

LUNDELL-PROFILE products are available in several different zinc coatings, as corrosion protection is achieved by coating the steel. A coating such as a zinc layer slows the corrosion rate of the steel to one tenth. Corrosion resistance is affected by, among other things, the thickness of the zinc layer, sulfur compounds in the air and moisture.

Galvanizing means adding a thin layer of pure or alloyed zinc to the surface of a steel piece. In indoor construction, the coating is 100 g / m² of zinc, and in facades, products embedded in structures have a zinc coating of 275 g / m².

Strain

The international corrosion protection painting standard SFS EN ISO-12944 divides climate stresses into categories.

- C1 very mild
- C2 mild
- C3 moderate
- C4 harsh
- C5 very harsh (sea)

Indoors, the classification of dry and warm rooms is C1, in which case no corrosion occurs due to the lack of electrolyte like moisture, wet room category is C2.

Quality of operation and EPD

Our operations have been certified since 2004 in accordance with ISO 9001. We belong to the tilaajavastuu.fi register and our steel structures have been CE marked since 2007. Since 2019, our products have had an environmental product declaration EPD.

All products are made to order, with fast and reliable delivery times.

Environmental Product Statements (EPD)

The Environmental Product Declaration (EPD) is a document that contains information on the product's environmental impact throughout its life cycle. The calculation of the building's carbon footprint will become mandatory in 2025. The EPD is based on international standards and is a certified type III declaration in accordance with the ISO 14025 standard.

LUNDELL-PROFILE PRODUCTS HAVE EPD PRODUCT FAMILIES:

1. Gypsteel profiles EPD
2. Supporting structures EPD
3. EPD of lightweight profiles
4. Liune Door EPD

Patented UltraSTEEL[®] -technique

We manufacture our Gypsteel products in Finland, and our patented manufacturing technique*) optimizes the properties of steel, so that steel profiles can be lighter without compromising the strength or performance of the structure.

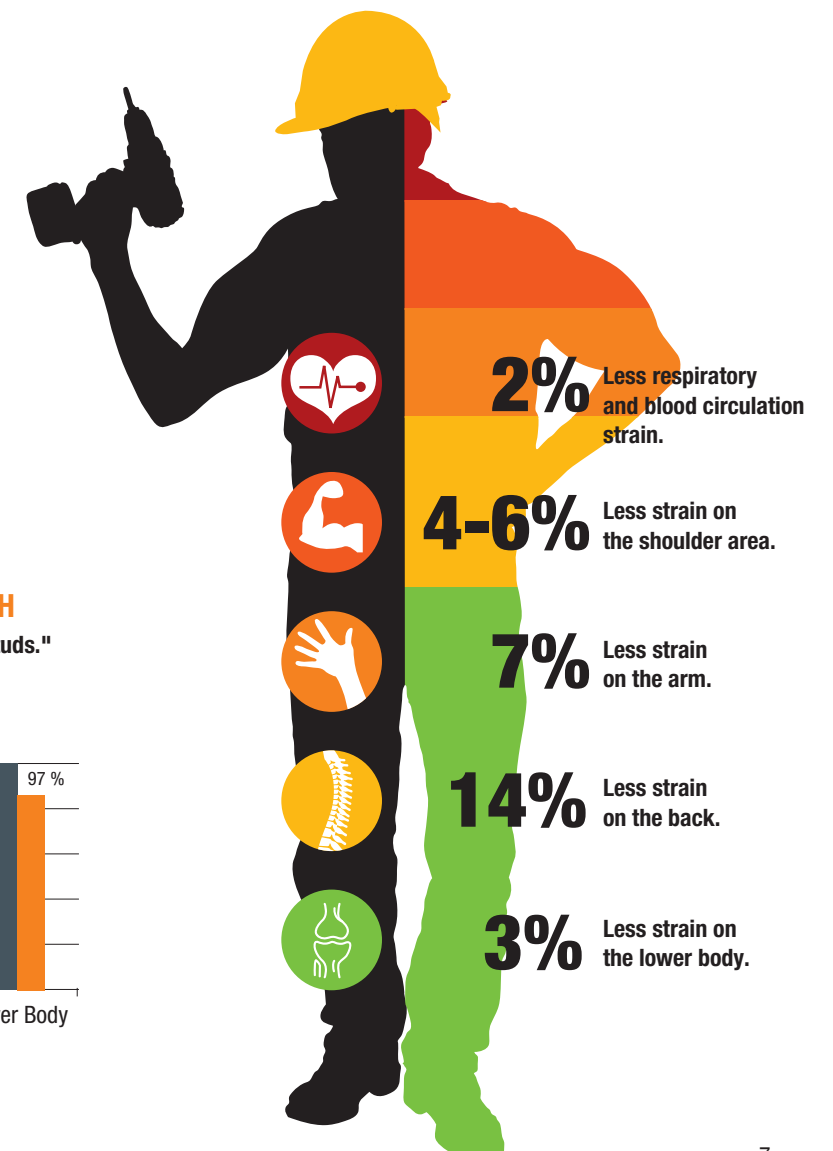
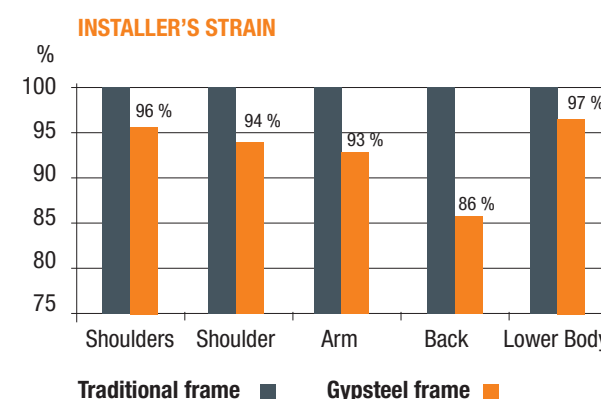
Thanks to the lightness and ergonomics of the profiles, the structure is light and quick to install. When attaching the plates, the screws sink more easily and bite into the steel profiles better.

Thanks to the material structure of the steel profiles, there is no risk of the screws being raised and cutting the profiles is easier.

GYPSTEEL ADVANTAGES:

- ✓ Approximately 20% lighter profiles are easier to move and lift.
- ✓ Friction joints between profiles reduce the need for fastening and improve occupational safety.
- ✓ Gypsteel frame is about 5% faster to install than a traditional steel frame.
- ✓ The ergonomic and ecological Hadley Group's patented UltraSTEEL[®] saves both raw material and costs as well as the workers.

STUDY BY DEP. OF OCCUPATIONAL HEALTH "Attaching plaster boards to different types of steel studs."

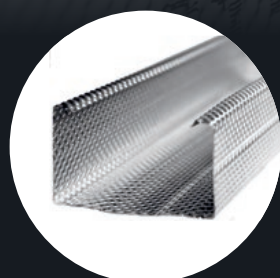




Mikael Nyholm
Sales Manager
Saint-Gobain Finland Oy

"We gain more by developing installation-
friendliness, speed and ergonomics,
than by pressing down material prices."

GYPSTEEL
WALL PROFILES



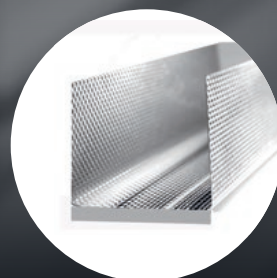
2009

GYPSTEEL SUB-
CEILING PROFILES



2010

GYPSTEEL SKP
SEALED RAIL PROFILES



2012

"It was lighter
to screw in"

- an installer comment

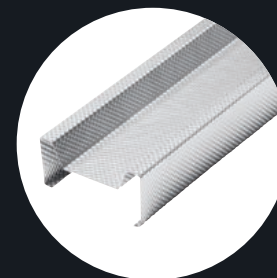
"The screw goes
through easily"

- an installer comment

"It required less
body rotation"

- an installer comment

GYPSTEEL
XR DB-PROFILE



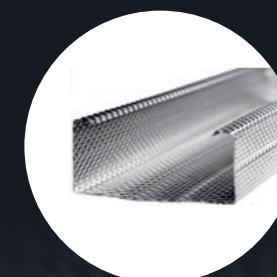
2017

2019



10 YEARS

2020



HVS PROFILE SLIM

THE MOST VALUED FEATURE
OF GYPSTEEL IS ITS
COST-EFFECTIVENESS:

- ✓ SAVES BUILDING TIME.
- ✓ WEIGHS LESS THAN NORMAL STEEL PROFILES.
- ✓ 100% RECYCLABLE.

Gypsteel ► 10 Years of product
development

The best technical solutions are achieved with cooperation
based on trust and a continuous joint innovation process.

We have a very close partnership with Gyproc/Saint-Gobain Finland to develop plaster board based light-weight building systems that fulfill the Finnish requirements regarding fireprotection, energy efficiency and sound proofing, and that makes a carbon free future possible. The solutions are not found only in individual products, but in the tested features and serviceability of the systems as a whole, and which also fulfill the requirements and needs of our customers.

Gyproc/Saint-Gobain Finland is the market leader and pioneer of light-weight building systems, as well as a local producer and supplier. For 50 Years the company has been developing a selection of innovative and trustable systems for the construction industry. The company is also known for their pioneer work within product education.



Aulis Lundell
Chairman of the Board
Aulis Lundell Ltd

"The Gypsteel roll formed steel profiles, made by
Aulis Lundell Ltd in cooperation with Gyproc Saint-Gobain
Finland, provide the widest selection and the most efficient
solution for light-weight partition walls on the market"

Partition Walls

Lundell-Profile solutions are state-of-the-art and represent modern construction technology. Lundell-Profile dimensionally accurate structures are easy and quick to install. The steel frame is a frame system designed for the construction of partition walls, which suits well for both renovation and new construction. The steel frames together with the plaster boards have a non-living structure and guarantee a maintenance-free whole. Frames, rails and other partition wall profiles are dimensionally accurate. Dry construction, indoor climate classified and safe construction.

The Partition Wall is Completed by the Liune Door's Door Solution

Calculate your materials here:



www.aulislundell.fi/en
► Concepts ► Material Calculators



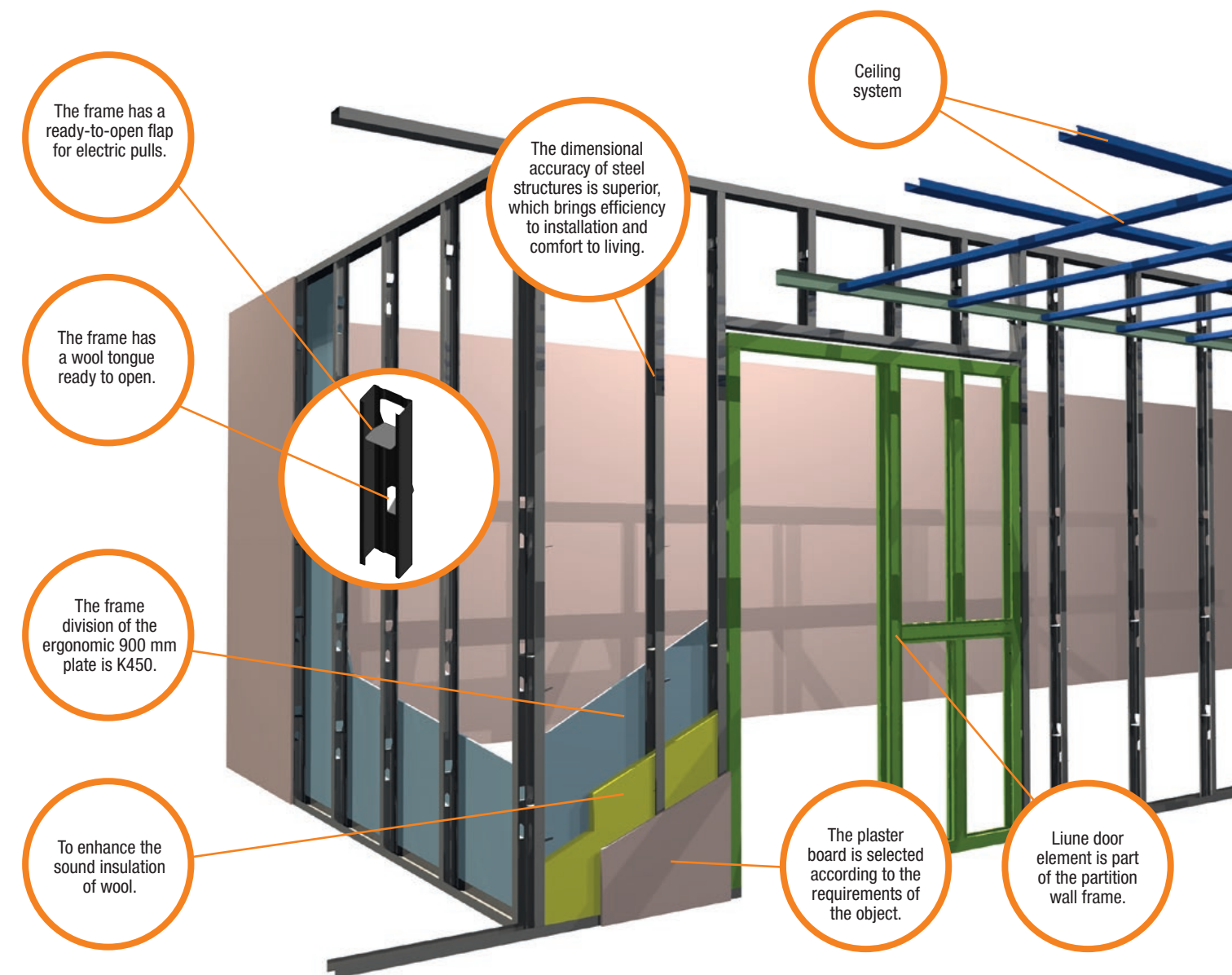
BENEFITS OF STEEL FRAME PARTITION WALL FOR THE BUILDER:

- ✓ Dimensionally accurate construction and always a straight frame.
- ✓ Light to move and build.
- ✓ Good installation ergonomics.
- ✓ Easy and quick installation.
- ✓ The steel frame can be extended telescopically.
- ✓ Saves time, material and space.
- ✓ The frames are delivered cut to size according to the object.
- ✓ The best sound insulation brings good comfort.

Aulis Lundell Ltd's products are tested and approved solutions for the building industry. We are certified with the SFS-EN ISO 9001 – quality system and our harmonized products are CE-marked in accordance with the standard.



Lundell-Profile steel profiles are made of hot-dip galvanized steel sheet using roll forming technology.

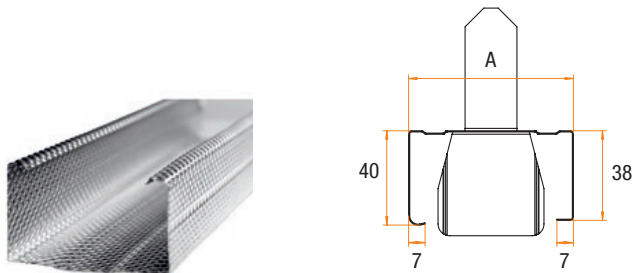


The products have good mechanical properties; tensile and compressive strength, tolerance accuracy and flexibility.

PARTITION WALL PROFILES

Internal partition wall structures of apartments.

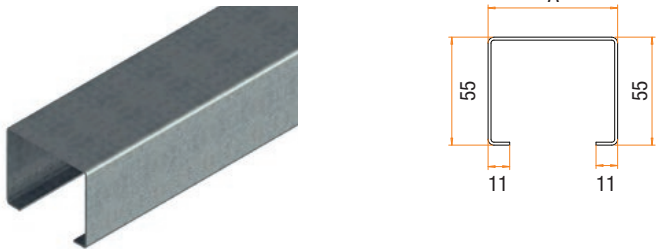
PARTITION STUD LR/40



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
42	0.5	1000-9000	10	0.50
45	0.5	1000-9000	10	0.51
50	0.5	1000-9000	10	0.52
66	0.5	1000-9000	10	0.57
70	0.5	1000-9000	10	0.59
75	0.5	1000-9000	10	0.61
95	0.5	1000-9000	10	0.68
100	0.55	1000-9000	10	0.71
120	0.55	1000-9000	8	0.77
140	0.55	1000-9000	8	0.86
150	0.55	1000-9000	8	0.90

Door openings and other objects requiring bend resistance and for open seam fastenings as well as for fragile strong- and fibreboards.

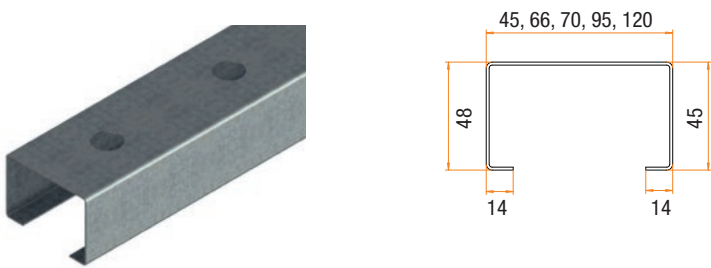
REINFORCING STUD FR/55 STUD R/55



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
66	1.0	1000-9000	6	1.48
70	1.0	1000-9000	6	1.51
95	1.0	1000-9000	6	1.71
120	1.0	1000-9000	6	1.94
66	0.7	1000-4800	6	1.04
70	0.7	1000-4800	6	1.06
95	0.7	1000-6800	6	1.18
100	0.7	1000-7000	6	1.20
120	0.7	1000-8100	6	1.29

Objects that require special bend resistance.

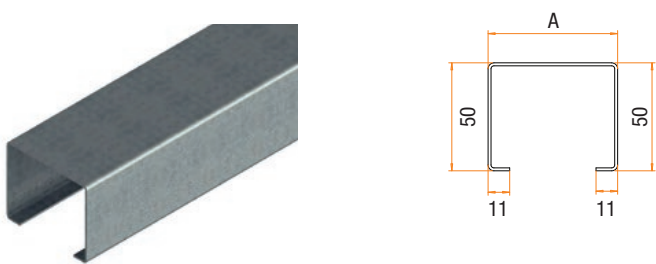
REINFORCING STUD FR/48



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
45	1.20	1000-9000	6	1.48
66	1.20	1000-9000	6	1.68
70	1.20	1000-9000	6	1.72
95	1.20	1000-9000	6	1.96
120	1.20	1000-9000	6	2.19

Objects that require special bend resistance.

REINFORCING STUD VHR S350GD+ZA

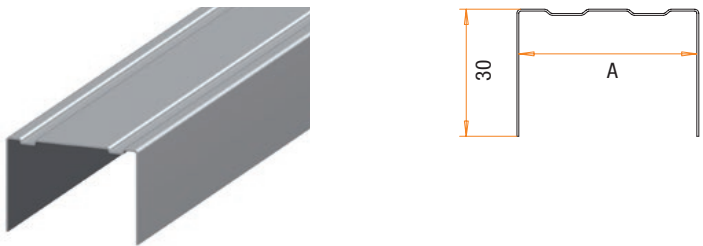


A	material/ mm	length/ mm	pcs/ bundle	kg/ m
66	1.00	1000-9000	6	1.48
70	1.00	1000-9000	6	1.51
95	1.00	1000-9000	6	1.71
120	1.00	1000-9000	6	1.94
66	1.20	1000-9000	6	1.65
70	1.20	1000-9000	6	1.89
95	1.20	1000-9000	6	2.05
120	1.20	1000-9000	6	2.33

PARTITION WALL PROFILES

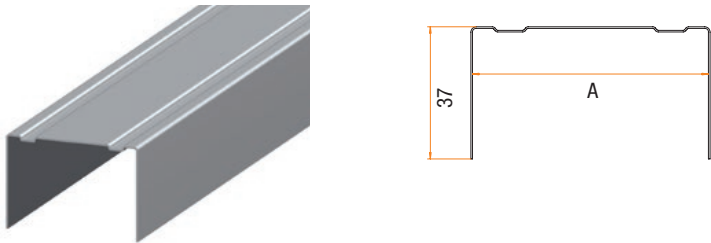
Partition runners for floor and ceiling

RUNNERS SK/30



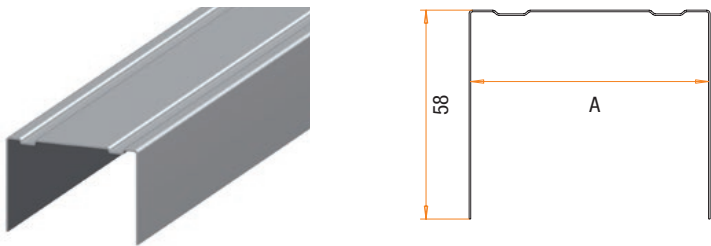
A	material/ mm	length/ mm	pcs/ bundle	kg/ m
42	0.50	3000	10	0.43
66	0.50	3000	10	0.54
70	0.50	3000	10	0.55
95	0.50	3000	10	0.66

RUNNERS SK/37



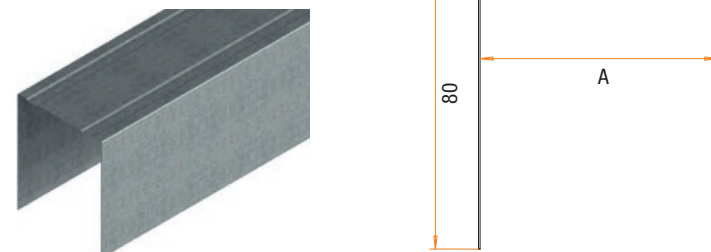
A	material/ mm	length/ mm	pcs/ bundle	kg/ m
42	0.50	3000	10	0.49
50	0.50	3000	10	0.53
66	0.50	3000	10	0.60
70	0.50	3000	10	0.62
95	0.50	3000	10	0.72
100	0.50	3000	10	0.78
120	0.50	3000	10	0.81
125	0.50	3000	10	0.70
140	0.50	3000	10	0.91
150	0.50	3000	10	0.95

RUNNERS SK/58



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
42	0.50	3000	10	0.66
50	0.50	3000	8	0.71
66	0.50	3000	8	0.76
70	0.50	3000	8	0.78
95	0.50	3000	8	0.90
100	0.50	3000	8	0.92
120	0.50	3000	8	1.00
125	0.50	3000	8	0.87
150	0.50	3000	8	1.13

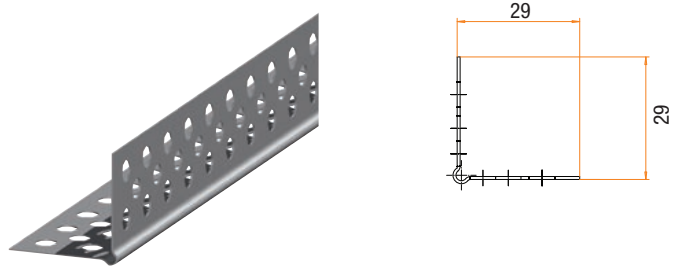
RUNNERS SK/80



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
66	0.50	3000	8	0.90
70	0.50	3000	8	0.92
95	0.50	3000	8	1.02
100	0.50	3000	8	1.04
120	0.50	3000	8	1.12

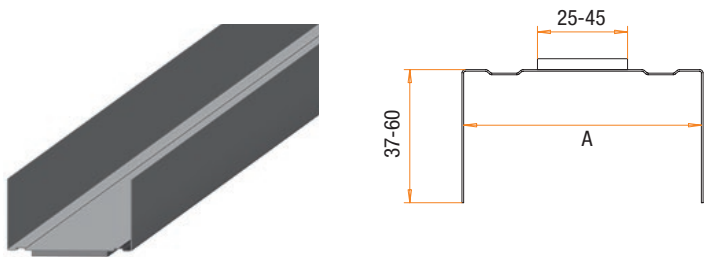
PARTITION WALL PROFILES

CORNER PROTECTION HS 29/29



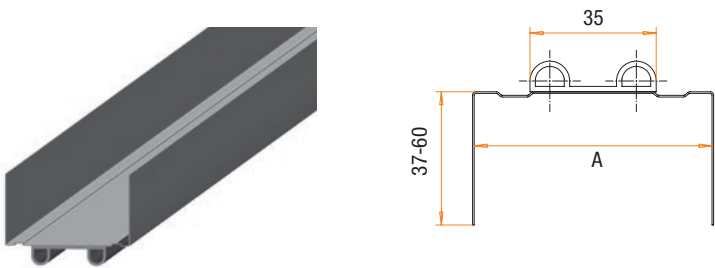
A	material/ mm	length/ mm	pcs/ bundle	kg/ m
29/29	0.56	2500	20	0.26
29/29	0.56	2600	20	0.26
29/29	0.56	2700	20	0.26
29/29	0.56	2800	20	0.26
29/29	0.56	3000	20	0.26
29/29	0.56	3300	20	0.26

Floor and ceiling runners with sealing tape
RUNNERS SKF/37. SKF/60



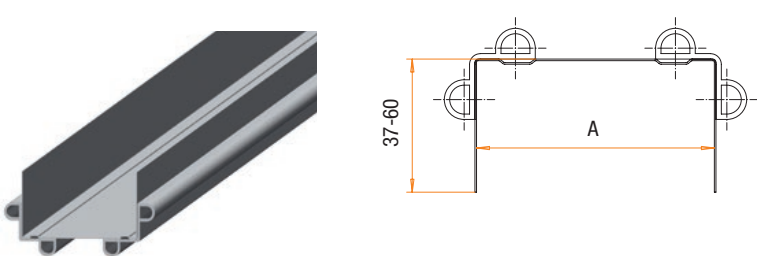
A	material/ mm	length/ mm	pcs/ bundle	kg/ m
42	0.56	3000	10	0.49
50	0.56	3000	10	0.53
66	0.56	3000	10	0.60
70	0.56	3000	10	0.62
95	0.56	3000	10	0.72
120	0.56	3000	10	0.81
SKF/60				
66/60	0.56	3000	10	0.76
70/60	0.56	3000	10	0.78
95/60	0.56	3000	10	0.90
150/60	0.56	3000	8	1.13

Floor- and ceiling runners with sealing rubber
RUNNERS SKE + EPDM (<40DB)



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
42	0.56	3000	10	0.53
50	0.56	3000	10	0.57
66	0.56	3000	10	0.64
70	0.56	3000	10	0.66
95	0.56	3000	10	0.76
120	0.56	3000	10	0.85
SKE/60				
66/60	0.56	3000	10	0.80
70/60	0.56	3000	10	0.82
95/60	0.56	3000	10	0.94
150/60	0.56	3000	8	1.17

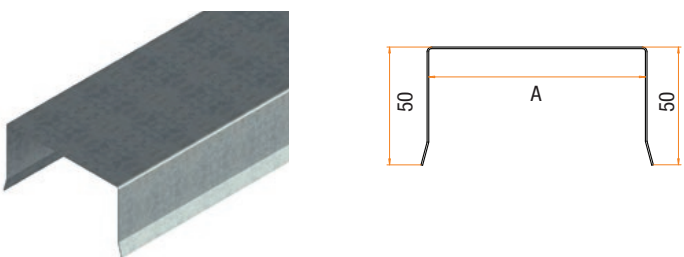
Floor- and ceiling runners with sealing rubber
RUNNERS SKT + EPDM CORNERS (>40DB)



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
42	0.56	3000	10	0.57
50	0.56	3000	10	0.61
66	0.56	3000	10	0.68
70	0.56	3000	10	0.70
95	0.56	3000	10	0.80
120	0.56	3000	10	0.89
SKT/60				
66/60	0.56	3000	10	0.84
70/60	0.56	3000	10	0.86
95/60	0.56	3000	10	0.98
150/60	0.56	3000	8	1.21

PARTITION WALL PROFILES

TRIMMING CHANNELS



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
92	0.7	3000	6	1.07
96	0.7	3000	6	1.09
118	0.7	3000	6	1.22
121	0.7	3000	6	1.24
123	0.7	3000	6	1.28
146	0.7	3000	6	1.37
147	0.7	3000	6	1.39
172	0.7	3000	6	1.53

CORNER PROFILE L 50/50



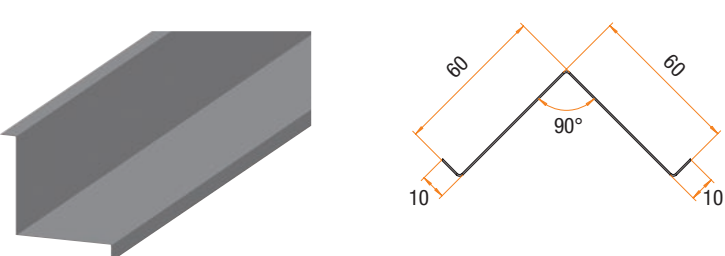
A	material/ mm	length/ mm	pcs/ bundle	kg/ m
50/50	0.56	3000	20	0.43

BENT CORNER



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
50/50	0.56	2500	6	0.43

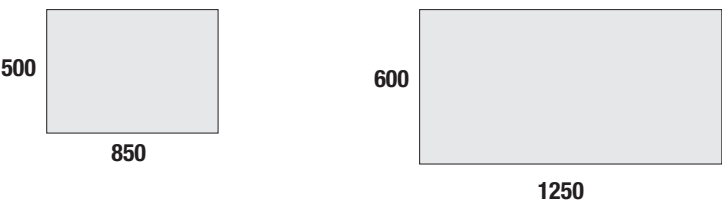
HR 60/60



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
60/60	0.56	3000	20	0.62

PARTITION WALL EQUIPMENT

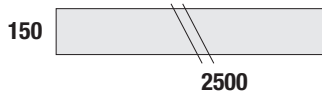
SUPPORT PLATES



Sink support for wet room or toilet or railing support and, if necessary, eg TV support under plasterboard.

A	material/ mm	length/ mm	pcs/ bundle	kg/ m
500	1.0	850	pcs	3.4
600	1.0	1250	pcs	9

CABINET SUPPORT PLATE



Cabinet supports are suitable for all cabinets, such as kitchen cabinets.

A	material/ mm	length/ mm	pcs/ bundle	kg/ m
150	1.0	2500	pcs	1.2

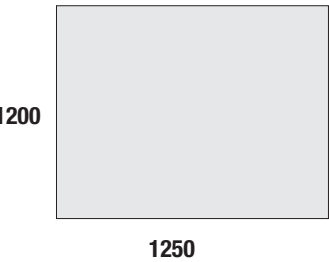
SHOWER SUPPORT PLATE



Wet room shower support plates.

A	material/ mm	length/ mm	pcs/ bundle	kg/ m
400	1.0	1250	pcs	4.0

TV-SUPPORT/BURGLAR PLATE



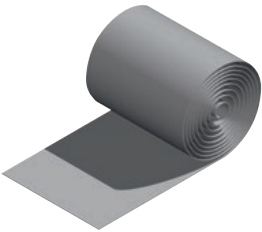
A flat panel under plasterboard to support the TV or for burglary protection the entire wall can be protected.

A	material/ mm	length/ mm	pcs/ bundle	kg/ m
1250	1.5	1200	pcs	18

PARTITION WALL EQUIPMENT

SEALS FOR SOUNDPROOFING

PF



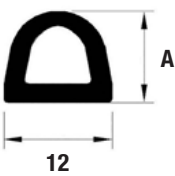
Polyethylene tape insulates water, moisture, air and dirt. The structure of the strip is flexible under compression and loading and is suitable for fixed, still structures. There is an adhesive sticker on the bottom of the tape.

A	material/ mm	length/ m	pcs/ bundle	kg/ m
25	3	25	roll	
40	3	25	roll	
66	4	25	roll	
95	4	25	roll	

EPDM35



EPDM10x12



The purpose of EPDM cell rubber is to seal structures. There is an adhesive sticker on the bottom of the EPDM seal.

A	material/ mm	length/ m	pcs/ bundle	kg/ m
35		50	roll	
10		50	roll	

STEEL STRIP



For support, panel support or other mounting. Supplied as rolls.

A	material/ mm	length/ m	pcs/ bundle	kg/ m
100	1.0	2,5	pcs	0.8
150	1.0	2,5	pcs	1.2
300	1.0	3,6	pcs	3.64
500	0.55	2,5	pcs	5.91
600	1.0	2,6	pcs	12.48

SCREWS



Drywall Screw Phosphated
Drywall screw + drill tip
Drywall screw + counter spiral
Hobau tight spiral
Tight spiral
Nail-anchor
Eko 16 + drill tip (screw head 1,0mm)

A	pcs/ bundle
25, 35, 45	10000
25, 35	10000
25, 35, 45	10000
25, 41	10000
13,19	10000
25	500
16	500

Compartmentalizing Stud RYC

Features of the wall between apartments

The PROFILE sound system is implemented as a single-frame partition separating the apartments. The installation work proceeds as apartment- and floor-specific defined structural parts, so that there is no material loss. The PROFILE sound frame system consists of a steel frame and plaster boards that are installed on both sides of the frame.

According to Part C1-1998 of the Finnish Building Code, the minimum permissible airborne sound insulation number between residential apartments is R_w 55dB.

The compartmentability of the wall structure is determined on the basis of the sheet layers, in which case the class of plasterboard 1 + 1 is EI30 and plasterboard 2 + 2 is EI60. The material thickness is 0.7 mm for non-load-bearing on-site walls and 1.2-1.5 mm for load-bearing walls.

The maximum height of a partition wall in the fracture limit state is the bending moment capacity and in the operating limit state it is the wall deflection $L/300$. The characteristic line load q_k 0,5 kN allows a maximum stud height of 8 m with two plaster boards.

Building Services Engineering

Placing building services engineering inside the structure is not recommended. The importance of the gap or opening to the airborne sound insulation of the wall is to be considered. Even the smallest unsealed cracks affect the insulation of the structure. A wall-mounted socket reduces the sound insulation of the wall. This deterioration can be reduced by sealing around the socket with plaster or mineral wool.

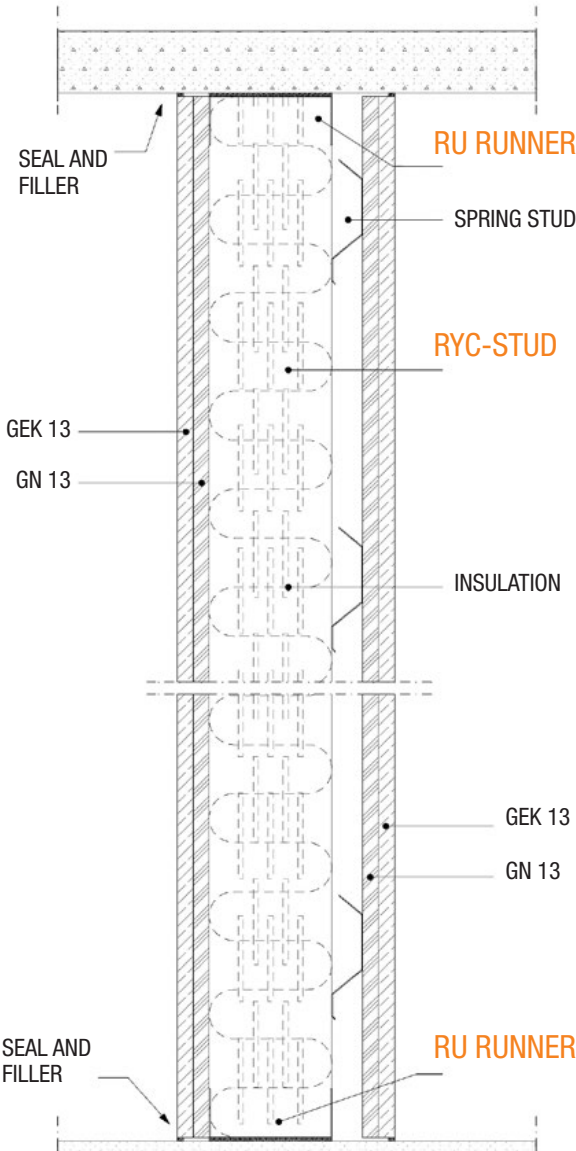
Interfaces

Sound moves in a building in different ways. Sound transition paths include, for example, straight

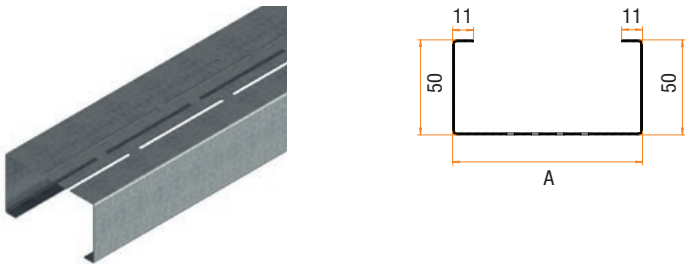
through a wall and side transitions. Flanking transmission is the sound that travels from room to room through the frame of a house or through air conditioning and heating pipes.

Boarding

Board attachments are done according to the manufacturer's instructions.

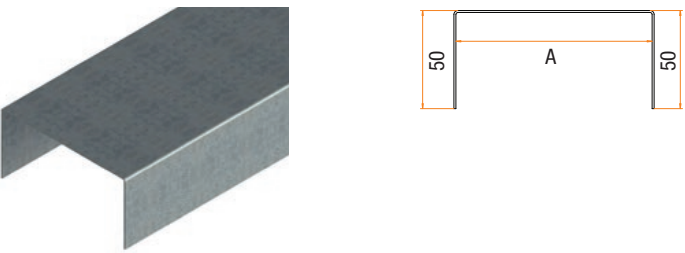


WALL FRAME BETWEEN APARTMENTS RYC



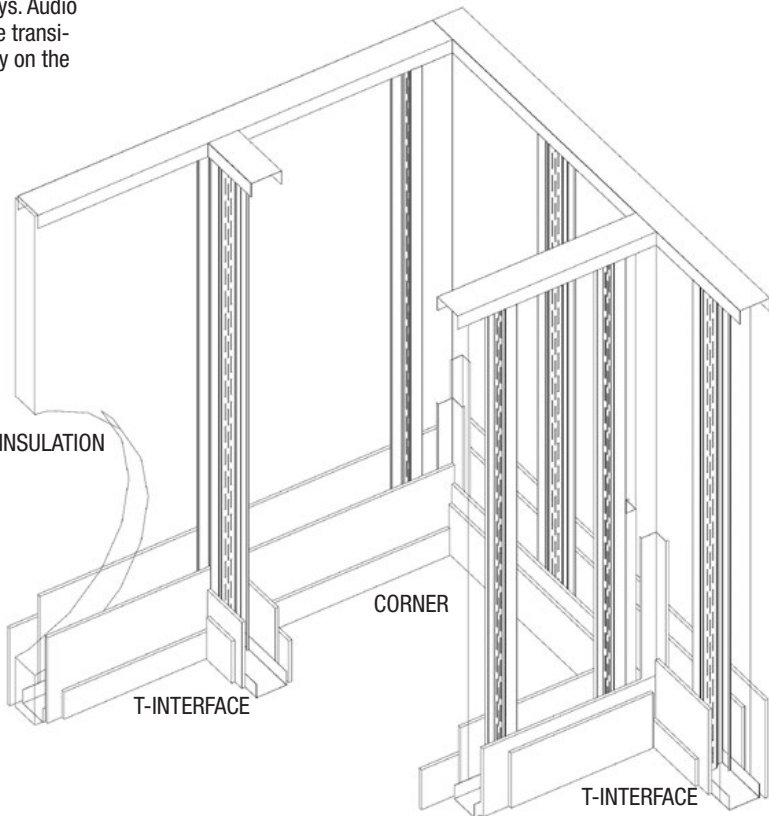
A	material/ mm	length/ mm	pcs/ bundle	kg/ m
100	0.7	3000	8	1.25
125	0.7	3000	8	1.41
150	0.7	3000	8	1.56
100	1.2	3000	8	2.15
125	1.2	3000	8	2.26
150	1.2	3000	8	2.51

WALL RUNNER BETWEEN APARTMENTS RU



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
100	0.7	3000	8	1.25
125	0.7	3000	8	1.41
150	0.7	3000	8	1.56
100	1.2	3000	8	2.15
125	1.2	3000	8	2.26
150	1.2	3000	8	2.51

Sound moves in buildings in different ways. Audio transition paths include, for example, side transitions. Careful work and using elastic putty on the seams is important.



GK Suspended Ceiling System

The thin steel plate profiles of the GK suspended ceiling system are reinforced with patented technology. The benefits already proven in wall systems can now also be used in suspended ceiling structures.

THE DEPARTMENT OF OCCUPATIONAL HEALTH HAS DONE A STUDY WITH THE GYPSTEEL GK-SUBCEILING SYSTEM WHICH PROVED THAT:

- The strain on the respiratory and blood circulation systems was less.
- The heart rate was lower and the energetic strain was less.
- The contraction frequency of the muscles was smaller.
- The installation time with Gypsteel GK-profiles was 10% shorter.
- Repetitional work with Gypsteel GK-profiles is more recommended than working with traditional sub ceiling profiles, when considering the strain on the workers musculoskeletal system.

THE GYPSTEEL GK-SUBCEILING SYSTEM IS FIRE TESTED ACCORDING TO EN 13381-1:2020 STANDARD

- EI30

GK frames can be assembled into two different basic structures, which are used as support systems for plates attached with screws.

In a **two-level truss** structure, the support frames pass over the dividing frames functioning as screwing frames, and in a single-level truss structure the frames are connected to each other by special connecting parts, the **single-level truss** is suitable, for example, for the construction of acoustically perforated 600x600mm plate ceiling structure. The distribution of frame depends on the size of the plate used and the recommendations of the plate manufacturer.

Thanks to the lightness and ergonomic features of the profiles, the structure is light and quick to install. When attaching plates, the screws sink easier and bite into the steel profiles better. Thanks to the

structure of the steel profiles, there is no risk of the screws being lifted even with special hard plates. Profiles are also easier to cut.

The load capacities of the structure have been verified on the brochure p.4-5 for products with the requirements and test methods of the suspended ceiling standard SFS-EN 13964 at VTT. CE markings for profiles according to EN 14195 and 13964, fastening parts according to EN 13964 and the entire suspended ceiling system according to EN 13964. The endurance of the load on the fasteners and hangers is ten times more before breaking. Deflection tests were performed on only the profile parts as well as on the profiles with plasterboards, the final stiffness was determined by the plasterboard attached to the profiles. The construction and load bearing combinations also meet the dimensional accuracy requirements for



suspended ceiling boarding class 2 in SisäRyl 2000 (general quality requirements for construction work).

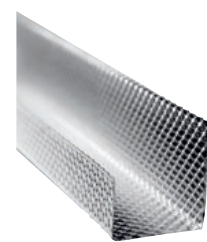
If hot appliances, such as halogen lamps, are to be placed on the ceiling extremely near the board, the type of lamp must be selected or installed in such a way that their use does not cause a constant temperature of more than +50 °C in the plasterboard structure. Constant high temperature reduces the strength of plasterboard. The installation must follow such work methods and procedures that the installations are done exactly as planned. Instruments, devices, etc. to be installed on the ceiling structure must be hung on the structures at a predetermined place and in carefully planned manner.

Approximate examples of load bearing caused by suspensions on ceiling structures:

- Suspended ceiling board (1 board layer) with insulation ≈20 kg/m²
- Suspended ceiling board (2 board layers) ≈30 kg/m²
- Ventilation ducts (note vibrations) ≈8 kg/m²
- Ventilation devices ≈10–100 kg/m²
- Cooling devices with shelf ≈7kg/m²
- Heat and water pipes ≈5 kg/m²
- Light fittings and cable tray ≈5 kg/m²
- Friezes and signs etc. ≈5 kg/m²

The concentrated load caused by the suspensions are often much more significant than the square loads, therefore they almost always have to be suspended with separate fasteners directly on the load-bearing structure. Information on most hardware-, pipe- and cable tray installations can be found in the industry specific literature.

Support system spacing of longitudinal supports GK1 (primary support) must not exceed 1200 mm. The transverse supports GK1 (secondary support) must not exceed 400 mm. The edge profile GK-C is installed at each wall and ceiling connection point with a fastening distance of max. $k / k 600$.

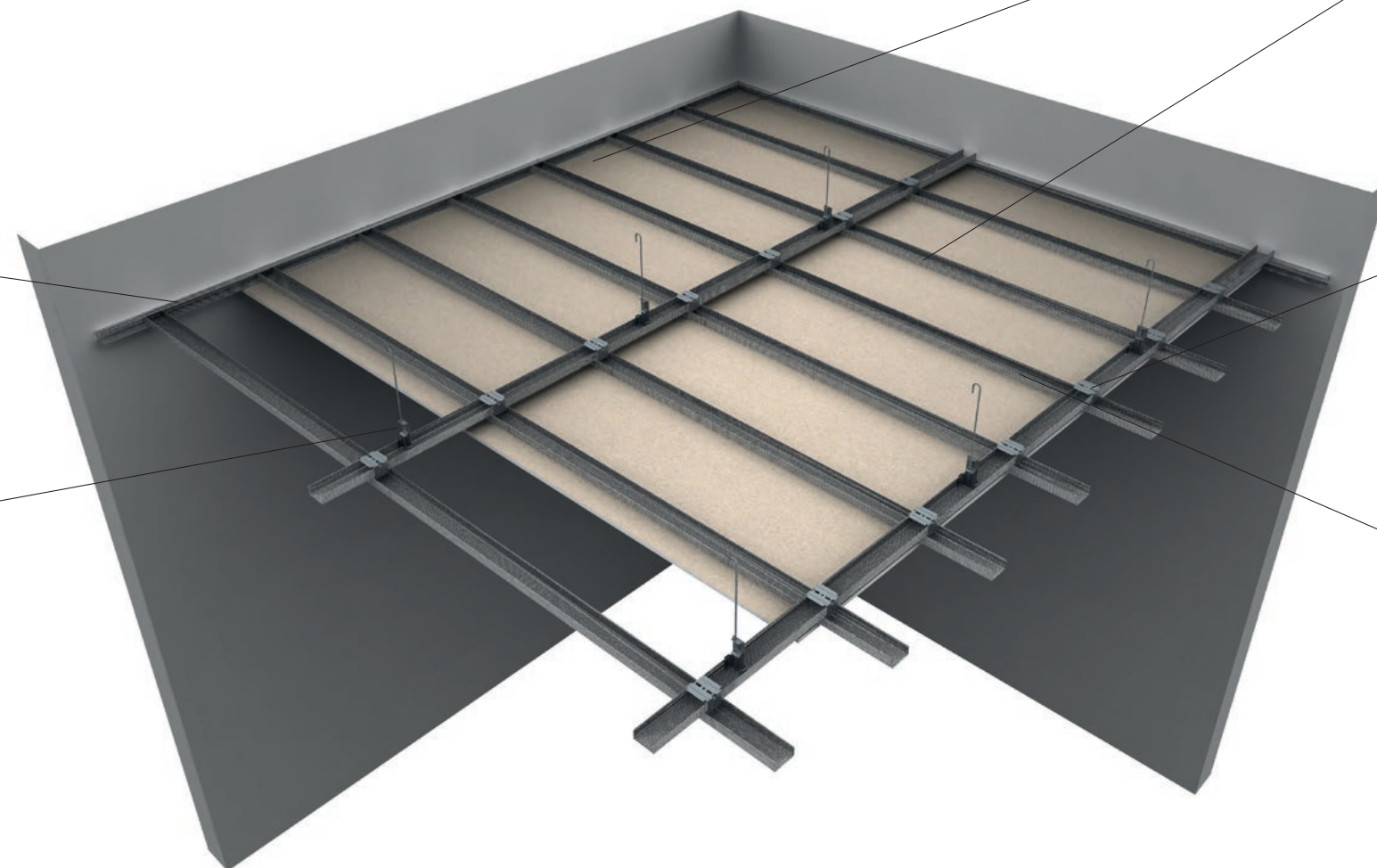


1. GKC edge and starter moulding



2. GK-454 spring, suspension bracket

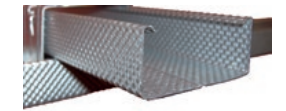
GK-454 adjustable suspension brackets



4. Plasterboard

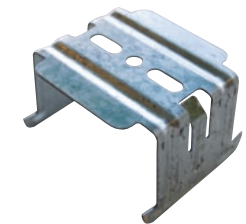
3. GK 1 Steel Stud

GK steel stud, as a secondary and primary supporter, the main profile of the structure.



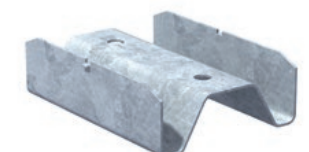
Locking Piece GK-457

The piece binds GK's primary and secondary supporters together.



GK-450, Extension Piece

By threading the piece at both ends of the profiles, it extends the frame to the desired length.



1. GKC Starter Moulding

Attach the edge mouldings to the desired height on top of the finished partition wall.

2. GK-454 Spring, Suspension Bracket

Adjustable suspension brackets GK spring + wire that only attach to longitudinal brackets ($k 1200$), placed in them with a 900 mm pitch dimension (900x1200, single plate ceiling). The first hanger is placed at a maximum distance of 600 mm from the end of the supporter as seen from the starting wall.

The fasteners for the suspension wires must be metal wedge anchors. It is not recommended to

shoot the fastener in to the concrete. The hanger wire must be carefully attached and locked on to the anchor.

3. GK 1 Steel Stud

The longitudinal supporter is mounted on top of the ending profile and the secondary supporter is installed inside the ending profile.

The installation of GK supporters begins by placing the first longitudinal support up to 600 mm from the starting wall. It is extended with a pitch of maximum of 1200 mm (single plate ceiling).

The last longitudinal supporter is installed at a distance of at least 600 mm from the end point.

The even spacing of the transverse supporters is finally determined by the length of the plate used and must not exceed 400 mm.

4. Plasterboard Single-layer Ceiling

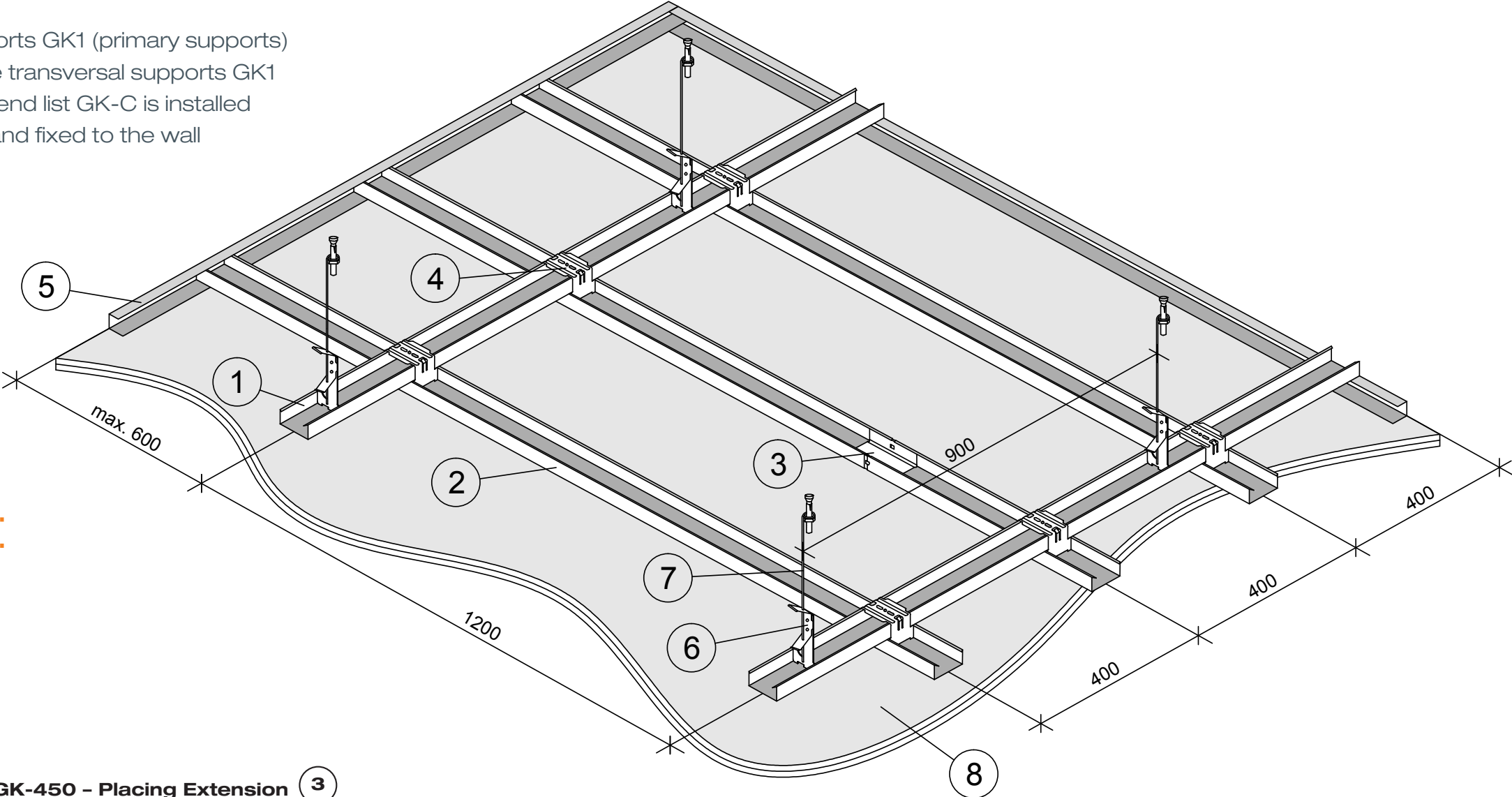
A 1200 mm wide board is used for boarding. The plates are installed parallel to the longitudinal supporters (perpendicular to the transverse supports). The plates are attached from their end

edges with screw spacing of $k 200$ and at other parts of the plate with screw spacing of $k 300$.

The plates can also be installed parallel to the transverse supporters.

The bending stiffness of the plate is considerably higher in the longitudinal direction than in the transverse direction. As a result, the overall stiffness of the structure is higher in the former method of installation mentioned.

The distance between the longitudinal supports GK1 (primary supports) is max. 1200 mm. The distance between the transversal supports GK1 (secondary supports) is max. 400 mm. The end list GK-C is installed in all joints between the wall and the ceiling and fixed to the wall with a max. distance of 600 mm.



Calculate Material Consumption Here:



www.aulislundell.fi/en
► Concepts ► Material Calculators

Details

- 1. Longitudinal supporter GK 1, h 850-1200 mm
- 2. Transverse supporter GK 1, k 400 mm.
- 3. Extension Piece GK-450
- 4. Locking Piece GK-451 and GK-457
- 5. Ending Profile GK-C1
- 6. Adjustable Suspension Brackets GK-454 + Hanging Loop Wire
- 7. Hanging Wire GK 150-2000 mm
- 8. Gyproc Plaster Boards, 1-3 layers

Load Capacity

Concentrated load of max. 2 kg / m2 can be hung from plaster board when there is no other concentrated or continuous load from the supporters.

GK-450 - Placing Extension 3

The extension of the primary supporter is made at one-third from the span between the fasteners. The extension of the transverse supporter max. one-third from the longitudinal supporter.

Hangers 6 7

The fasteners for the suspension wires must be metal wedge anchors. It is not recommended to shoot the fastener in to the concrete. The suspension wire must be carefully attached and locked to the anchor. The maximum dimensionable load allowed for the hangers is max. 25 kg. One layer of board can have a concentrated load point of max. 5 kg / 1.2 m with plaster board or a continuous load point of max. 5 kg / m suspended on a GK 1 supporter. Concentrated and continuous point loads must not affect simultaneously. Higher load or 2-3 plate layers and load: Install the hangers at a denser k-distance.

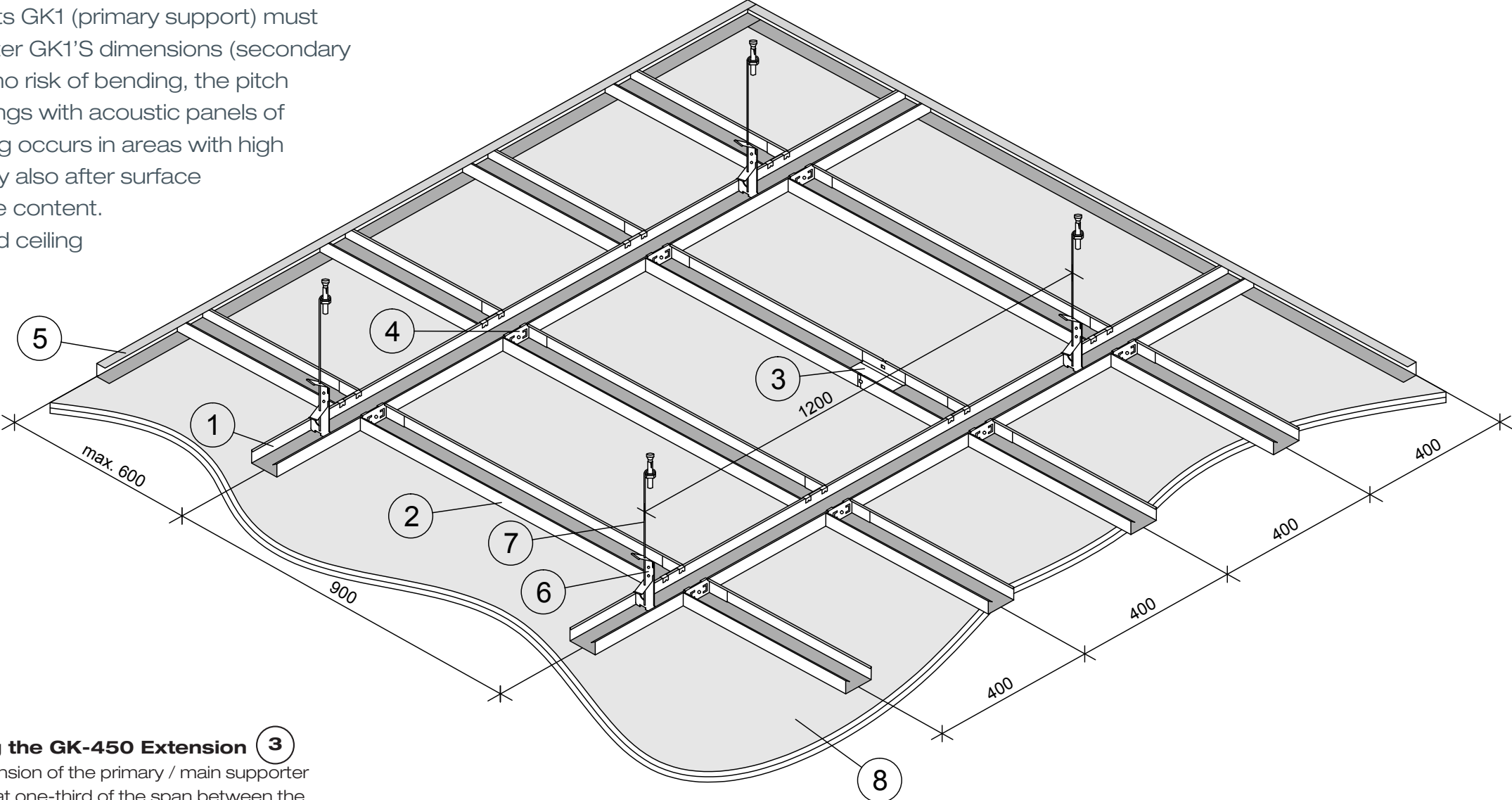
K-DISTANCE FOR GK-CEILING 2-LEVEL SYSTEM					
Plaster Boards	Minimum height mm	Weight/m² kg	Parts k-distance (mm)		
			Longitudinal Supporter	Hanger	Cross-Supporter
GN /GEK Board	217	11/13,7	1200	900	400
GN/GEK Board x 2	229	20/22,7	850	900	400

Support system the spacing of longitudinal supports GK1 (primary support) must not exceed 1200 mm. The cross-sectional supporter GK1'S dimensions (secondary support) must not exceed 400 mm, but if there is no risk of bending, the pitch dimension may be 600 mm, allowing acoustic ceilings with acoustic panels of 600x600 mm or 600x1200 mm. The risk of bending occurs in areas with high seasonal moisture or seasonal heating and possibly also after surface treatment made with products with a high moisture content. The ending profile GK-C is installed at each wall and ceiling joint with mounting distance of max. k 600.

Calculate Material Consumption Here:



www.aulislundell.fi/en
► Concepts ► Material Calculators



Details

- 1. Longitudinal Support GK 1, k 900-1200 mm
- 2. Transverse Support GK 2 or GK 3, k 400 mm.
- 3. Extension Part GK-450
- 4. Level Locking Piece GK-453
- 5. Ending Profile GK-C1
- 6. Adjustable Suspension Brackets GK-454 + Hanging Loop Wire
- 7. Hanging Wire GK 150-2000 mm
- 8. Gyproc Plaster Boards, 1-3 layers

Load Capacity

Point load max. 2 kg / m2 can be hung from plaster board when no other point or continuous load on supporters is present.

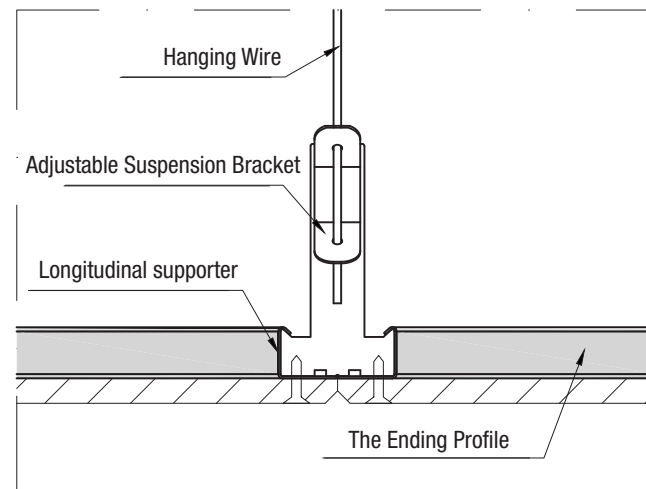
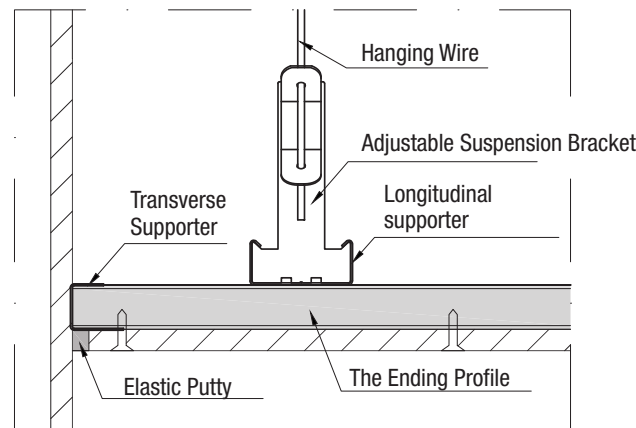
Placing the GK-450 Extension 3

The extension of the primary / main supporter is made at one-third of the span between the fasteners. The extension of the transverse supporter max. one-third of the longitudinal supporter.

Hangers 6 7

The fasteners for the suspension wires must be metal wedge anchors. It is not recommended to shoot the fastener in to the concrete. The suspension wire must be carefully attached and locked to the anchor. The maximum dimensionable load allowed for the hangers is max. 25 kg. One layer of board can have a concentrated load point of max. 5 kg / 1.2 m with plaster board or a continuous load point of max. 5 kg / m suspended on a GK 1 supporter. Concentrated and continuous point loads must not affect simultaneously. Higher load or 2-3 plate layers and load: Install the hangers at a denser k-distance.

K-DISTANCE GK-CEILING 1-LEVEL SYSTEM					
Plaster Boards	Minimum Height mm	Weight/m² kg	Parts K-distance (mm)		
			Longitudinal supporter	Hanger	Transverse Supporter
GN Board	190	11	900	1200	400
GEK Board	190	13,7	1200	900	400
GN Board x 2	202	20	900	1000	400
GEK Board x 2	202	22,7	1200	650	400



Supporters

The installation of the supporters begins by placing the first longitudinal support at most 600 mm from the starting wall. It is extended in a two-level system with a split dimension of up to 1200 mm (single-plate roof) or a split dimension of max 850 mm (double-plate roof), the single-level divisions can be seen in the table. The last longitudinal supporter is installed at a maximum distance of 600 mm from the end point.

The even spacing of the transverse supporters is determined by the width of the final plate used, and shall not exceed 400 mm. The transverse supporters are attached to the longitudinal supporters with locking pieces. In a single-level system, the length of the transverse supporters is either 835 mm or 1135 mm, depending on the distribution of the transverse supporters, which is determined by the type of the plate.

Hanging

Adjustable suspension brackets GK spring + wire (wire length 150 .. 2000 mm), which are attached only to longitudinal supporters (k 1200 .. 850), are placed in them with a 900 mm pitch dimension (900x1200 mm single-plate roof and 900x850 double-plate roof), you can see the distribution of the hangers of the single-level system in the table. The first hanger is placed at a maximum distance of 600 mm from the end of the supporter as seen from the starting wall. The hangers must be firmly attached to the structure. Attaching them to the concrete by shooting is not recommended. The use of plastic anchors / plugs in the attachment of hangers is prohibited.

Height of the System

Two-level: wire + hanger 150 .. 2000 mm + brackets 56 mm + plates n * 13 mm and single-level: wire + hanger 150 .. 2000 mm + brackets 28 mm + plates n * 13 mm

Joining the Wall

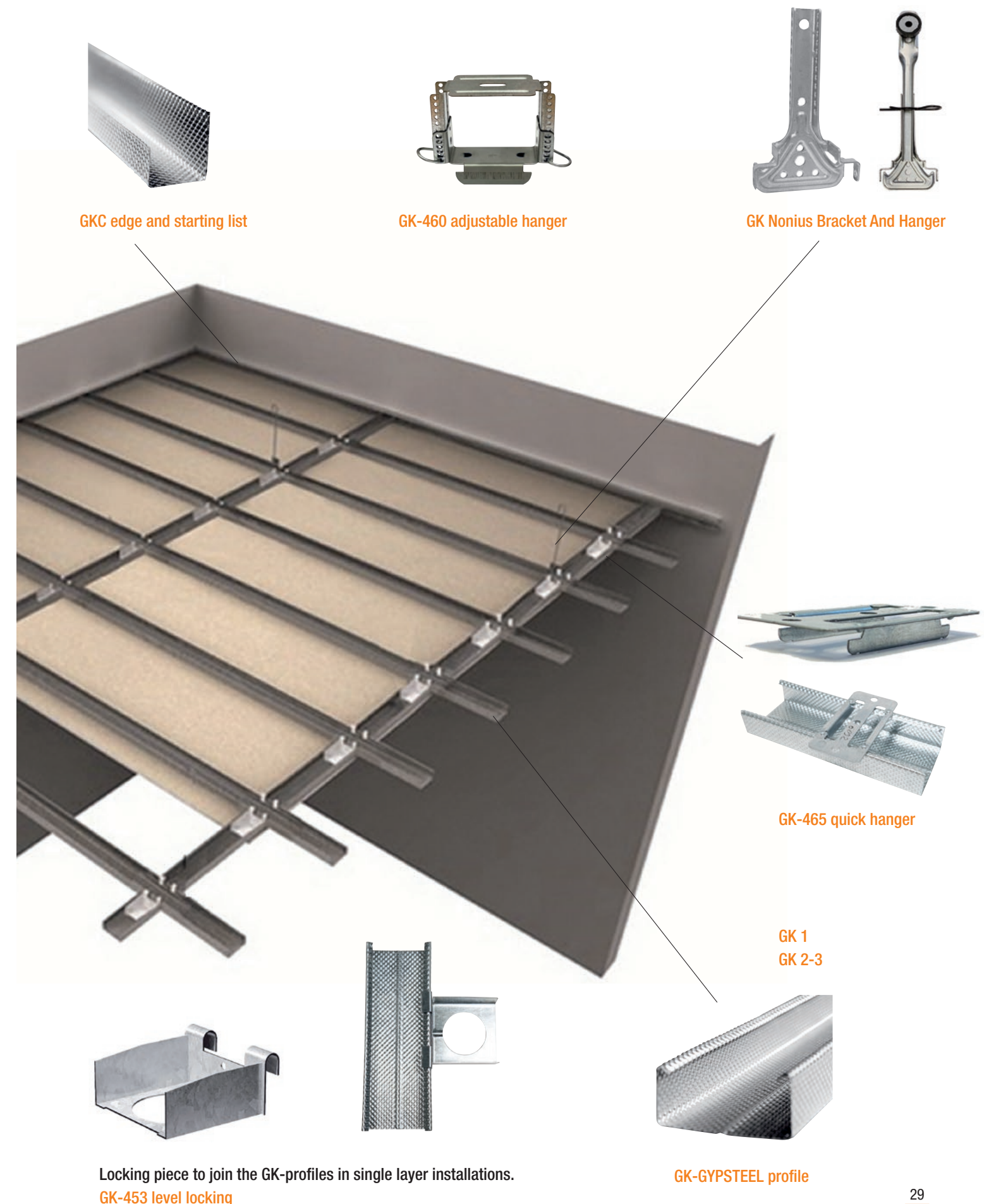
The ending profile GK-C or the corner profile GK-L is installed at each wall and ceiling connecting point between the mounting max. k 600., When it is desired to improve the acoustics, an EPDM seal is attached to the moulding, or a gap of 10 mm is left between the plaster board and the wall, which is filled with elastic putty.

Placing the Extension Piece

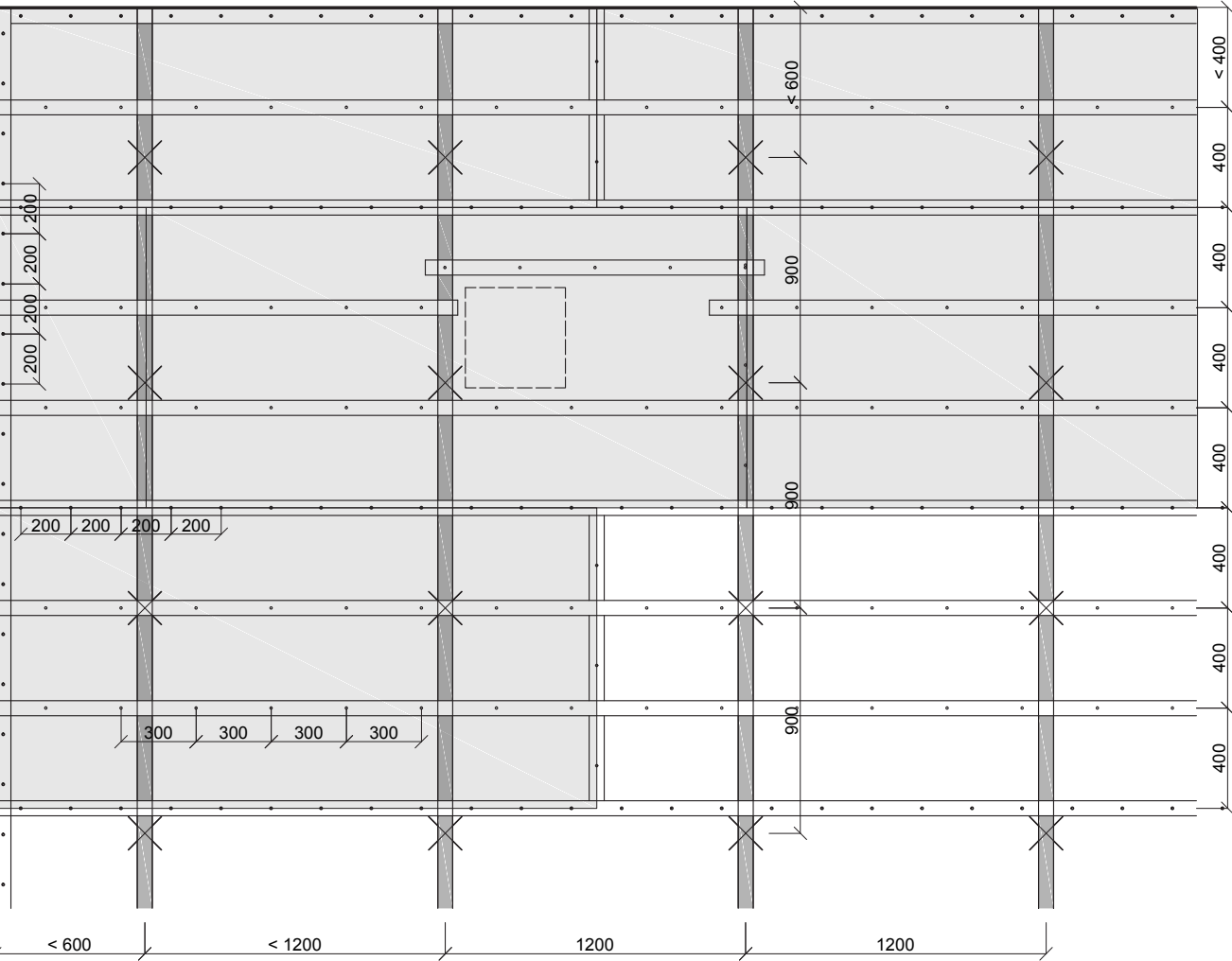
The extension of the primary supporter is made at one-third of the span between the hangers. Extension of the transverse supporter max. one-third away from the longitudinal support.

Inspection Hatch

The division frame cut off at the inspection hatch must be replaced with an additional frame to be installed on the side of the hatch. Correspondingly, if the support frame has to be cut off, an additional support frame suspended separately from the upper base must be installed next to the hatch. The hatches are attached with L-pieces and screws against the plating surrounding the installation opening. To avoid possible problems due to changes in the shape of the door or the closing clearance, it is not recommended to attach the hatch to the support frames.



SINGLE LAYER CEILING



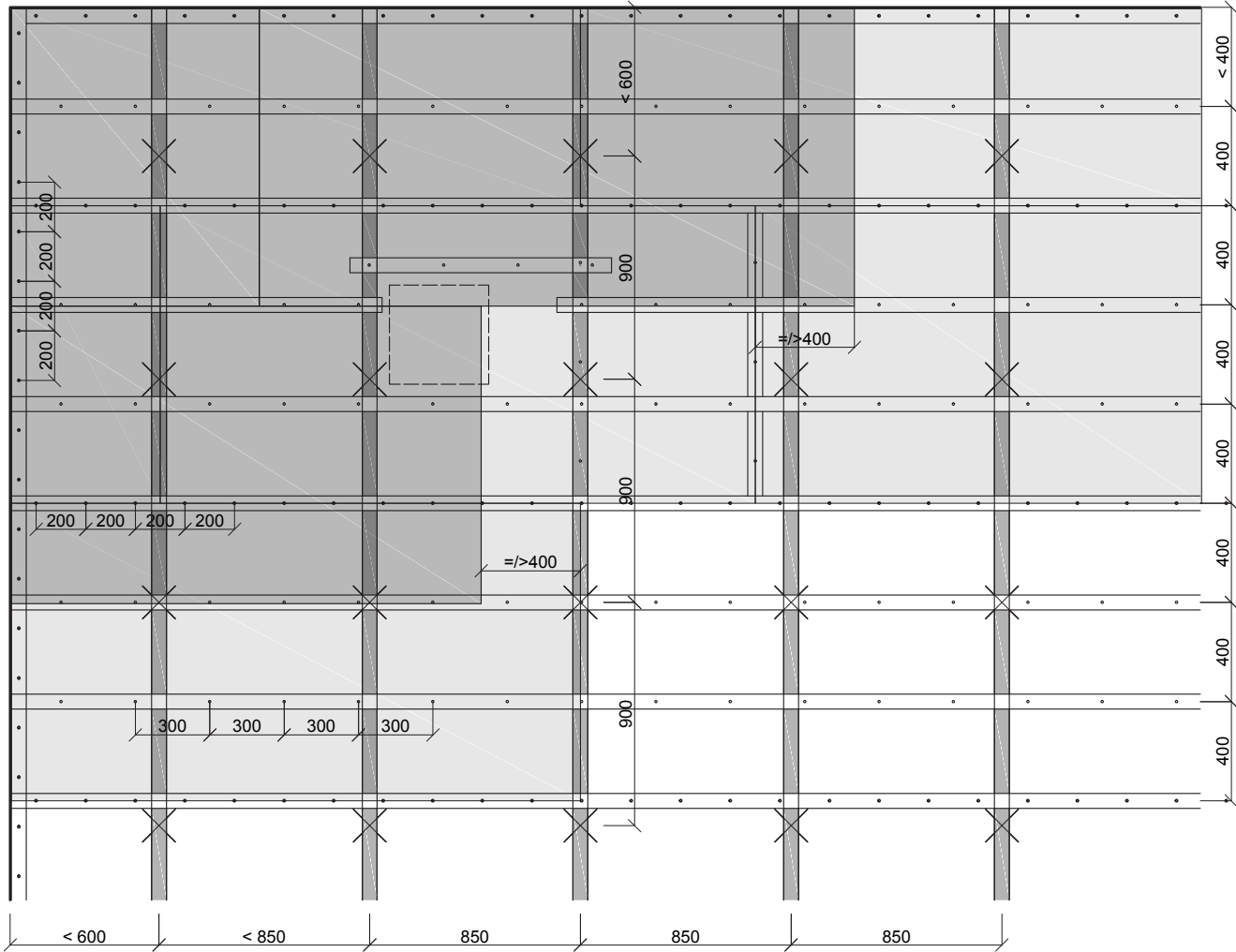
Single plate layer ceiling with a two-level truss structure (seen from below).

A 1200 mm wide board is used for boarding. The plates are installed parallel to the longitudinal supporters (perpendicular to the transverse supports). The plates are attached at their end edges at k 200 intervals and at other intervals at k 300 intervals. The plates can also be installed parallel to the transverse supporters. The bending stiffness of the plate is considerably higher in the longitudinal direction than in the transverse direction.

As a result, the overall stiffness of the structure is higher in the former method of installation. If there is no support frame left at the seam of the boards, an additional frame must be added as a screw base behind the seam.

This applies in particular to butt joints between the ends of plates in a single-layer ceiling, in which transverse frame pieces have to be added between the division frames in order to achieve the required screwing density.

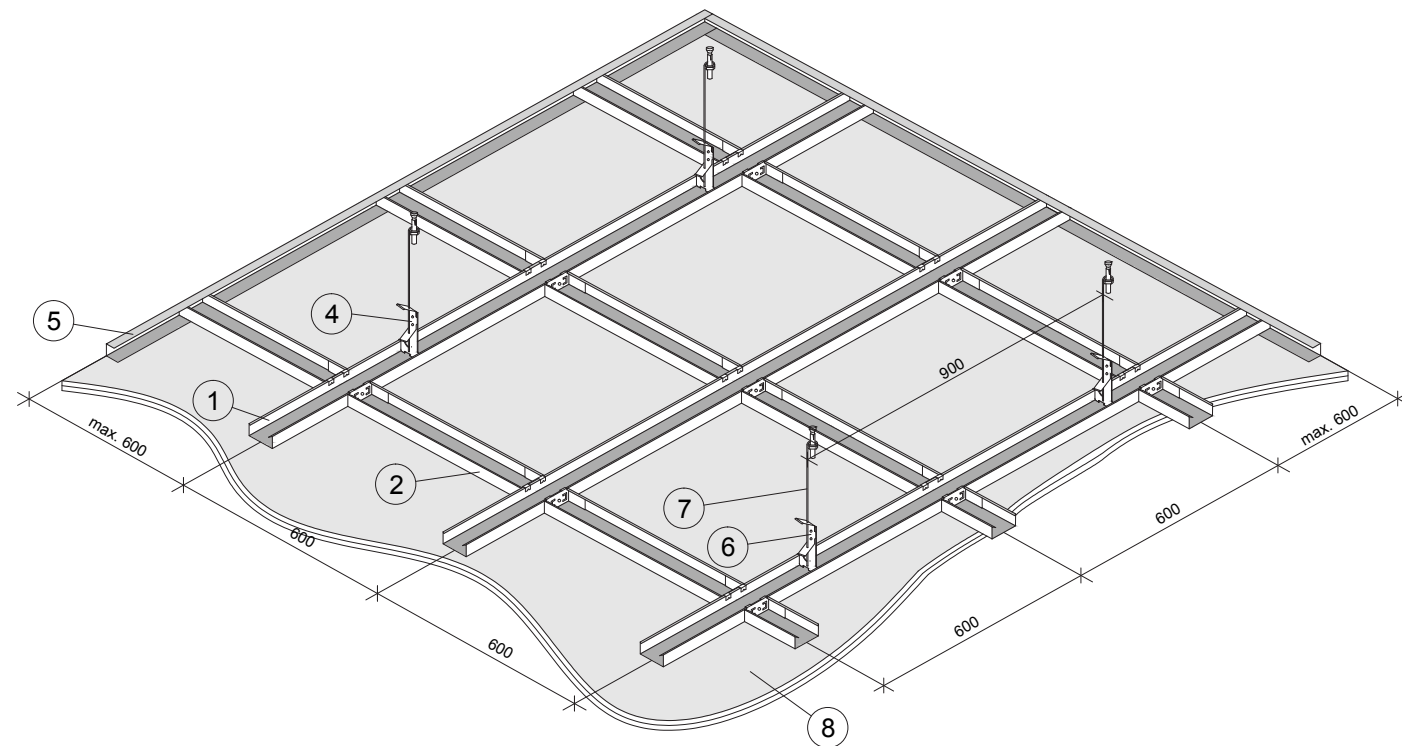
TWO LAYER CEILING



Double plate layer ceiling with a two-level truss structure (seen from below).

The plates of the first plate layer are installed so that the plate seams do not align with the plate seams of the second plate layer. They can be "Running joints". Overlap with the plate seams of the second plate layer in both directions by at least 300 mm.

Both plate layers are installed parallel to the longitudinal supporters. In a two-layer plate solution, the first sheet layer is attached with about 600 pitch dimensions. The second plate layer is attached to the support system through both plate layers at the same screw intervals as the plates of one plate layer.



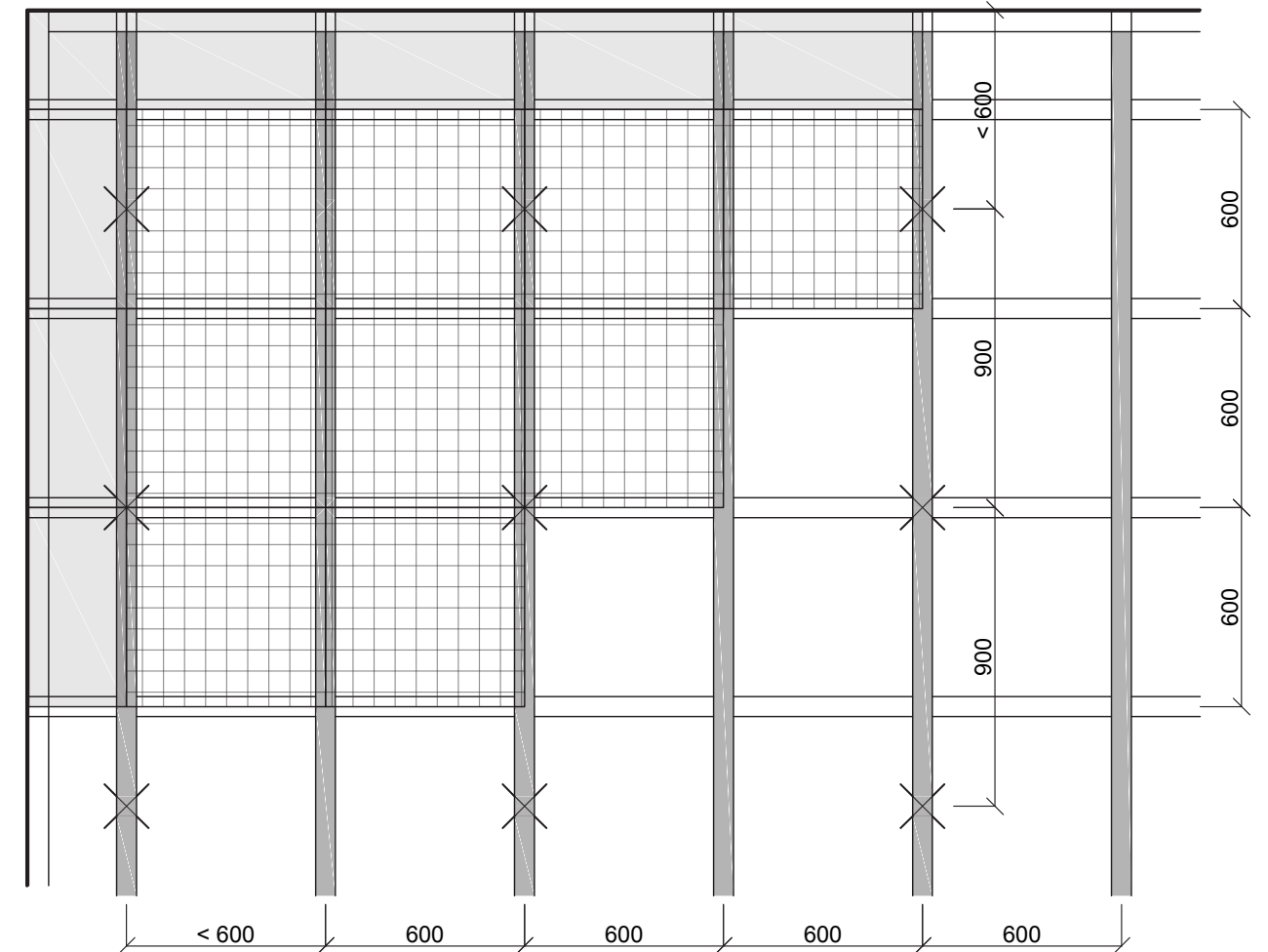
Details

1. Longitudinal Supporter GK 1, h 600 mm
2. Transverse Supporter GK, h 600 mm
3. Extension Piece GK-450
4. Level Locking Piece GK-453
5. Ending Profile GK-C1
6. Adjustable Suspension Brackets GK-454 + Hanging Loop Wire
7. Hanging Wire GK 150-2000 mm
8. Gyproc Plaster Boards, 1-3 layers

The most common sizes of acoustic panels are 600x600 and 600x1200, with a single-level support system, the division of the supporters can be done with a division 600x600 or 300x1200 suitable for acoustic panels in the case where there is no risk of bending. The risk of bending occurs in rooms with

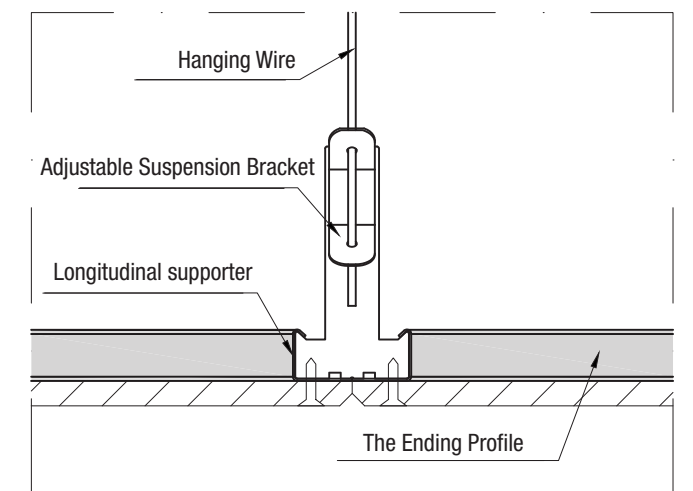
high seasonal humidity or seasonal heating and possibly also when surface treatment is performed with high moisture content products.

Longitudinal supporters with a spacing of 600 m and transverse supporters are attached to the

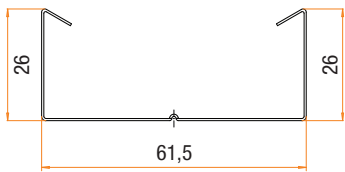
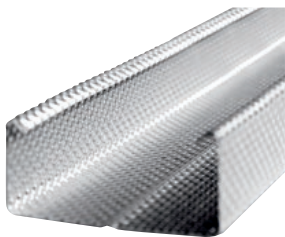


Ceiling of acoustic 600x600 panels with a single-level truss structure (seen from below).

longitudinal supporters with locking pieces with a spacing of 600 m, the length of the transverse supporters here being 535 mm. Adjustable hanging brackets only attach to the longitudinal supporters and are placed in them with a 900 mm pitch dimension.

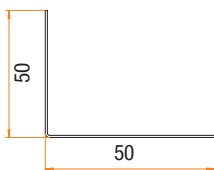
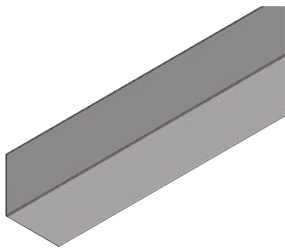


GK-GYPSTEEL STUD



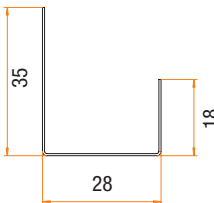
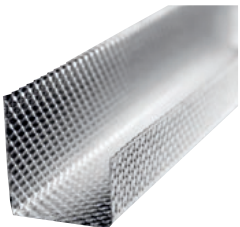
A	material/ mm	length/ mm	pcs/ bundle	kg/ m
60	0.50	3000	10	0.53
	0.50	4000	10	0.53
	0.50	Quantity Measure	10	0.53

CORNER



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
30/40	0.50	3000	20	0.3
50/40	0.50	3000	20	0.38
50/50	0.50	3000	20	0.43

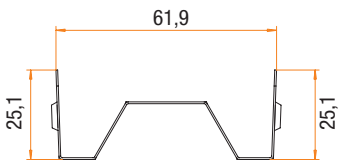
GK-C GYPSTEEL STARTING



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
	0.50	3000	10	0.34

Connection Piece for GK -profiles.

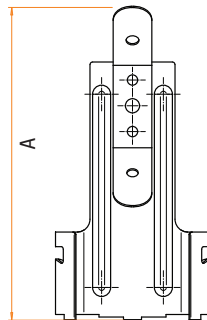
GK-450 CONNECTOR PIECE



A	material/ mm	pcs/ bundle	kg/ 100
60/60	0.60	100	4.00

Adjustable hanger spring for GK-profiles. Adjustment margin ► 140 mm

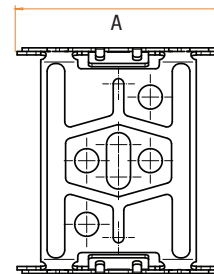
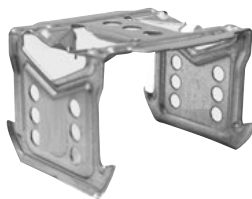
GK-456 SPRING 0,40 KN



A	material/ mm	length/ mm	pcs/ bundle	kg/ pcs
100	1.0		100	0.59

Locking piece for joining GK-profiles in 2-level installation.

GK-457 LOCKING PIECE 0,40 KN



A	material/ mm	length/ mm	pcs/ bundle	kg/ pcs
60	0.8		100	0.40

Locking piece for joining GK-profiles in 1-level installation.

GK-453 LEVEL LOCKING



A	material/ mm	pcs/ bundle	kg/ pcs
60	0.6	100	0.40

LOOP WIRES



A	material/ mm	length/ mm	pcs/ bundle	kg/ 100 pcs
300		300	100	6
500		500	100	9
700		700	100	12
900		900	100	16
1100		1100	100	20
1300		1300	100	24
1500		1500	100	29
1700		1700	100	35
1900		1900	100	40

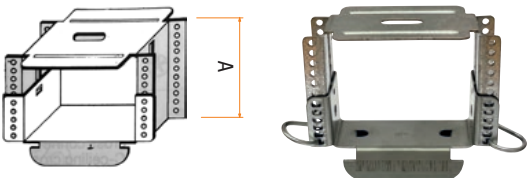
GK-456 JOIST HANGER



A	material/ mm	pcs/ bundle	kg/ pcs
60	1.0	10	0.31

Straight hanging from profile to ceiling 0.40 kN. Quick installation.

GK-461-462 U-HANGER GK DAMPER DB30
59-108 mm 0,40 kN



	A	material/ mm	pcs/ bundle	kg/ pcs
60	59-108	1.00	100	0.13
Nouniussokka				0.06

GK-461-462 U-HANGER GK DAMPER DB30
Vibration Damper 30db
Flat U-hanger 0,4 kN.



	A	material/ mm	pcs/ bundle	kg/ pcs
dB30 Rubber				0.10
U hanger	125	0.9	10	0.06
U hanger	200	0.9	10	0.08

GK NONIUS BRACKET AND HANGER



	material/ mm	pcs/ bundle	kg/ pcs
dB30 Rubber			0.10
Bracket 26	125	100	0.48
Hanger 27	235	100	0.06
Nounius Pin			0.06

INSPECTION HATCH TL



Non fire classified inspection hatch for single and double plaster board structures for both walls and ceilings.

A	color	pcs/ bundle
200x200	White	6
300x300	White	6
400x400	White	6
500x500	White	6

HATCH TL



The plasterboard coated hatch opens and closes with one push (push-up). Thanks to the innovative fastening method, the plaster cover has no screws, which makes finishing the surface of the door easy. The surface of the door can be painted or covered with wallpaper, this helps achieving a uniform-looking ceiling or wall surface. The seal between the installation frame and the cover prevents dust from accumulating at the edges of the door. Sold by piece.

A	color	pcs/ bundle
200x200	White	1
300x300	White	1
400x400	White	1

FIRE HATCH EI 30 – FIRE CLASSIFICATION EI 30



Tested and approved in EI2 class 30 building component, type approved VTT-RTH-00032-11. The hatch also acts as a sound insulating hatch, R_w 38 dB. The hatch is fire tested on both sides in both horizontal and vertical position, applying the standard SFS-EN 1634-1. The door installation size is the specified door size. Open with a 5mm Allen key. Sold by piece.

A	color	pcs/ bundle
200x200	White	4
300x300	White	4
400x400	White	4

COVER PLATE



Screw-mounted frameless cover plate for plate structures. The cover plate has holes for mounting screws. Color: White, RAL 9016. Sold by piece.

A	color	pcs/ bundle
140x140	White	6
200x200	White	6
300x300	White	6
460x460	White	6

More Room with Liune

Liune Door brings comfort to your home, office and public spaces. Liune's comprehensive door selection includes high-quality massive MDF doors, wet room doors, sauna doors, mirror and glass doors, technical doors, decorative doors and art and print doors. The collection has been supplemented with new representative mirror doors as well as a modern Liune Stripe door, which can also be found in the hinged Liune Space door models.

THE FINNISH LIUNE IS SUITABLE FOR BOTH NEW CONSTRUCTION AND RENOVATION.

The Liune intermediate door slides completely inside the wall structure, because of its embedded handles. The doorways are threshold-free and unobstructed. The doors move easily and are very safe during both installation and operation.

Among the numerous door models, everyone will find an alternative that suits their style. As interior design trends change, the door is also easily replaceable. The Liune Door product is completed by the hinged door Liune SPACE collection.

Liune is an Entity with Door Delivery that Consists of

- ✓ Ready-to-install sliding door element
- ✓ Partition door
- ✓ Frames



Liune Door Sound Insulation

DOOR MODEL	Door thickness mm	Frame [mm] 66-95-120 [measured]	Rw (dB)	DOOR MODEL	Door thickness mm	Frame [mm] 66-95-120 [measured]	Rw (dB)
MASSIVE DOOR				DECORATIVE DOORS			
D1 HOPE	40	K+95+K	28	D15 SURFACE	8-40	-	***
D2 STRENGHT	25	K+95+K	23	GLASS DOORS			
D3 MAGIC	25	K+95+K	23	D7 LIGHT	25	K+95+K	23
D4 CLASSIC	25	K+95+K	23	D8 STAR	25	K+95+K	23
D5 THEME	25	K+95+K	23	D9 TIME	8	K+95+K	17
D6 MOUNTAIN	25	K+95+K	23	D10 REFLECT	25	K+95+K	17
D13 WAVE	25	K+95+K	23	D26 KARE	32	K+95+K	23
D16 DESIGN	20-40	-	**	ART AND PRINT DOORS			
D17 EFFECT	25	K+95+K	22	D14 MYDOOR	8-40	-	32
D19 LIGHT	32	K+95+K	23	D20 ART	8-40	K+95+K	**
D22 SAFE	25	K+95+K	23	ACOUSTIC DOORS			
D20 ART	8-40	-	**	D18 CALM	25	K+95(V)*+K	32
D21 BLACK	25	K+95+K	23	TECNICAL DOOR			
D23 STRIPE	25	K+95+K	22	D22 SAFE	25	K+95+K	23
D24 CITY	32	K+95+K	22	** dB by The Door			
D25 JOY	32	K+95+K	22	*** Decorative Sliding doors are without dB value			

K = plasterboard 12,5 mm
The lab-tested timber door Rw 12dB. Tests were conducted by Sitowise Group Oyj/ Helimäki Acoustics.

V = Acoustic tile

* = Door Threshold



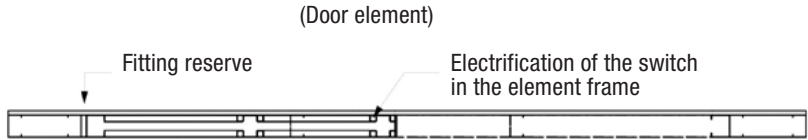
Spacial Solutions, Art and Steel en.pyörre-talo.fi

LIUNE
NORDIC
DESIGN

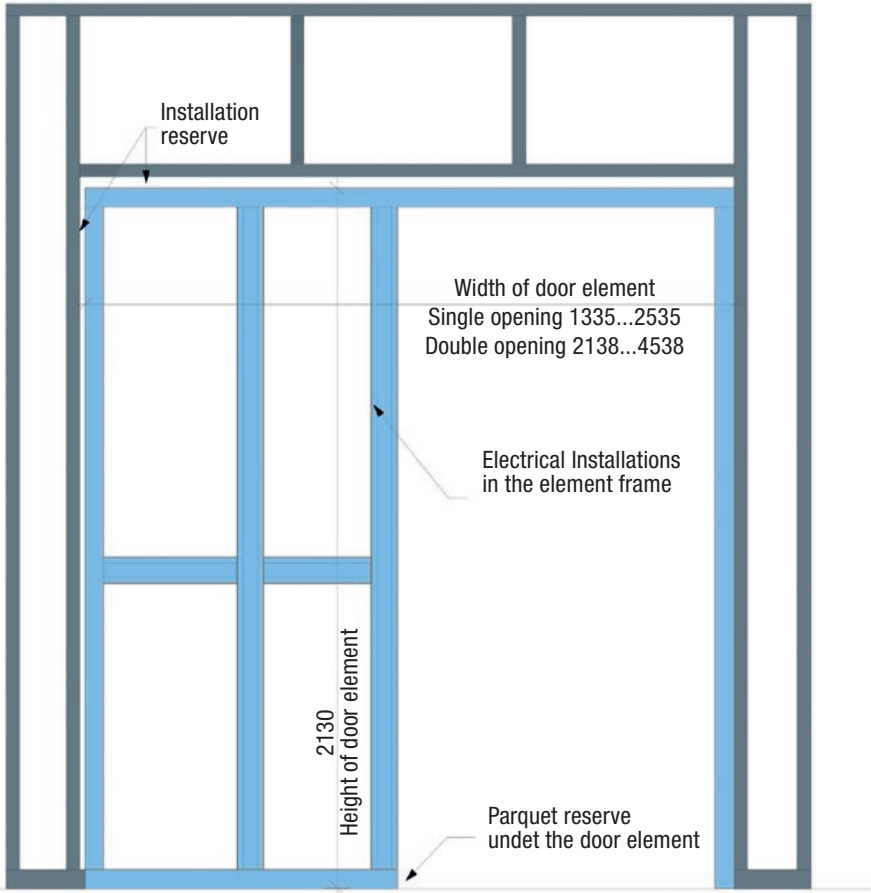
Liune Adds More Square Meters Available for Sale
www.liune.fi/products

LIUNE ELEMENT FACIAL - AND HORIZONTAL VIEW
And Electrical Wiring Dimensions

Horizontal view 1:20 wall
frame, 1. boarding
and door element



Facial view 1:20
wall frame and
door element



PROPERTIES OF ELECTRICAL FITTINGS FOR DIFFERENT ELEMENTS AND DOORS		
FRAME THICKNESS IN mm	DOOR IN mm	PARTITION WALL SOCKET AT THE LEVEL OF ELEMENT
66	25 and 32	Surface sockets
95	25	Embedded low sockets
95	32 and 40	Surface sockets
120	25	Embedded sockets
120	32 and 40	Embedded low sockets

LIUNE DOOR INSTALLATION
Element and Installation Opening Size



LIUNE DOOR STEPS

1. The Liune element comes as a welded element in two parts. On-site installation is easy by connecting the parts by screwing the slide rail into place with the screws included.
2. The partition frame is ready and the Liune element is lifted into its place..
3. The bottom of the element is installed at the level of the finished floor surface and attached to the frame.
4. The element is installed parallel to the entire wall structure. Use a laser to check that the element is in line horizontally and vertically and that the width of the door opening is the same from above and below.
4. The partition wall is paneled with the attaching screws supplied with the element, which make boarding / paneling easy and the wall surface is finished.
5. The surfaces are ready, and the door is installed on Liune's roller wheels, and the frame mouldings are fastened with the included screws.

Download Liune Door Objects www.liune.fi/bim/en
www.liune.fi ► Materials

LIUNE DOOR, ELEMENT- AND INSTALLATION OPENING SIZE. LIUNE STANDARD HEIGHT UP TO 2600 MM

Door Code		Door Opening Size (width x height)	Door element size (width x height)*	Element Installation Opening
Single Leaf Door				
66-95-120 mm	Li06	610 x 2060 mm	1335 x 2130 mm	1350 x 2170 mm
	Li07	710 x 2060 mm	1535 x 2130 mm	1550 x 2170 mm
	Li08	810 x 2060 mm	1735 x 2130 mm	1750 x 2170 mm
	Li09	910 x 2060 mm	1935 x 2130 mm	1950 x 2170 mm
	Li010	1010 x 2060 mm	2135 x 2130 mm	2150 x 2170 mm
	Li011	1110 x 2060 mm	2335 x 2130 mm	2350 x 2170 mm
	Li012	1210 x 2060 mm	2535 x 2130 mm	2550 x 2170 mm
Double Door				
66-95-120 mm	Li08	834 x 2060 mm	938 x 2130 mm	958 x 2170 mm
	Li010	1034 x 2060 mm	2138 x 2130 mm	2158 x 2170 mm
	Li012	1234 x 2060 mm	2538 x 2130 mm	2558 x 2170 mm
	Li014	1434 x 2060 mm	2938 x 2130 mm	2958 x 2170 mm
	Li016	1634 x 2060 mm	3338 x 2130 mm	3358 x 2170 mm
	Li018	1834 x 2060 mm	3738 x 2130 mm	3758 x 2170 mm
	Li020	2034 x 2060 mm	4138 x 2130 mm	4158 x 2170 mm
	Li022	2234 x 2060 mm	4538 x 2130 mm	4558 x 2170 mm

*Installation reserve of 40mm has been taken into account .

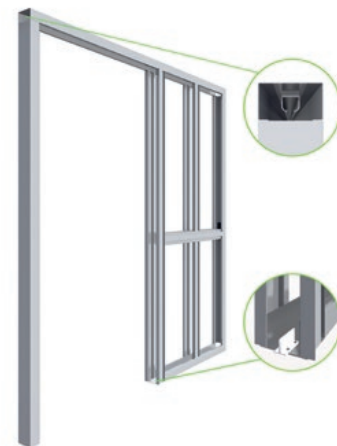
Pocket elements for all spaces. Choose what you need at:



LIUNE ELEMENT



GLASS DOOR ELEMENT



WET ROOM ELEMENT



SAUNA ELEMENT



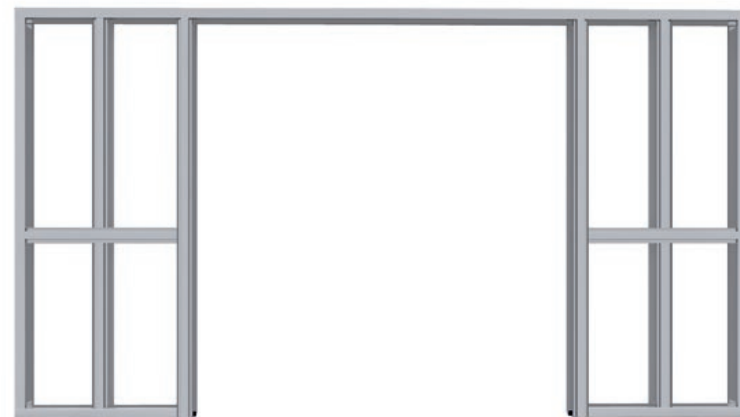
RENOVATION ELEMENT



AUTOMATION ELEMENT



CORNER ELEMENT



DOUBLE DOOR ELEMENT

Find space solutions and new ideas
for interior design with us!



More space and style with Liune!



PYÖRRE HOUSE

40 Years of accumulated knowledge and innovation from Aulis Lundell Ltd was united the Pyörre-house, which was a huge step towards low carbon emissions and circular economy. Pyörre (eng. "Vortex") was part of a Green design -project, a low carbon emission building -evaluation of both the carbon hand- and footprint, and also an evaluation of the design criteria for adaptability, dismantability and recyclability of buildings.

FUTURE BUILDING AT ITS BEST!

LIFESTYLE CHANGE IN BUILDING; CIRCULAR ECONOMY AND LIGHTER STRUCTURES PROMOTE CARBON NEUTRAL BUILDING.

STEEL IS 100% RECYCLABLE AND REUSABLE.

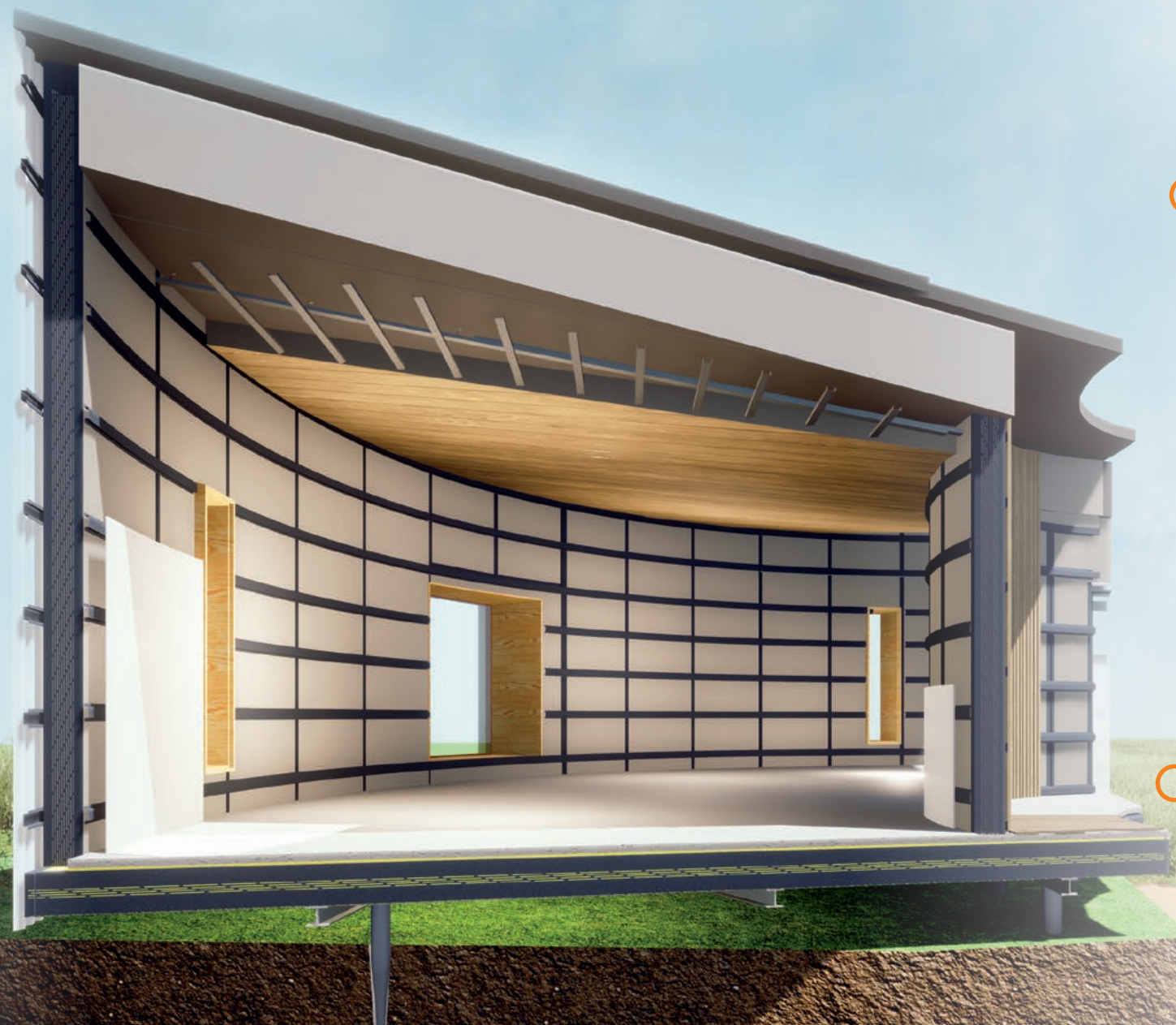
STEEL IS THE STRONGEST AND LIGHTEST BUILDING FRAME MATERIAL. A STEEL STUD WEIGHS 60 % LESS THAN A CORRESPONDING WOODEN STUD.

80% OF THE MATERIALS CAN BE RECYCLED AND RESUSED.

FUTURE BUILDINGS HAVE TO BE DESIGNED FOR THE WHOLE LIFE CYCLE, INCLUDING THE DISMOUNTING.

LIGHT-WEIGHT STRUCTURES INCREASE THE EFFICIENCY AND THE LIFE CYCLE QUALITY, AND MAKES IT POSSIBLE TO REACH THE CLIMATE GOALS.

A GENUINELY UNBROKEN RECYCLING CHAIN OF STEEL MAKES IT SUPERIOR AND ETERNAL.



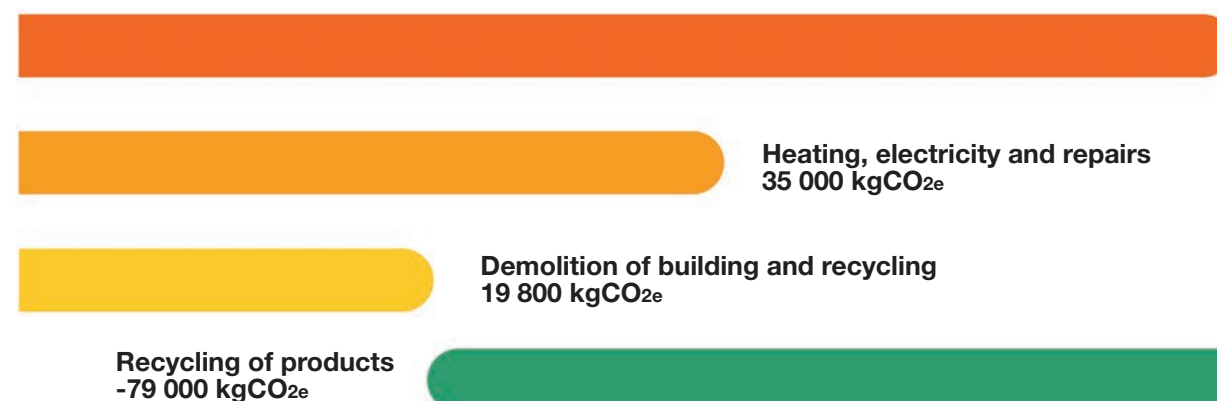
Green deed 1.st place Honorable Mention Pyörre 2021.



en.pyörre-talo.fi

How does Pyörre influence the climate?

Climate disadvantages



Products and building
61 800 kgCO_{2e}

Carbon sink of garden and recycled concrete
-4 200 kgCO_{2e}

Carbon stored in structures
-14 000 kgCO_{2e}

Climate benefits





F O R E S T M E A D O W I S L A N D



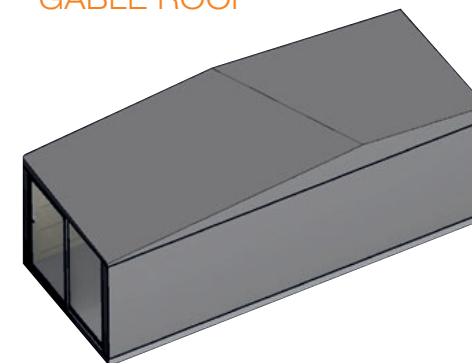
Swishing, rasping, creaking, clattering. The forest is the heirloom of being a Finn, it's the evergreen restorer. When the noise of the city and the work stress become overwhelming, the forest embraces the weary traveler with its gentle hug. This down to earth interior helps one to slow down and find inner peace. Forest glows with a soft, cozy warmth that one will miss and will want to return to again and again. Let the time and your mind halt. Enjoy the silence and breath the air refreshed by conifers, while you are listening to the birds and waiting for the sauna to get warm in the cooling night.

Can you hear the hum?

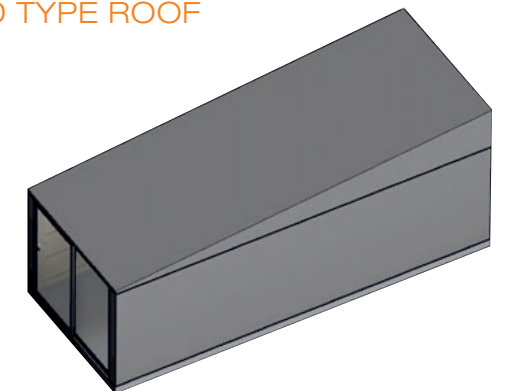
X
MOD



GABLE ROOF

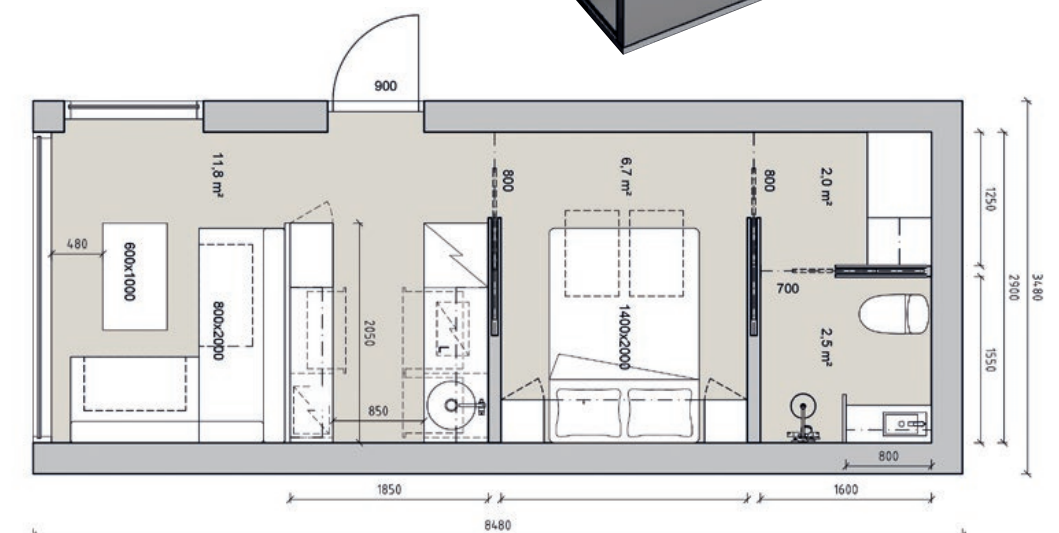


SHED TYPE ROOF



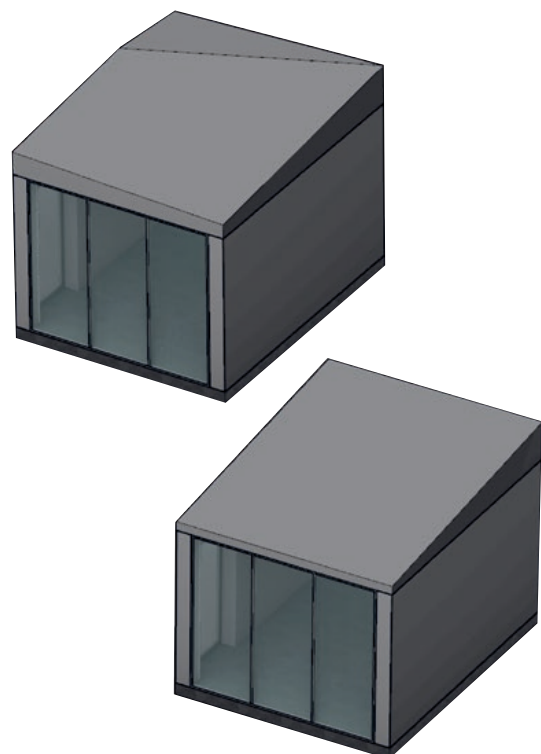
FURNITURE
AND INTERIOR
SOLUTIONS

- ISLET
- OAR
- GRAIN
- FIELD
- PRIMEVAL
- WILDERNESS



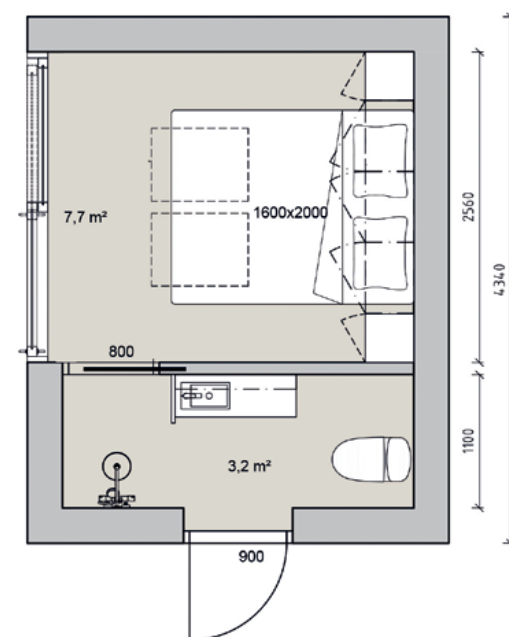


GABLE ROOF



FURNITURE AND INTERIOR SOLUTIONS

- ISLET • OAR • GRAIN
- FIELD • PRIMEVAL • WILDERNESS



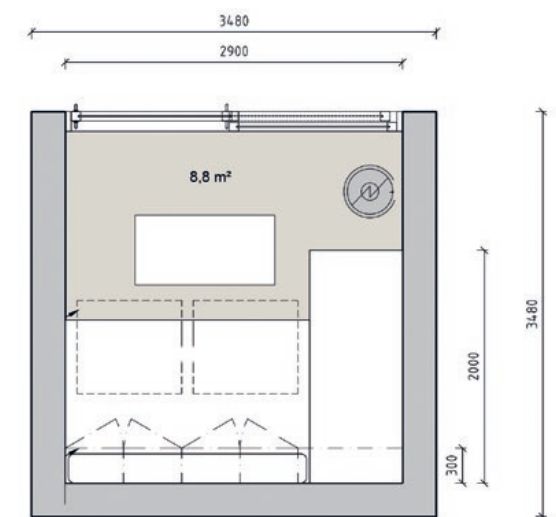
SHED TYPE ROOF

GABLE ROOF



FURNITURE AND INTERIOR SOLUTIONS

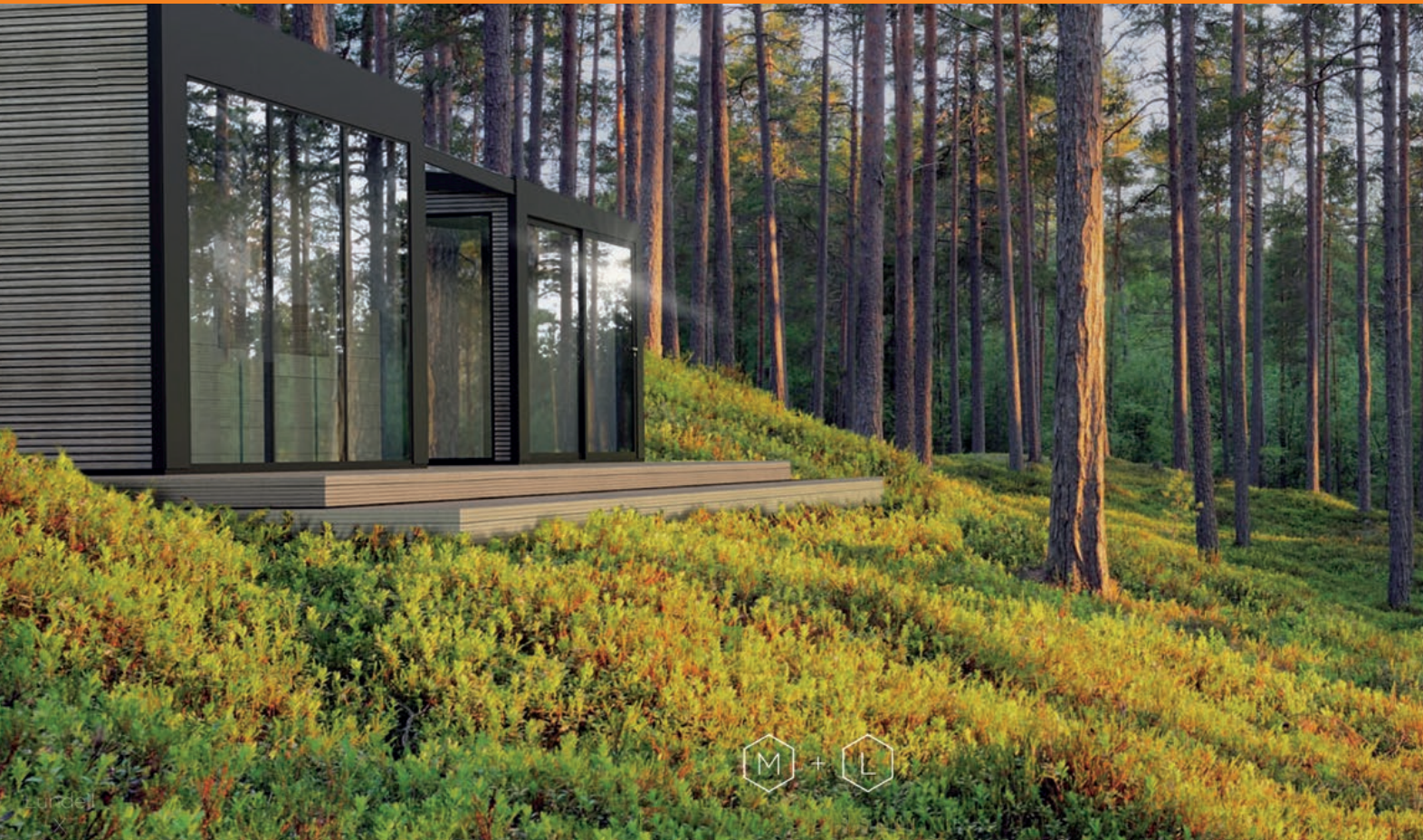
- ISLET • OAR • GRAIN
- FIELD • PRIMEVAL • WILDERNESS



SHED TYPE ROOF

X MOD MODULES AND COMBOS

LUNDELL X MOD EXTERIOR CLADDING



DESIGN YOUR OWN COMBO!



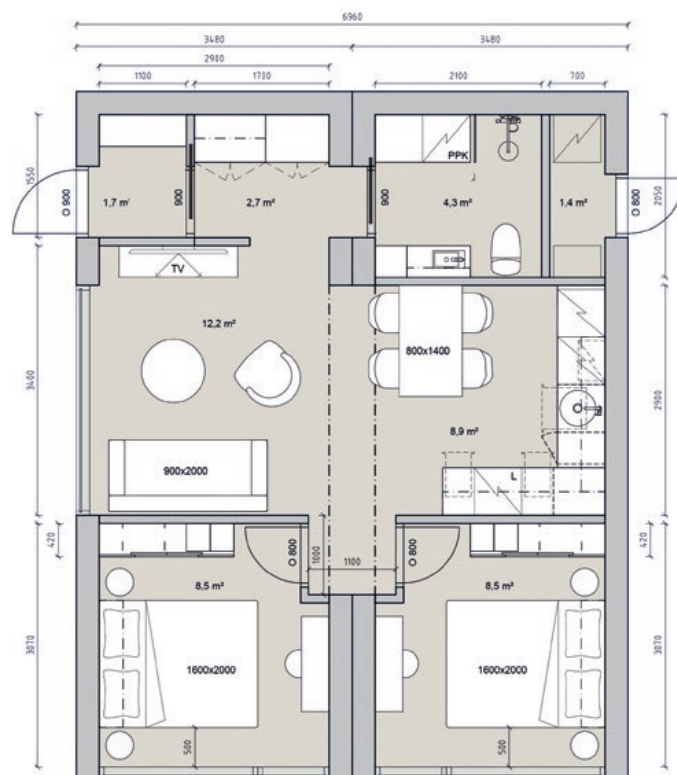
WOOD



STONE

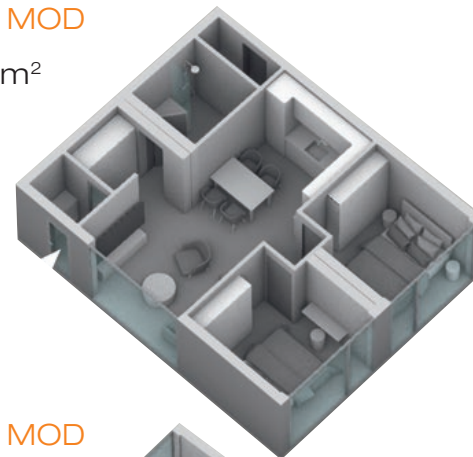


METAL



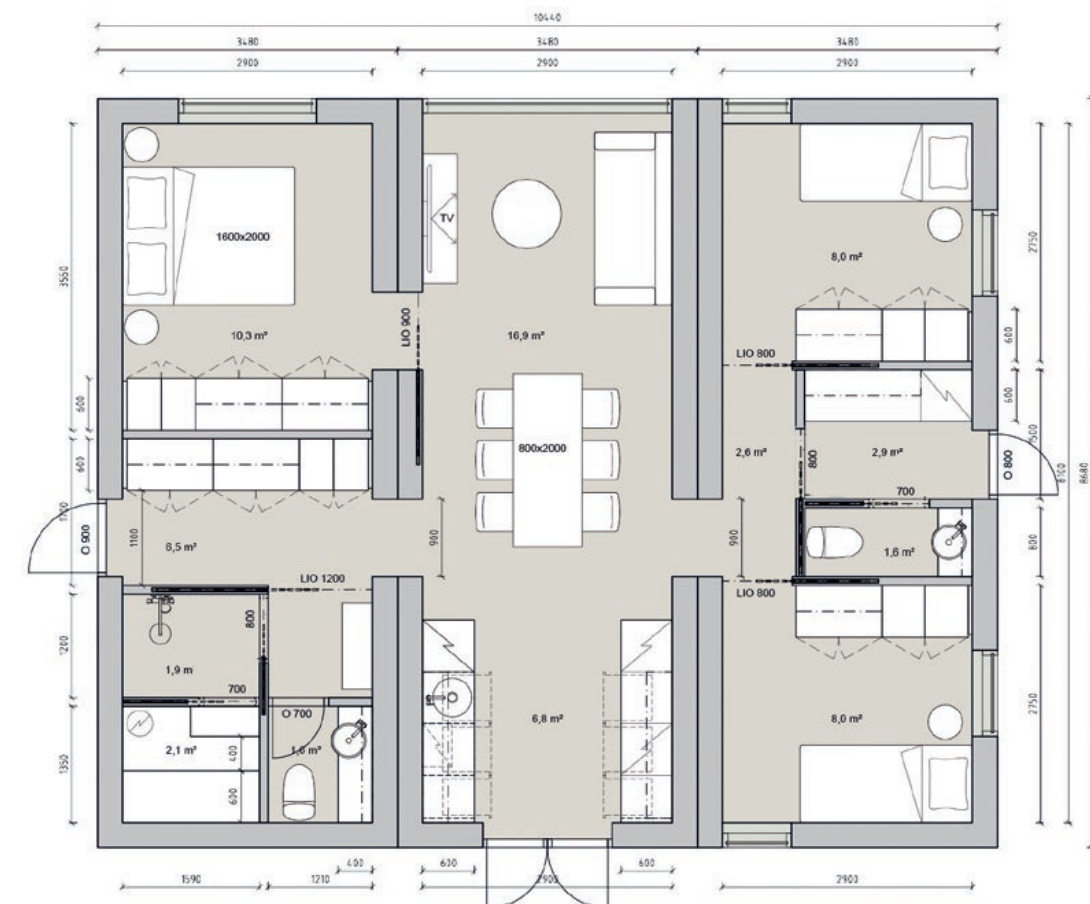
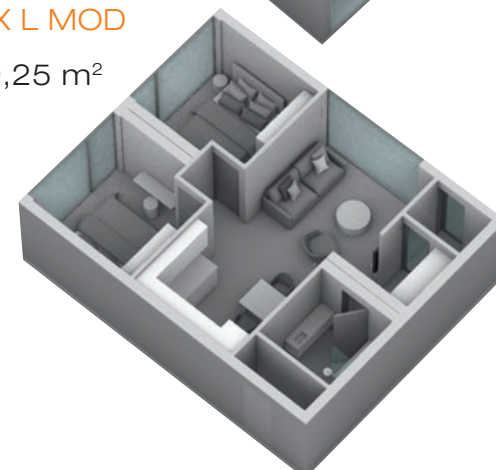
2 X L MOD

59,5 m²



3 X L MOD

89,25 m²



KOOLARI® Strong and Accurate

Applications and Corrosion Resistance

KOOLARI hat profiles are suitable as a frame for all facade and roofing materials. Hat furring can also be used for collars on the inside of external walls, in new construction and renovation. The possibility of using ventilated rib profiles is versatile, and there is no longer any need for cross-forming. The XELEN hat furring perforation method is also suitable for preventing cold bridges when used in an

KOOLARI hat profiles or ventilated hat furring as well as the necessary profiles form a strong and uniform structure for facades or ceiling collars. Coatings with a high corrosion resistance class C4 can be used in the profiles of the structure. Coatings according to the C5 classification for sites near seaside can be ordered as a special order.

Structures to be combined with KOOLARI

Other profiles required on site, such as thermal frames, corner profiles and fasteners, are galvanized profiles, which simplifies and speeds up the installation work. The thermal and strength



technical properties of thermo profiles are in their own guidelines.

In support of the design guide, there are indicative structural details for facade structures.

KOOLARI® PROFILES:

Method of production: roll forming technology

Stock length: L = 3300

Production length: depending on the object L = 1000-8000

Length tolerance: +0/-5 mm

Product and material strength	Product Description	Small Flange Max. mm	Weight kg/m	Perforation Ø ja and Division			
				k25mm Ø7Flange	k50mm Ø20mm	k50mm Ø12mm	Ø12 & Ø7mm Flange
HTL 16/70 x 0,7	Hat Furring 20/16/70/16/20	20	0,78			x	
HTL 16/70 x 1,0	Hat Furring 20/16/70//16/20	20	1,10			x	
HTL 16/70 x 1,2	Hat Furring 20/16/70//16/20	20	1,32				
HTL 16/100 x 0,7	Hat Furring 20/16/100/16/20	20	1,00			x	
HTL 16/100 x 1,0	Hat Furring 20/16/100//16/20	20	1,44			x	
HTL 16/100 x 1,2	Hat Furring 20/16/100//16/20	20	1,73			x	
HTL 21/40 x 0,7	Hat Furring 20/21/40/21/20	40	0,67	x	x		x
HTL 21/40 x 1,0	Hat Furring 20/21/40/21/20	40	0,94	x	x		x
HTL 21/40 x 1,2	Hat Furring 20/21/40/21/20	40	1,12	x	x		x
HTL 21/40 x 1,5	Hat Furring 20/21/40/21/20	40	1,39	x	x		x
HTL 25/70 x 0,7	Hat Furring 20/25/70/25/20	20	0,88	x	x		x
HTL 25/70 x 1,0	Hat Furring 20/25/70/25/20	20	1,25	x	x		x
HTL 25/70 x 1,2	Hat Furring 20/25/70/25/20	20	1,49	x	x		x
HTL 25/100 x 0,7	Hat Furring 20/25/100/25/20	20	1,02	x	x		x
HTL 25/100 x 1,0	Hat Furring 20/25/100/25/20	20	1,45	x	x		x
HTL 25/100 x 1,2	Hat Furring 20/25/100/25/20	20	1,74	x	x		x
HTL 30/40 x 0,7	Hat Furring 20/30/40/30/20	40	0,77	x	x		x
HTL 30/40 x 1,0	Hat Furring 20/30/40/30/20	40	1,09	x	x		x
HTL 30/40 x 1,2	Hat Furring 20/30/40/30/20	40	1,30	x	x		x
HTL 30/40 x 1,5	Hat Furring 20/30/40/30/20	40	1,60	x	x		x
HTL 30/60 x 0,7	Hat Furring 20/30/60/30/20	40	0,88	x	x		x
HTL 30/60 x 1,0	Hat Furring 20/30/60/30/20	40	1,25	x	x		x
HTL 30/60 x 1,2	Hat Furring 20/30/60/30/20	40	1,49	x	x		x
HTL 30/60 x 1,5	Hat Furring 20/30/60/30/20	40	1,85	x	x		x
HTL 35/40 x 0,7	Hat Furring 20/35/40/35/20	40	0,82	x	x		x
HTL 35/40 x 1,0	Hat Furring 20/35/40/35/20	40	1,17	x	x		x
HTL 35/40 x 1,2	Hat Furring 20/35/40/35/20	40	1,39	x	x		x
HTL 50/50 x 1,0	Hat Furring 20/50/50/50/20	20	1,49		x		
HTL 50/50 x 1,2	Hat Furring 20/50/50/50/20	20	1,78		x		
HTL 50/50 x 1,5	Hat Furring 20/50/50/50/20	20	2,20		x		
HTL 50/50 x 2,0	Hat Furring 20/50/50/50/20	20	2,90		x		

HTL



HTL Furring



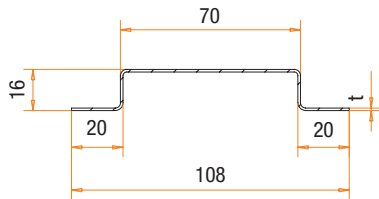
HTL Fire Stop Profile



Arched Profiles



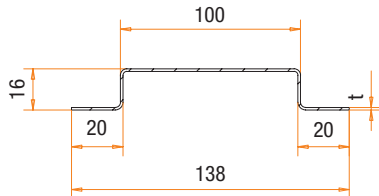
HTL 16/70 20/16/70/16/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	0.78
1.0	3300	6	1.10
1.2	3300	6	1.32

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

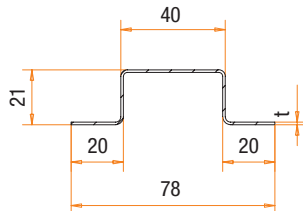
HTL 16/100 20/16/100/16/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	1.00
1.0	3300	6	1.44
1.2	3300	6	1.73

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

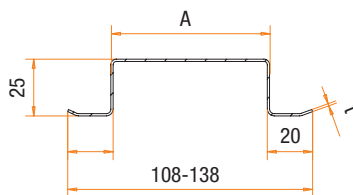
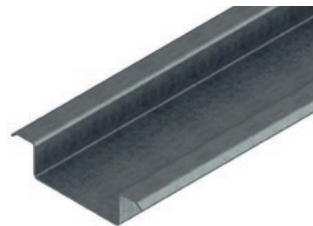
HTL 21/40 20/21/40/21/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	0.67
1.0	3300	6	0.94
1.2	3300	6	1.12
1.5	3300	6	1.39

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

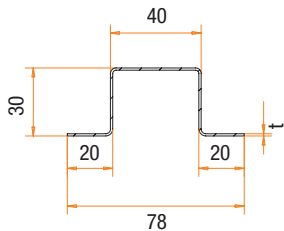
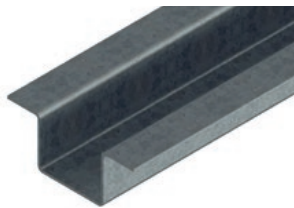
HTL 25/70 20/25/70/25/20
 HTL 25/100 20/25/100/25/20



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
70	0.7	3300	6	0.88
70	1.0	3300	6	1.25
70	1.2	3300	6	1.49
100	0.7	3300	6	1.02
100	1.0	3300	6	1.45
100	1.2	3300	6	1.74

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

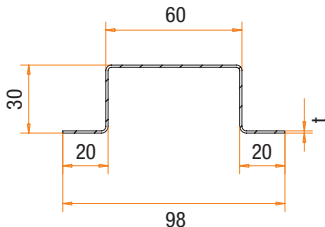
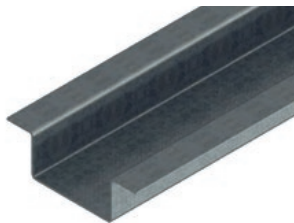
HTL 30/40 20/30/40/30/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	0.77
1.0	3300	6	1.09
1.2	3300	6	1.30
1.5	3300	6	1.60

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

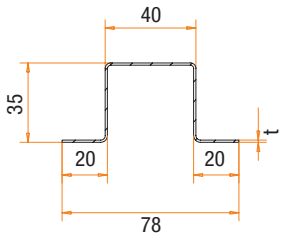
HTL 30/60 20/30/60/30/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	0.88
1.0	3300	6	1.25
1.2	3300	6	1.49
1.5	3300	6	1.85

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

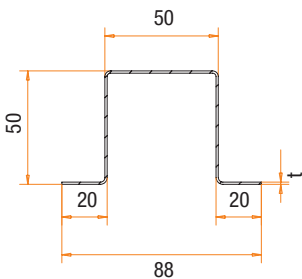
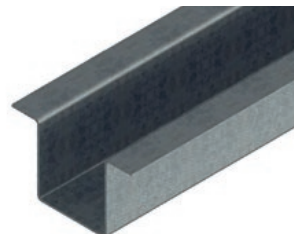
HTL 35/40 20/35/40/35/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	0.82
1.0	3300	6	1.17
1.2	3300	6	1.39

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

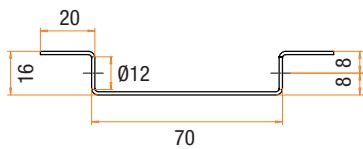
HTL 50/50 20/50/50/50/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
1.0	3300	6	1.49
1.2	3300	6	1.78
1.5	3300	6	2.20
2.0	3300	6	2.90

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

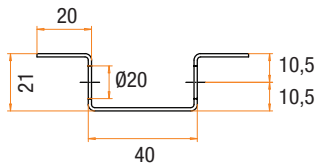
HTL FURRING 16/70 20/16/70/16/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	0.78
1.0	3300	6	1.10
1.2	3300	6	1.32

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

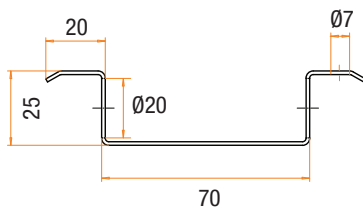
HTL FURRING 21/40 20/21/40/21/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	0.67
1.0	3300	6	0.94
1.2	3300	6	1.12
1.5	3300	6	1.39

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

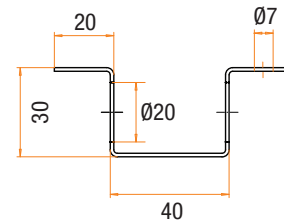
HTL FURRING 25/70 20/25/70/25/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	0.88
1.0	3300	6	1.25
1.2	3300	6	1.49

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

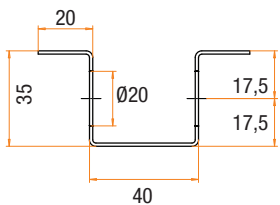
HTL FURRING 30/40 20/30/40/30/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	0.77
1.0	3300	6	1.09
1.2	3300	6	1.30
1.5	3300	6	1.60

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

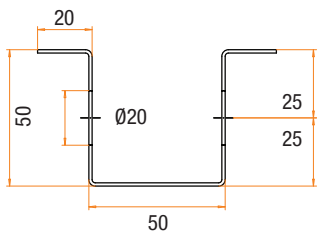
HTL FURRING 35/40 20/35/40/35/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	0.82
1.0	3300	6	1.17
1.2	3300	6	1.39

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

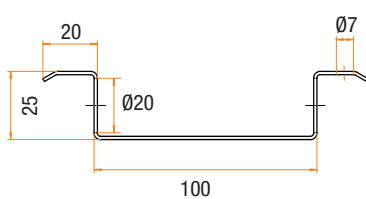
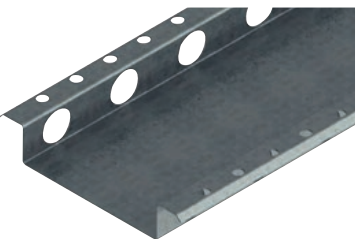
HTL FURRING 50/50 20/50/50/50/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
1.0	3300	6	1.49
1.2	3300	6	1.78
1.5	3300	6	2.20
2.0	3300	6	2.90

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

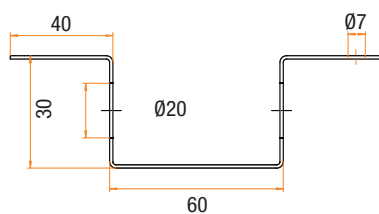
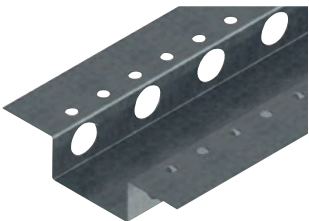
HTL FURRING 25/100 20/25/100/25/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	1.02
1.0	3300	6	1.45
1.2	3300	6	1.74

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

HTL FURRING 30/60 20..40/30/40/30/20..40

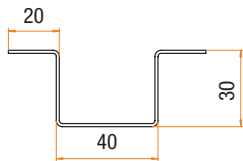


material/ mm	length/ mm	pcs/ bundle	kg/ m
0.7	3300	6	0.88
1.0	3300	6	1.25
1.2	3300	6	1.49
1.5	3300	6	1.85

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

HTL FIRE STOP 30/40

20/30/40/30/20

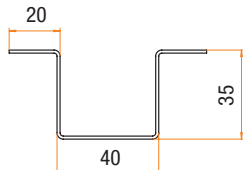


material/ mm	length/ mm	pcs/ bundle	kg/ m
1.0	3300	6	1.09

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

HTL FIRE STOP 35/40

20/35/40/35/20

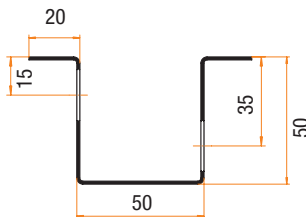


material/ mm	length/ mm	pcs/ bundle	kg/ m
1.0	3300	6	1.17

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

HTL FIRE STOP 50/50

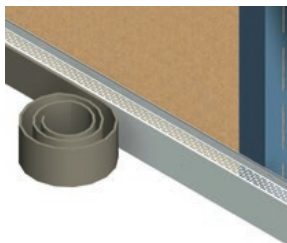
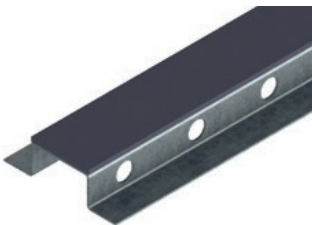
20/50/50/50/20



material/ mm	length/ mm	pcs/ bundle	kg/ m
1.0	3300	6	1.49

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

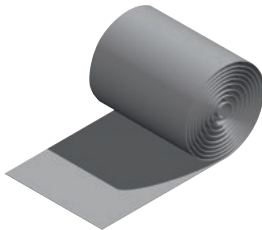
KOOLARI® PRODUCTS WITH PF-SEAL



All products in the KOOLARI product family can also be ordered with a PF seal that is gluable to the profile.

SEALS FOR SOUND INSULATION

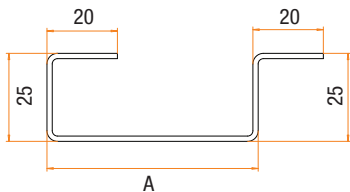
PF



Polyethylene strip insulates water, moisture, air and dirt. The structure of the strip is flexible under compression and loading and is suitable for fixed, stationary structures. There is an adhesive sticker on the bottom of the tape.

A	material/ mm	length/ m	pcs/ bundle	kg/ m
25	3	25	rl	
40	3	25	rl	
66	3	25	rl	
95	3	25	rl	

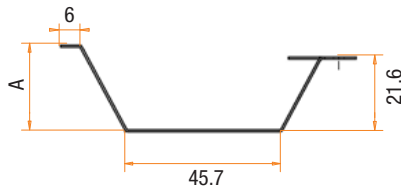
HTLN CORNER PROFILE 60/25 20/25/60/25/20



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
60	0.7	3300	6	0.84
60	1.0	3300	6	1.18
60	1.2	3300	6	1.41
60	1.5	3300	6	1.76

The steel quality of the standard profiles and stock profiles is DX51D + Z, other materials on request.

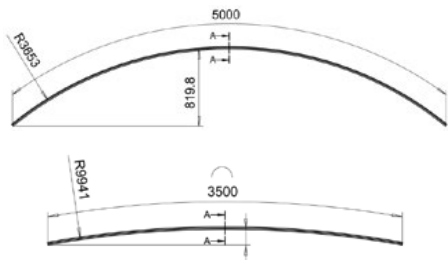
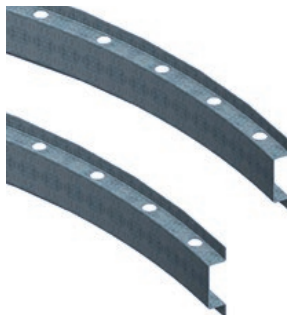
AP RECILIENT CHANNEL AP-25



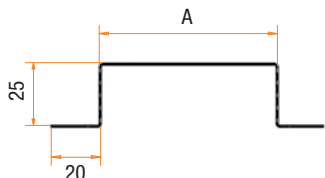
A	material/ mm	length/ mm	8 pcs/ bundle	kg/ m
25	0.5	3600	6	0.49

Steel quality DX51D +Z.

ARCHED FURRING CurvedH - convex or concave



A	material/ mm	length/ mm	8 pcs/ bundle	kg/ m
70	1.0	CurveH radius >10		1.25
70	1.2	CurveH radius <10		1.49
70	1.5	CurveH radius <4		1.75



Steel quality according to site plans DX51D + Z or S350GD + Z.

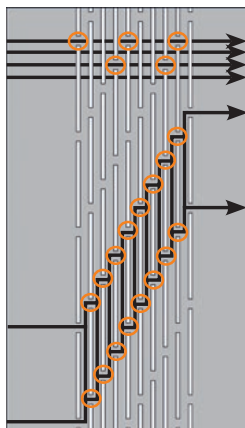
Profile 'Hottis'

— Thermo Frame that Won't Leave You Cold

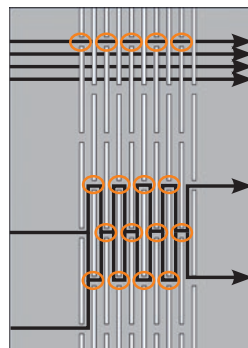
BETTER HEAT INSULATION ■ PROFILES C, U, J, L AND Z ■ BETTER BUCKLE DURABILITY

FRAME POST THERMO FRAMES

NEW FRAME



OLD FRAME



Steel is Today's Building Material; tough, dimensionally accurate and recyclable. The modern new thermo frame is stronger and has better calorific values than before. The strength of the new thermo frame manufactured by Aulis Lundell Oy is 2-20% higher, depending on the site, new and future regulations are better achieved in calorific values than in the old thermal frame.

Better technical properties were achieved through special perforation, which reduces the thermal conductivity of the steel frame. Profile shapes C, U, J, L, Z are made by perforating the profile web with a new technology.

The Thermal Frame Leaves the Cold Outside.

THERMAL FRAME

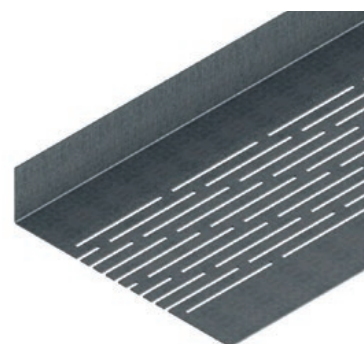
Method of production: roll forming technology

Material: S350GD+Z

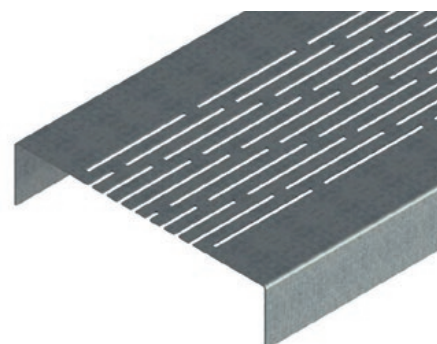
Production length: depending on the object L = 1000-17000

Length tolerance: +0/-5 mm

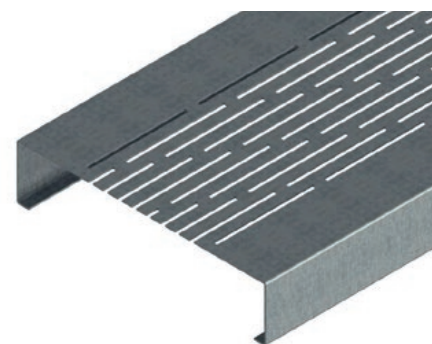
RL



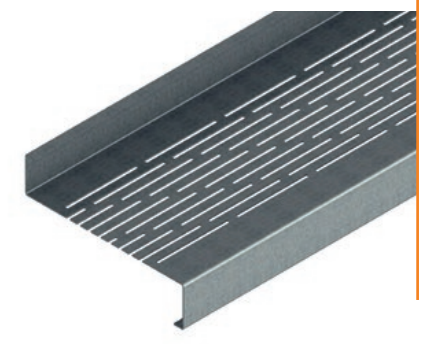
SKY



RY



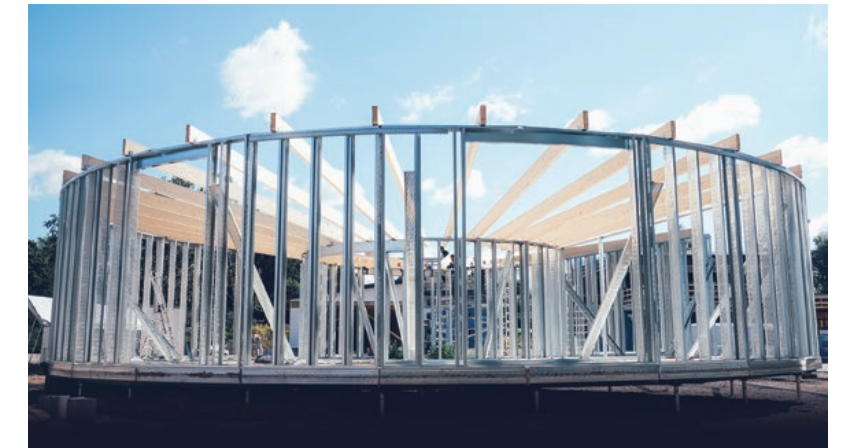
ZR



Read more:
en.pyörre-talo.fi

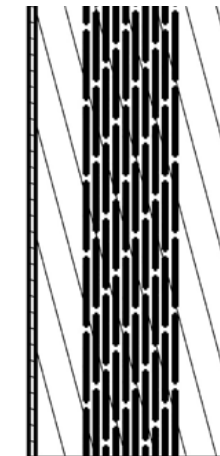
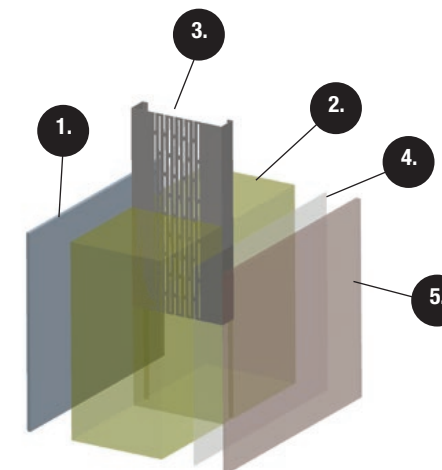


PYÖRRE HOUSE
— MOST REWARDS
AT 2021 HOUSE
EXHIBITION!



SITE SPECIFIC REQUIREMENTS CAN BE INTEGRATED INTO THE STRUCTURE. THE HEAT TRANSMISSION FACTORS (U-VALUES) IN THE TABLE ARE BASED ON THE FOLLOWING STRUCTURE INWARD FROM THE OUTSIDE.

Wall Structure



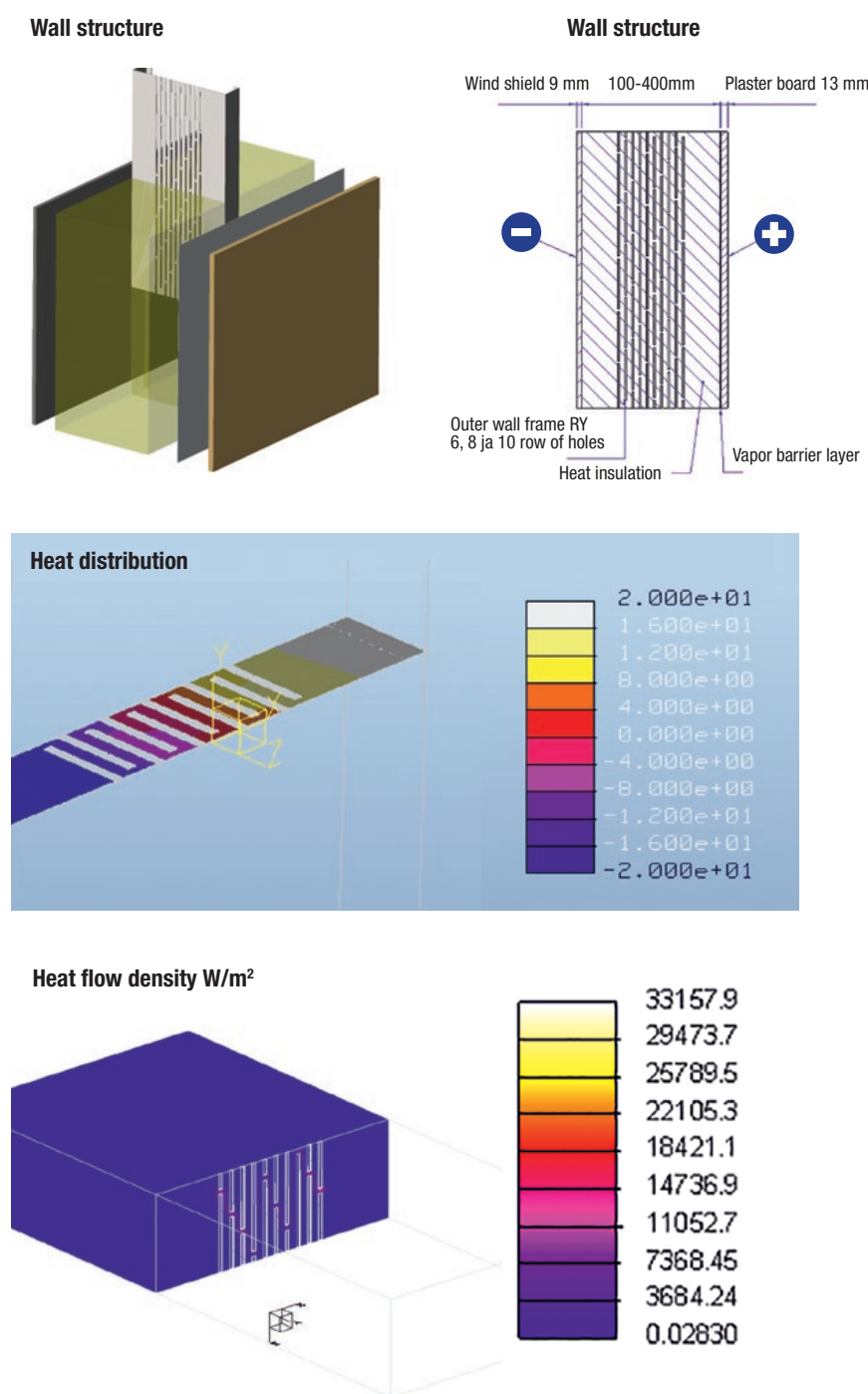
1. Wind shield board 9 mm
2. Thermal insulation according to the properties listed in the table
3. RY frame C-shaped vertical frame, the table shows the number of hole rows / thermal frame
4. Vapor barrier
5. Normal plaster board 13mm

New Technology Brings Strength and Stiffness to the Frame.

By changing the shape of the frame, for example to a U model, the thermal insulation coefficient improves or by additionally changing the flanges of U to smaller, which again affects the coefficient. By changing the structure, the desired requirement is achieved on a site-by-site basis.

Profile	Material mm	Frame	Holes	U-value	U-value	U-value
Thermal conductivity values (W/mK):				0,032	0,033	0,034
RY THERMO FRAME 175						
RY_C_175_10_1	1,00	175	10	0,19	0,20	0,20
RY_C_175_10_12	1,20	175	10	0,20	0,20	0,21
RY_C_175_10_15	1,50	175	10	0,20	0,21	0,21
RY_C_175_10_2	2,00	175	10	0,21	0,22	0,22
RY THERMO FRAME 195						
RY_C_195_10_1	1,00	195	10	0,18	0,18	0,19
RY_C_195_10_12	1,20	195	10	0,18	0,19	0,19
RY_C_195_10_15	1,50	195	10	0,19	0,19	0,20
RY_C_195_10_2	2,00	195	10	0,20	0,20	0,20
RY THERMO FRAME 200						
RY_C_200_10_1	1,00	200	10	0,18	0,18	0,18
RY_C_200_10_12	1,20	200	10	0,18	0,18	0,19
RY_C_200_10_15	1,50	200	10	0,19	0,19	0,20
RY_C_200_10_2	2,00	200	10	0,20	0,20	0,20
RY THERMO FRAME 225						
RY_C_225_10_1	1,00	225	10	0,16	0,17	0,17
RY_C_225_10_12	1,20	225	10	0,17	0,17	0,17
RY_C_225_10_15	1,50	225	10	0,17	0,18	0,18
RY_C_225_10_2	2,00	225	10	0,19	0,19	0,20
RY THERMO FRAME 245						
RY_C_245_10_1	1,00	245	10	0,15	0,16	0,16
RY_C_245_10_12	1,20	245	10	0,15	0,16	0,17
RY_C_245_10_15	1,50	245	10	0,16	0,17	0,17
RY_C_245_10_2	2,00	245	10	0,17	0,18	0,18
RY THERMO FRAME 250						
RY_C_250_10_1	1,00	250	10	0,15	0,15	0,16
RY_C_250_10_12	1,20	250	10	0,15	0,16	0,17
RY_C_250_10_15	1,50	250	10	0,16	0,17	0,17
RY_C_250_10_2	2,00	250	10	0,17	0,17	0,18

Heat transfer coefficients according to SFS-EN ISO 6946 standard.



Profile	Material mm	Frame	Holes	U-value	U-value	U-value
Thermal conductivity values (W/mK):				0,032	0,033	0,034
RY THERMO FRAME 275						
RY_C_275_10_1	1,00	275	10	0,14	0,14	0,15
RY_C_275_10_12	1,20	275	10	0,14	0,15	0,15
RY_C_275_10_15	1,50	275	10	0,15	0,15	0,16
RY_C_275_10_2	2,00	275	10	0,16	0,16	0,17
RY THERMO FRAME 300						
RY_C_300_10_1	1,00	300	10	0,13	0,14	0,14
RY_C_300_10_12	1,20	300	10	0,14	0,14	0,15
RY_C_300_10_15	1,50	300	10	0,14	0,15	0,15
RY_C_300_10_2	2,00	300	10	0,15	0,16	0,16
RY THERMO FRAME 325						
RY_C_325_10_1	1,00	325	10	0,13	0,13	0,14
RY_C_325_10_12	1,20	325	10	0,13	0,14	0,14
RY_C_325_10_15	1,50	325	10	0,14	0,14	0,15
RY_C_325_10_2	2,00	325	10	0,15	0,15	0,15
RY THERMO FRAME 350						
RY_C_350_10_1	1,00	350	10	0,12	0,12	0,13
RY_C_350_10_12	1,20	350	10	0,13	0,13	0,13
RY_C_350_10_15	1,50	350	10	0,13	0,13	0,14
RY_C_350_10_2	2,00	350	10	0,14	0,14	0,15
RY THERMO FRAME 375						
RY_C_375_10_1	1,00	375	10	0,12	0,12	0,12
RY_C_375_10_12	1,20	375	10	0,12	0,12	0,13
RY_C_375_10_15	1,50	375	10	0,13	0,13	0,13
RY_C_375_10_2	2,00	375	10	0,14	0,14	0,14
RY THERMO FRAME 400						
RY_C_400_10_1	1,00	400	10	0,11	0,12	0,12
RY_C_400_10_12	1,20	400	10	0,12	0,12	0,12
RY_C_400_10_15	1,50	400	10	0,12	0,13	0,13
RY_C_400_10_2	2,00	400	10	0,13	0,13	0,14

Heat transfer coefficients according to SFS-EN ISO 6946 standard.

RY-C-PROFILE U-VALUES [W/M²K]

Profile	Material mm	Frame	Holes	U-value	U-value	U-value	U-value	U-value
				Thermal conductivity values (W/mK):				
				0,031	0,032	0,033	0,034	0,035
THERMO FRAME 100								
RY_C_100_6_07	0,70	100	6		0,31	0,32	0,32	
RY_C_100_6_15	1,50	100	6	0,31	0,32			0,34
THERMO FRAME 120								
RY_C_120_8_07	1,50	120	8		0,26	0,27	0,27	
RY_C_120_8_15	1,50	120	8	0,26	0,26			0,28
RY_C_120_8_2	2,00	120	8	0,27	0,27			0,29
THERMO FRAME 145								
RY_C_145_8_07	0,70	145	8		0,22	0,23	0,24	
RY_C_145_8_15	1,50	145	8	0,22	0,30			0,25
RY_C_145_8_2	2,00	145	8	0,23	0,24			0,25
THERMO FRAME 150								
RY_C_150_8_07	0,70	150	8		0,22	0,22	0,23	
RY_C_150_8_15	1,50	150	8	0,22	0,22			0,24
RY_C_150_8_2	2,00	150	8	0,23	0,23			0,25
THERMO FRAME 175								
RY_C_175_8_15	1,50	175	8	0,20	0,20			0,22
RY_C_175_8_2	2,00	175	8	0,20	0,21			0,23
THERMO FRAME 195								
RY_C_195_8_15	1,50	195	8	0,18	0,19			0,21
RY_C_195_8_2	2,00	195	8	0,19	0,20			0,21
THERMO FRAME 200								
RY_C_200_8_15	1,50	200	8	0,17	0,18			0,20
RY_C_200_8_2	2,00	200	8	0,19	0,19			0,21
THERMO FRAME 225								
RY_C_225_8_15	1,50	225	8	0,17	0,17			0,19
RY_C_225_8_2	2,00	225	8	0,17	0,18			0,20
THERMO FRAME 245								
RY_C_245_8_15	1,50	245	8	0,16	0,17			0,17
RY_C_245_8_2	2,00	245	8	0,16	0,17			0,19
THERMO FRAME 250								
RY_C_250_10_15	1,50	250	10	0,15	0,16			0,17
RY_C_250_8_15	1,50	250	8	0,16	0,16			0,17
RY_C_250_8_2	2,00	250	8	0,16	0,17			0,18

RY-C-PROFILE U-VALUES [W/M²K]

Profile	Material mm	Frame	Holes	U-value	U-value	U-value
				Thermal conductivity values (W/mK):		
				0,031	0,032	0,035
THERMO FRAME 275						
RY_C_275_8_15	1,50	275	8	0,15	0,15	0,16
RY_C_275_8_2	2,00	275	8	0,15	0,16	0,17
THERMO FRAME 300						
RY_C_300_8_15	1,50	300	8	0,14	0,15	0,15
RY_C_300_8_2	2,00	300	8	0,15	0,15	0,16
THERMO FRAME 325						
RY_C_325_8_15	1,50	325	8	0,13	0,14	0,14
RY_C_325_8_2	2,00	325	8	0,14	0,15	0,15
THERMO FRAME 350						
RY_C_350_8_15	1,50	350	8	0,13	0,13	0,14
RY_C_350_8_2	2,00	350	8	0,14	0,14	0,15
THERMO FRAME 375						
RY_C_375_8_15	1,50	375	8	0,12	0,13	0,13
RY_C_375_8_2	2,00	375	8	0,13	0,14	0,14
THERMO FRAME 400						
RY_C_400_8_15	1,50	400	8	0,12	0,12	0,13
RY_C_400_8_2	2,00	400	8	0,13	0,13	0,14

The instructions have been checked as carefully as possible. However, we will not be liable for any direct or indirect damages resulting from any errors or misapplication of the information. All rights reserved. Lundell-Profile®

See More Detailed Technical Design Information:
www.aulislundell.fi/products

The interaction diagrams of normal force and horizontal force have been prepared for the thermal frame for each of five different material thicknesses $t = 0.7\text{mm}$, $t = 1.0\text{mm}$, $t = 1.2\text{mm}$ and $t = 1.5\text{mm}$ and $t = 2.0\text{mm}$. The dimensioning diagrams are presented with two different profile lengths: $L = 2800\text{mm}$ and $L = 3500\text{mm}$.

The values in the diagrams are valid for heat frames with both flanges supported on the building board using a max. screw pitch 300mm.

The diagrams include the eccentricity of the load, e.g. RY 175mm $e = h / 5 = 35\text{mm}$ profile in the stronger direction. In the weaker direction of the profile, the load is assumed to be central. The deflection limit of the frame is $L / 200$.

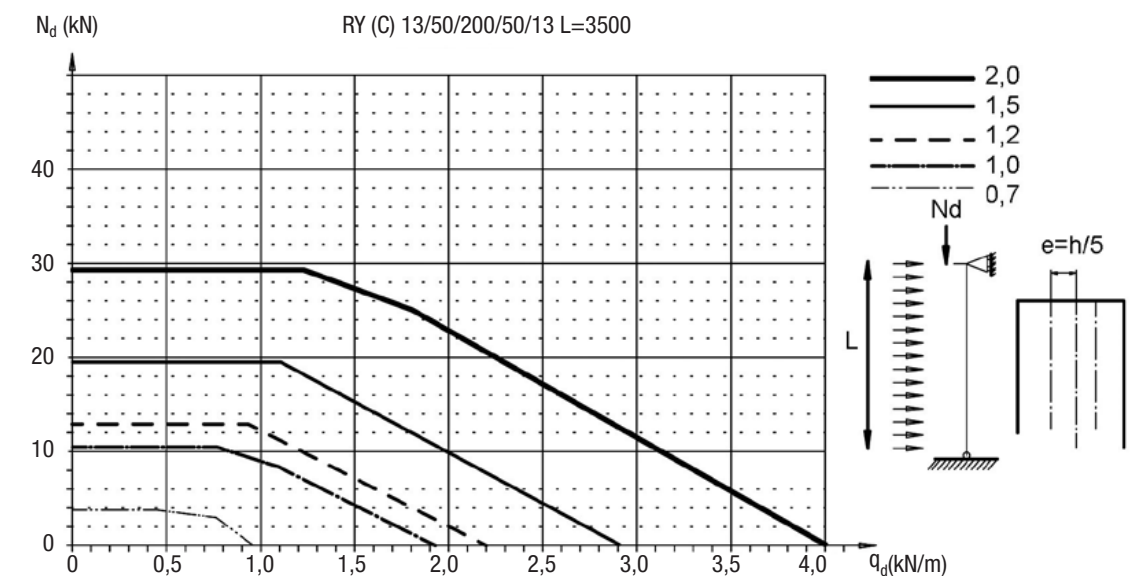
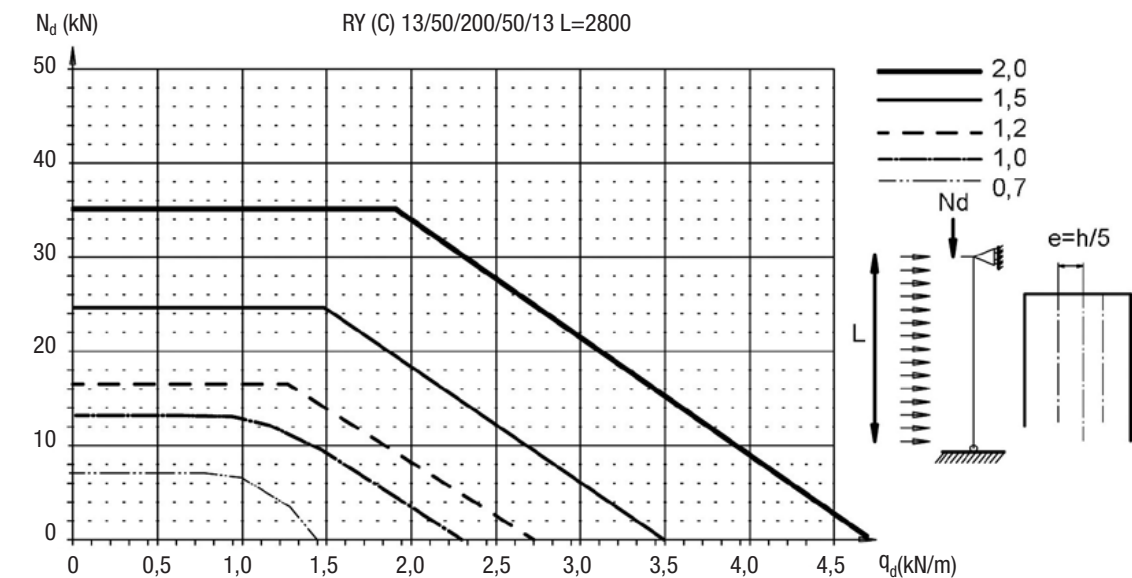
The values shown are calculation I. Design values. When using diagrams, the loads must first be multiplied by the partial load factors for the loads according to AC.

The instructions have been checked as carefully as possible. However, we will not be liable for any direct or indirect damages resulting from any errors or misapplication of the information. All rights reserved. Lundell-Profile®

Material hot-dip galvanized steel sheet,
 steel quality S350GD + Z275 (EN10246)



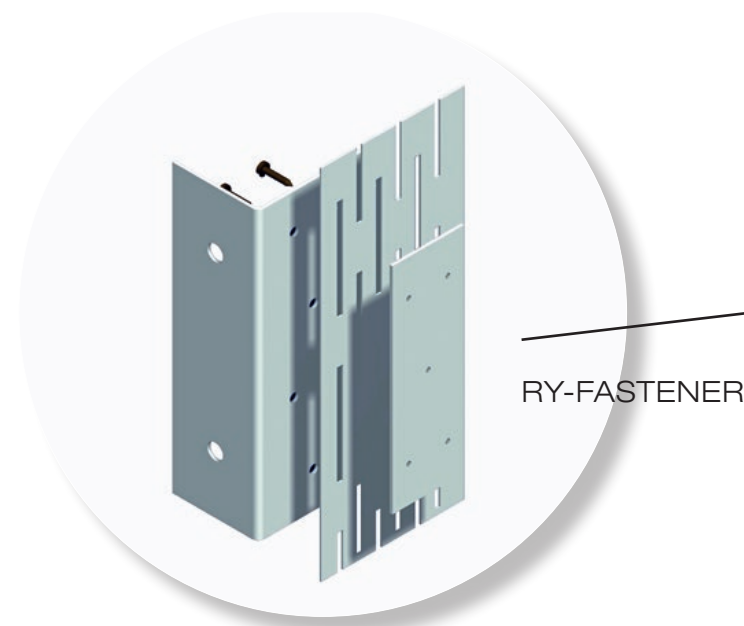
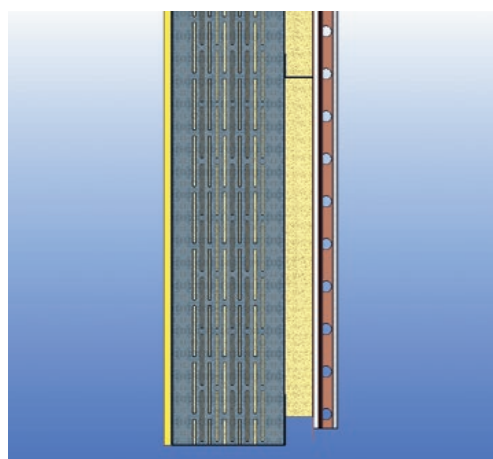
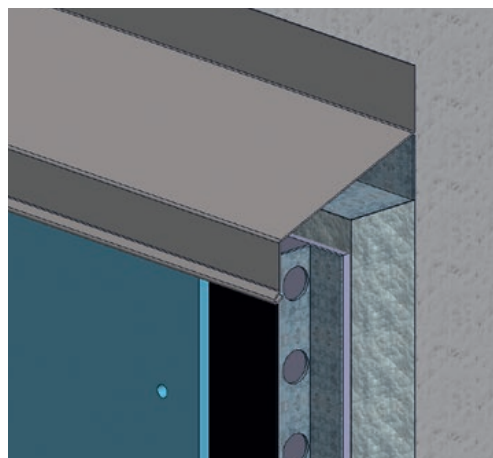
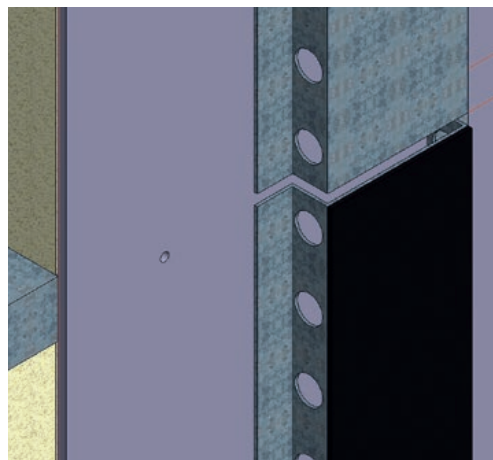
INTERACTION CURVE RY (C) 200 NORMAL FORCE /
 WIND LOAD ECCENTRICITY $E H / 5$



The advantage of steel frames is the dimensionally accurate and lifeless structure. Steel profiles are not vulnerable to moisture and thus dimensional fluctuations and other humidity movements are never formed due to the effect of the profiles.

The steel frame can be formed from C or U shaped steel profiles. A U-shaped steel profile can be used as a vertical post in the frame, depending

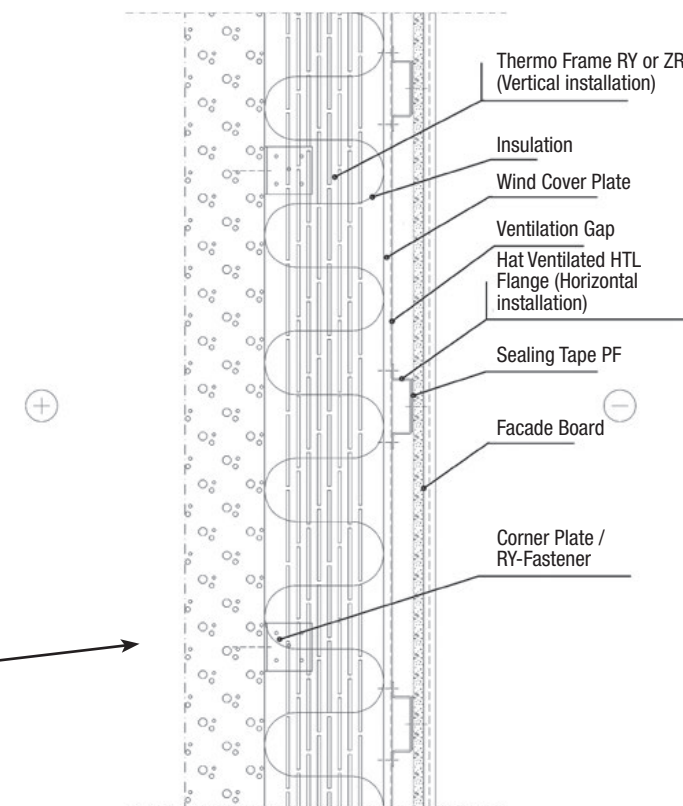
on the requirements and structure of the object. For facades, suitable for the structure, ventilated KOOLARI® FLANGE PROFILES are a good fit.



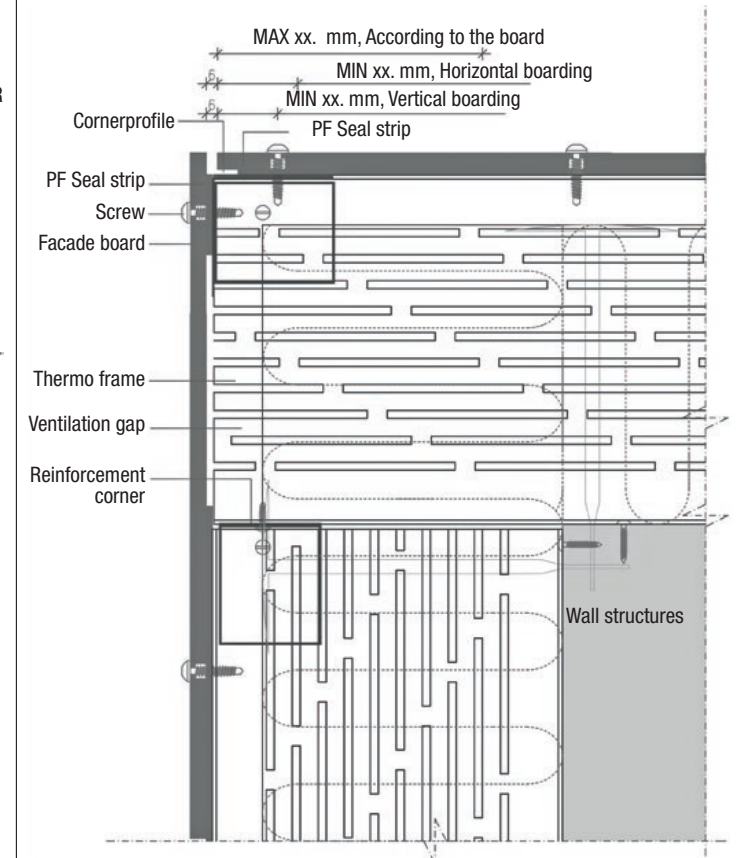
FACADE STEEL PROFILES:

KOOLARI®
Z
U
RY
RZ
SKY
JA RY -FASTENERS

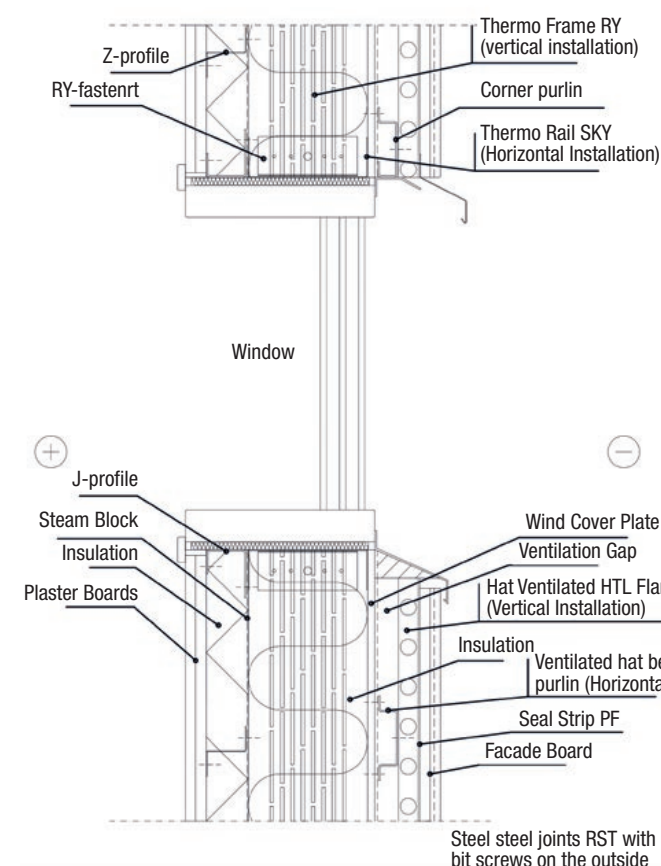
RENOVATION SITE'S VENTILATED FRAME STRUCTURE DET-JS3



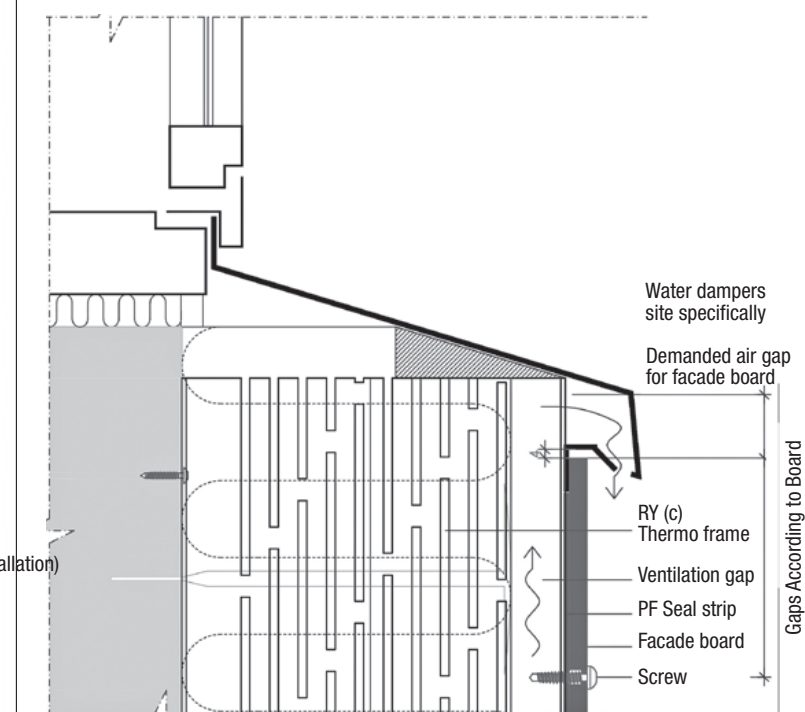
VENTILATED FACADE, OUTSIDE CORNER DET-004



THERMO FRAME FACADE DET-JS8



VENTILATED WALL STRUCTURE AND BOTTOM EDGE OF WINDOW



THERMO FRAME: RY

RY THERMO FRAME 100-125

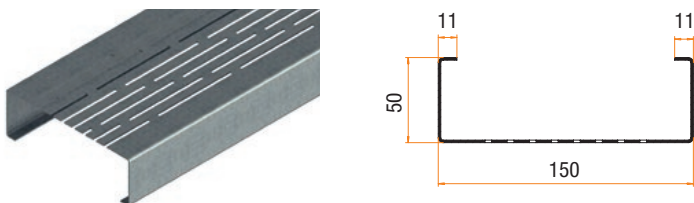
6 row of holes



A	material/ mm	length/ mm	kg/ m
100	0.7	1000-17000	1.13
100	1.0	1000-17000	1.68
100	1.2	1000-17000	2.10
100	1.5	1000-17000	2.52
100	2.0	1000-17000	3.36
120	0.7	1000-17000	1.25
120	1.0	1000-17000	1.84
120	1.2	1000-17000	2.30
120	1.5	1000-17000	2.76
120	2.0	1000-17000	3.68
125	0.7	1000-17000	1.32
125	1.0	1000-17000	1.88
125	1.2	1000-17000	2.26
125	1.5	1000-17000	2.82
125	2.0	1000-17000	3.76

RY THERMO FRAME 150

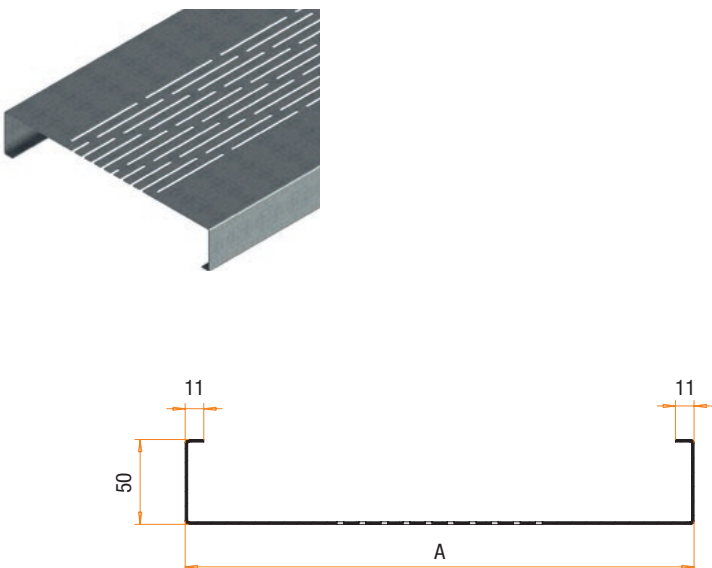
8 row of holes



A	material/ mm	length/ mm	kg/ m
150	0.7	1000-17000	1.56
150	1.0	1000-17000	2.08
150	1.2	1000-17000	2.50
150	1.5	1000-17000	3.12
150	2.0	1000-17000	4.16

RY THERMO FRAME 175-400

10 row of holes

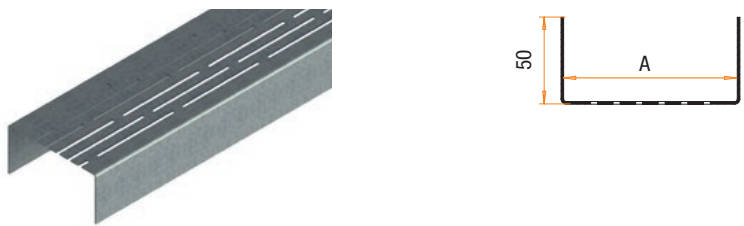


A	material/ mm	length/ mm	kg/ m
175	0.7	1000-17000	1.71
175	1.0	1000-17000	2.28
175	1.2	1000-17000	2.85
175	1.5	1000-17000	3.42
175	2.0	1000-17000	4.56
200	0.7	1000-17000	1.74
200	1.0	1000-17000	2.48
200	1.2	1000-17000	2.98
200	1.5	1000-17000	3.72
200	2.0	1000-17000	4.96
220	1.0	1000-17000	2.68
225	1.0	1000-17000	2.80
225	1.2	1000-17000	3.22
225	1.5	1000-17000	4.02
225	2.0	1000-17000	5.36
250	1.0	1000-17000	2.85
250	1.2	1000-17000	3.42
250	1.5	1000-17000	4.32
250	2.0	1000-17000	5.76
275	1.0	1000-17000	3.10
275	1.2	1000-17000	3.70
275	1.5	1000-17000	4.54
275	2.0	1000-17000	6.00
300	1.2	1000-17000	3.94
300	1.5	1000-17000	4.92
300	2.0	1000-17000	6.56
325	1.5	1000-17000	5.22
325	2.0	1000-17000	6.96
350	1.5	1000-17000	5.52
350	2.0	1000-17000	7.36
400	2.0	1000-17000	8.16

THERMO: SKY

SKY THERMO RAIL 100-125

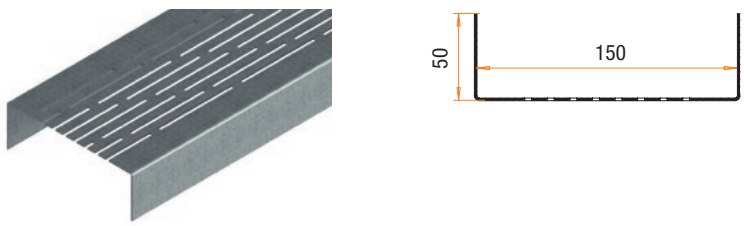
6 row of holes



A	material/ mm	length/ mm	kg/ m
100	0.7	1000-17000	1.06
100	1.0	1000-17000	1.52
100	1.2	1000-17000	1.82
100	1.5	1000-17000	2.28
100	2.0	1000-17000	3.04
120	0.7	1000-17000	1.13
120	1.0	1000-17000	1.68
120	1.2	1000-17000	2.10
120	1.5	1000-17000	2.52
120	2.0	1000-17000	3.36
125	0.7	1000-17000	1.20
125	1.0	1000-17000	1.72
125	1.2	1000-17000	2.06
125	1.5	1000-17000	2.58
125	2.0	1000-17000	3.44

SKY THERMO RAIL 150

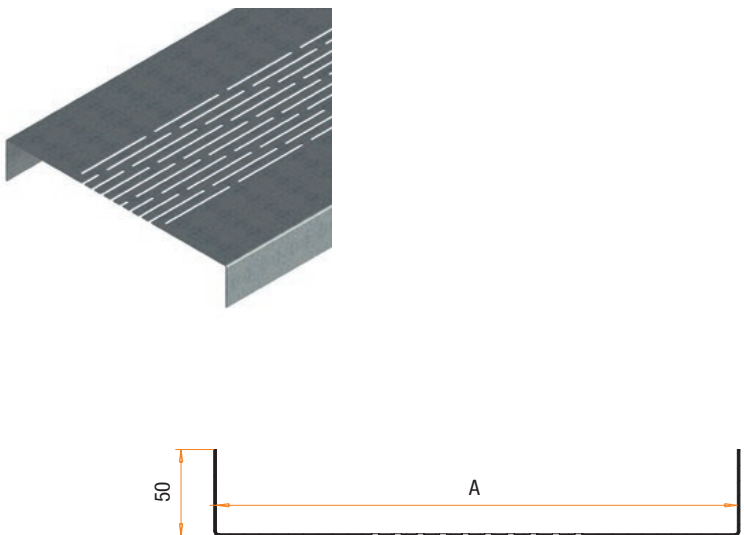
8 row of holes



A	material/ mm	length/ mm	kg/ m
150	0.7	1000-17000	1.36
150	1.0	1000-17000	1.92
150	1.2	1000-17000	2.30
150	1.5	1000-17000	2.88
150	2.0	1000-17000	3.84

SKY THERMO RAIL 175-400

10 row of holes



A	material/ mm	length/ mm	kg/ m
175	0.7	1000-17000	1.48
175	1.0	1000-17000	2.12
175	1.2	1000-17000	2.54
175	1.5	1000-17000	3.18
175	2.0	1000-17000	4.24
200	0.7	1000-17000	1.62
200	1.0	1000-17000	2.32
200	1.2	1000-17000	2.78
200	1.5	1000-17000	3.48
200	2.0	1000-17000	4.64
220	1.0	1000-17000	2.48
225	1.0	1000-17000	2.52
225	1.2	1000-17000	3.02
225	1.5	1000-17000	3.78
225	2.0	1000-17000	5.04
250	1.0	1000-17000	2.72
250	1.2	1000-17000	3.26
250	1.5	1000-17000	4.08
250	2.0	1000-17000	5.44
275	1.0	1000-17000	2.85
275	1.2	1000-17000	3.42
275	1.5	1000-17000	4.32
275	2.0	1000-17000	5.76
300	1.2	1000-17000	3.85
300	1.5	1000-17000	4.68
300	2.0	1000-17000	6.24
325	1.5	1000-17000	4.98
325	2.0	1000-17000	6.64
350	1.5	1000-17000	5.28
350	2.0	1000-17000	7.04
400	2.0	1000-17000	7.84

THERMO FRAME: RL

RL THERMO FRAME 100-125

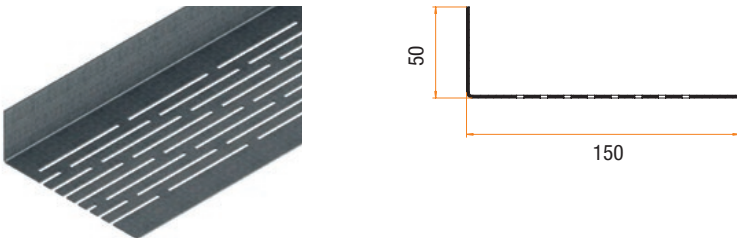
6 row of holes



A	material/ mm	length/ mm	kg/ m
100	1.0	1000-17000	1.20
100	1.2	1000-17000	1.44
100	1.5	1000-17000	1.80
100	2.0	1000-17000	3.20
120	1.0	1000-17000	1.36
120	1.2	1000-17000	1.63
120	1.5	1000-17000	2.04
120	2.0	1000-17000	2.72
125	1.0	1000-17000	1.40
125	1.2	1000-17000	1.68
125	1.5	1000-17000	2.10
125	2.0	1000-17000	2.80

RL THERMO FRAME 150

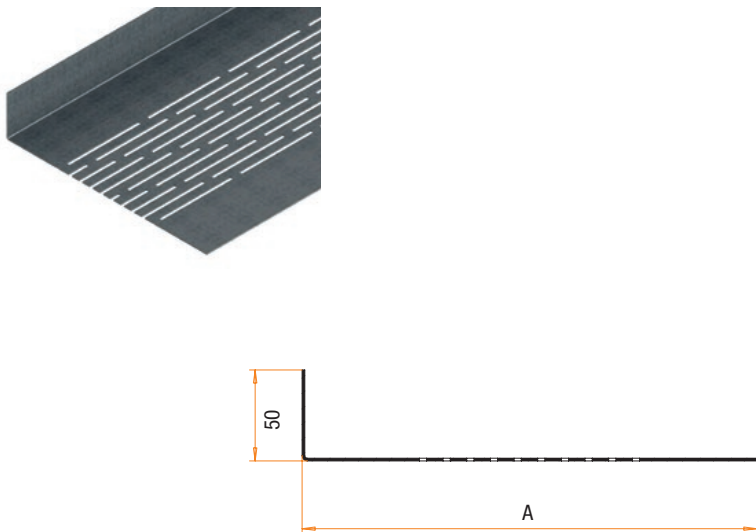
8 row of holes



A	material/ mm	length/ mm	kg/ m
150	1.0	1000-17000	1.60
150	1.2	1000-17000	1.92
150	1.5	1000-17000	2.40
150	2.0	1000-17000	3.20

RL THERMO FRAME 175-250

10 row of holes

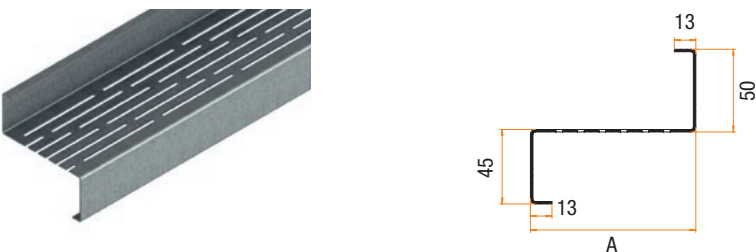


A	material/ mm	length/ mm	kg/ m
175	1.0	1000-17000	1.80
175	1.2	1000-17000	2.16
175	1.5	1000-17000	2.70
175	2.0	1000-17000	3.60
200	1.0	1000-17000	2.00
200	1.2	1000-17000	2.40
200	1.5	1000-17000	3.00
200	2.0	1000-17000	4.00
225	1.0	1000-17000	2.20
225	1.2	1000-17000	2.64
225	1.5	1000-17000	3.30
225	2.0	1000-17000	4.40
250	1.0	1000-17000	2.40
250	1.2	1000-17000	2.88
250	1.5	1000-17000	3.60
250	2.0	1000-17000	4.80

THERMO FRAME: ZR

ZR THERMO FRAME 100-120

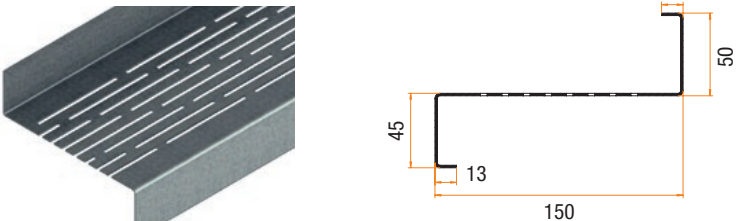
6 row of holes



A	material/ mm	length/ mm	kg/ m
100	1.0	1000-17000	1.68
100	1.2	1000-17000	2.10
100	1.5	1000-17000	2.52
100	2.0	1000-17000	3.36
120	0.7	1000-17000	1.25
120	1.0	1000-17000	1.84
120	1.2	1000-17000	2.30
120	1.5	1000-17000	2.76
120	2.0	1000-17000	3.68
125	0.7	1000-17000	1.56
125	1.0	1000-17000	1.88
125	1.2	1000-17000	2.26
125	1.5	1000-17000	2.82

ZR THERMO FRAME 150

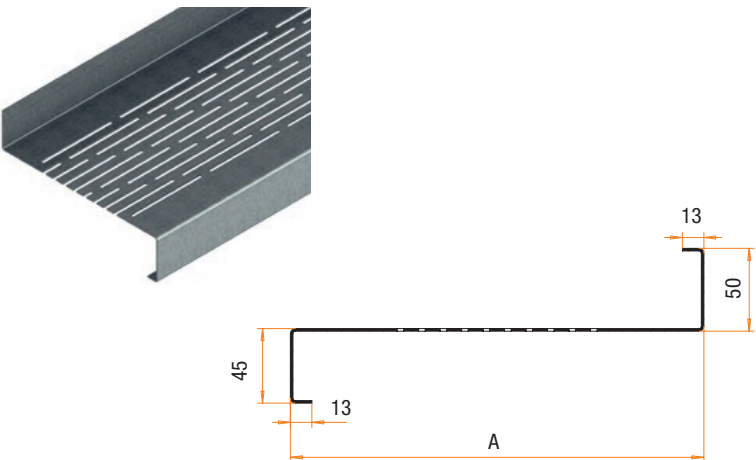
8 row of holes



A	material/ mm	length/ mm	kg/ m
150	1.0	1000-17000	2.05
150	1.2	1000-17000	2.50
150	1.5	1000-17000	3.12
150	2.0	1000-17000	4.10

ZR THERMO FRAME 175-250

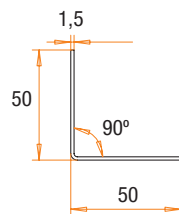
10 row of holes



A	material/ mm	length/ mm	kg/ m
175	0.7	1000-17000	1.71
175	1.0	1000-17000	2.28
175	1.2	1000-17000	2.85
175	1.5	1000-17000	3.42
175	2.0	1000-17000	4.56
200	0.7	1000-17000	1.74
200	1.0	1000-17000	2.48
200	1.2	1000-17000	2.98
200	1.5	1000-17000	3.72
200	2.0	1000-17000	4.96
225	1.0	1000-17000	2.68
225	2.0	1000-17000	4.96
250	0.7	1000-17000	2.18
250	1.0	1000-17000	2.96
250	1.2	1000-17000	3.42
250	1.5	1000-17000	4.27
250	2.0	1000-17000	5.70

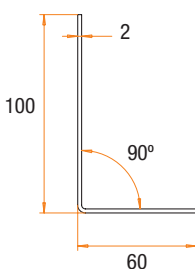
RY FASTENER

For installation use, for example, a 225 mm bracket RY-250 on both sides and RY 225 on the back and a SKY 225-250 on both sides of the profile.



A	material/ mm	pcs/ bundle	kg/ pcs
125-150	1.5	1	0.15
175-200	1.5	1	0.21
225-250	1.5	1	0.27
275-300	1.5	1	0.33

Adjustable facade structure of the wall structure.
RY WALL FASTENER 60/100



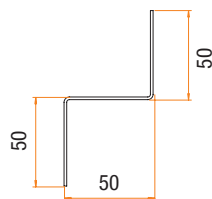
A	material/ mm	length/ mm	pcs/ bundle	kg/ pcs
200	2.0	200	1	0.64

Adjustable perforated wall bracket for facade construction.
RY WALL MOUNT COUNTER PIECE 75/200

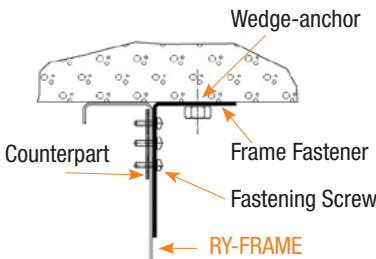
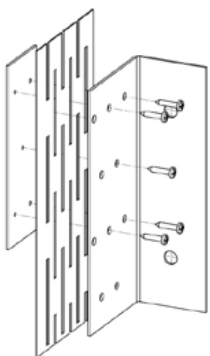
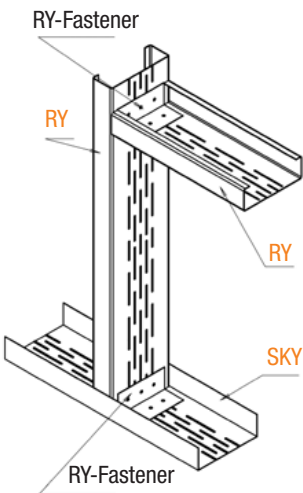
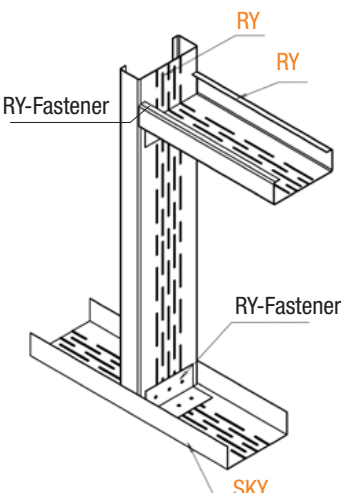
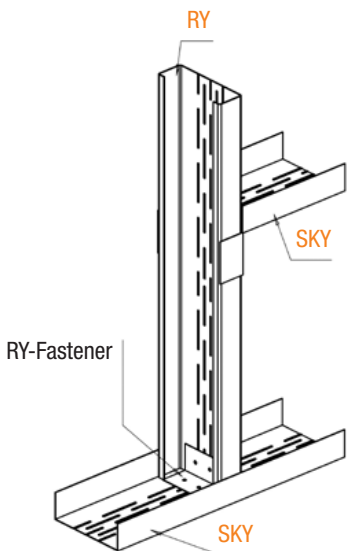


A	material/ mm	length/ mm	pcs/ bundle	kg/ m
200	2.0	200	1	0.23

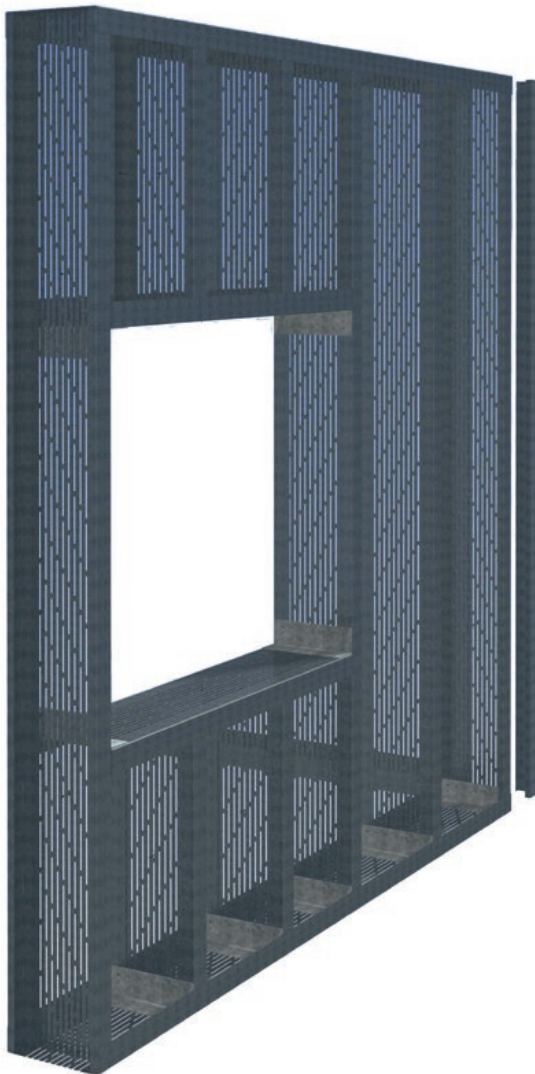
Z PROFILE 50



A	material/ mm	length/ mm	kg/ m
50	0.7	1000-17000	0,73



CROSSING THE OPENINGS AND
RY FASTENERS ALTERNATIVE USE.



Lundell-Profile Light Beam

Light Beams bring cost efficiency to the site. The beams are fastened with bolted joints to pre-drilled holes or with self-drilling screws. The cost-effectiveness of installing light beams is based on the speed of the work and the prefabricated components that do not need to be painted or perforated.

General

Light and economical steel structures are cold-formed thin steel parts. The selection of light beams is carried out by a structural designer, e.g. based on the loads on the structure.

Advantages of Using Beam Products:

- Wide range thanks to flexible manufacturing method.
- Good corrosion resistance due to galvanized material.
- High durability / weight ratio.
- With the product it is possible to achieve great cost savings when all the properties of the product, e.g. the stiffening properties of the beams, are utilized.
- Good transportability. The beams are packed one inside another which saves transport space. In addition, the galvanized material is not sensitive to knocks.
- Long spans when the load-bearing profile boards or wooden beams are no longer enough.
- Easy to control, for example, several perforations on the ceiling surface or ceiling loads formed by local equipment.

Light beams are used for both cold and warm spaces on ceilings and walls:

- There is no thermal insulation in the roof and wall of the cold room. The structure is common in agricultural machine shelters, etc. in rooms that do not require year-round heating. In this case, a separate orching will take place under the water cover and the wall profile plate.

- The ceiling and wall of a warm room have thermal insulation. The warm wall structure can consist of the following materials from the inside, including: profile plate, steam barrier, light beams, wind protection plate + ventilation gap, profile plate. Light beams and thermal insulation can be perforated in the wall, whereby the cold bridge is effectively been cut.

Material

Lightweight beams are made of roll-formed hot-dip galvanized steel sheet in coils. The material used in manufacturing is steel grade S350GD + Z.

The material tolerances are in accordance with EN 10143. The yield strength ReH of the steel material is 350 N / mm2 and the elongation at fracture A80 is 16%. The corrosion protection of the light beams is hot-dip galvanized 275-N SFS670 with 275 g / m2 zinc or Mangelis® coating ZM120, which corresponds to the previous one.

Cross-sections

The material thickness of light beams range from 1.0 to 2.0 mm. The total heights of the profiles are made steplessly between 100 and 400 mm, depending on the object.

The lengths of the light beams can be selected, but in practice the maximum length is limited to 14-17 m during transport and installation of the stalls. The table on page 43 shows more detailed cross-sectional dimensions.

Model	Height	Flange 1	Flange 2	Stiffeners	Material Strength				Length
Z	100	50	45	13	1.0	1.2	1.5	2.0	600-4000
Z	120	50	45	13	1.0	1.2	1.5	2.0	600-4000
Z	150	50	45	13	1.0	1.2	1.5	2.0	600-4000
Z	200	50	45	20	1.0	1.2	1.5	2.0	600-4000
Z	250	50	45	20	1.0	1.2	1.5	2.0	600-4000
Z	200	50	45	20			1.5	2.0	600-4000
Z	225	50	45	20			1.5	2.0	600-4000
Z	250	50	45	20			1.5	2.0	600-4000
C	200	50	50	20			1.5	2.0	600-4000
C	225	50	50	20			1.5	2.0	600-4000
C	250	50	50	20			1.5	2.0	600-4000
C	100	50	50	11	1.0	1.2	1.5	2.0	600-17000
C	120	50	50	11	1.0	1.2	1.5	2.0	600-17000
C	150	50	50	11	1.0	1.2	1.5	2.0	600-17000
C	200	50	50	11	1.0	1.2	1.5	2.0	600-17000
C	250	50	50	11	1.0	1.2	1.5	2.0	600-17000
L	100	50		13	1.0	1.2	1.5	2.0	1000-17000
L	120	50		13	1.0	1.2	1.5	2.0	1000-17000
L	150	50		13	1.0	1.2	1.5	2.0	1000-17000
L	200	50		13	1.0	1.2	1.5	2.0	1000-17000
L	250	50		13	1.0	1.2	1.5	2.0	1000-17000
L	300	50		13	1.0	1.2	1.5	2.0	1000-17000
J	100	50	50		1.0	1.2	1.5	2.0	1000-4000
J	120	50	50		1.0	1.2	1.5	2.0	1000-4000
J	150	50	50		1.0	1.2	1.5	2.0	1000-4000
J	200	50	50		1.0	1.2	1.5	2.0	1000-4000
J	250	50	50		1.0	1.2	1.5	2.0	1000-4000
J	300	50	50		1.0	1.2	1.5	2.0	1000-4000

LIGHT BEAMS

Manufacturing method: Roll forming technology • **Material:** S350GD + Z • **Manufacturing length:** according to table L = 1000-17000
• **Length tolerance:** +0/-5 mm

Single Hole System

Applications of the system: wall structures with short spans, subfloor structures, window and door frames, partition wall structures.

Advantages of the system: shorter installation parts, clear statics

Disadvantages of the system: large deflections with long spans, higher steel consumption than with multiple openings.

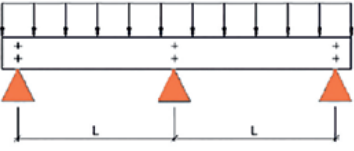


Two-hole system

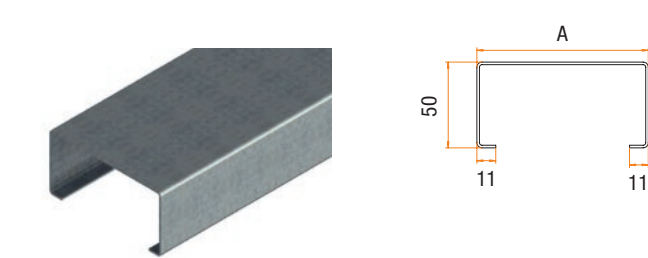
Applications of the system: wall structures with 4-6 m spans, roof structures with short spans.

Advantages of the system: few installation parts, clear statics of the structure, small deflections.

Disadvantages of the system: uneven support reactions, longer installation time than with a single-hole design.

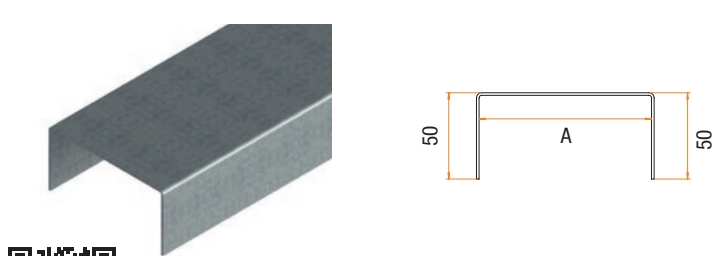


C-PROFILES



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
100	1.0-2.0	1000-17000	1	
120	1.0-2.0	1000-17000	1	
150	1.0-2.0	1000-17000	1	
200	1.0-2.0	1000-17000	1	
250	1.0-2.0	1000-17000	1	

U-PROFILES

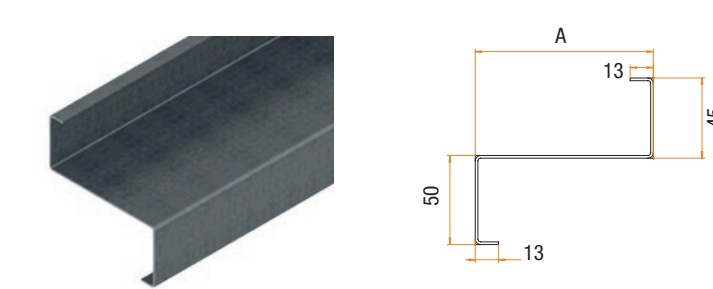


A	material/ mm	length/ mm	pcs/ bundle	kg/ m
100	1.0-2.0	1000-17000	1	
120	1.0-2.0	1000-17000	1	
150	1.0-2.0	1000-17000	1	
200	1.0-2.0	1000-17000	1	
250	1.0-2.0	1000-17000	1	



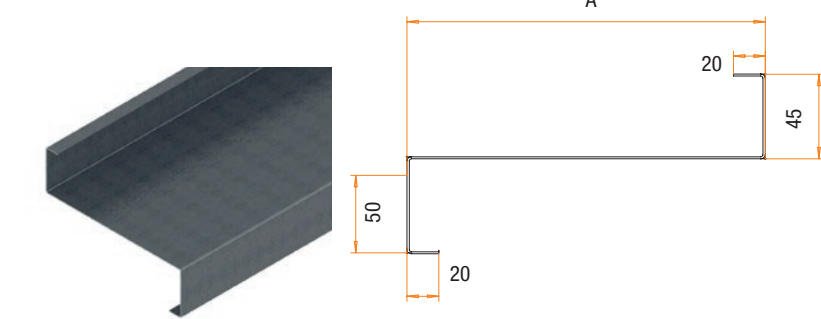
See more detailed technical information www.aulislundell.fi/products/LIGHTWEIGHT+PURLINS+Z+C+U/5

Z-PROFILES



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
100	1.0-2.0	1000-17000	1	
120	1.0-2.0	1000-17000	1	
150	1.0-2.0	1000-17000	1	
200	1.0-2.0	1000-17000	1	
250	1.0-2.0	1000-17000	1	

Z LIGHT BEAMS



A	material/ mm	length/ mm	pcs/ bundle	kg/ m
200	1.5-2.5		1	
225	1.5-2.5		1	
250	1.5-2.5		1	



The intermediate floor structures of the Parliament House are lower tile beams, in which the structures consisted of reinforced concrete beams, in the form of a cross-section 100–150 mm wide x 300–400 mm high beam, with a mean distance of approximately 1000–1300 mm.

The span was usually room length. The concrete thickness of the lower tile was usually 40 mm, but also 30 mm thick lower tile structures. The reinforcement was light in the lower tile, so 5 mm reinforcement in diameter kk200 mm and the dividers 2 Ø 5 mm / beam spacing. Compressed beam increases were scaled with so called water hose and verticality was achieved with a plumb line.

In compressed beam increases inside buildings, the height differences can be as high as 50–70 mm, and at the same time the compressed surface concrete tile can be sweep and crooked at the same time.

The KOOLARI® floor solved the challenges related to the unevenness of the old base and the building technology installations hidden under the floor structure. The heavy steps of Parliament are now borne by the KOOLARI® floor.

Installation Floor Brings Life Cycle Quality

Finished lightweight KOOLARI® floor for high quality renovation and new construction.

BENEFITS OF KOOLARI® FLOOR:

- ✓ The factory-ready assembly of the raised floors provides fast-acting savings, and the versatile space solutions of apartments bring economic benefits when modifying renovation objects.
- ✓ The installation speed is significant and the dry construction method avoids the time delay following from drying times.
- ✓ KOOLARI® floor is a high-quality choice for a change in purpose of use.

Applications

The most typical applications for raised floors are in renovation construction:

- Change in purpose of use of the premises.
- Old lower tile beam structures' surface renovation.
- Additional construction for attics, for example as well as apartment building extra layers that have become more common.
- A location for renewable building technology is obtained easily into structures with even a small elevation and short installation time.

In new construction:

- A raised floor on top of a load-bearing concrete structure, inside which HVAC drafts are installed.
- The 200 mm hollow core slab and KOOLARI® floor guarantee a functional and flexible whole.



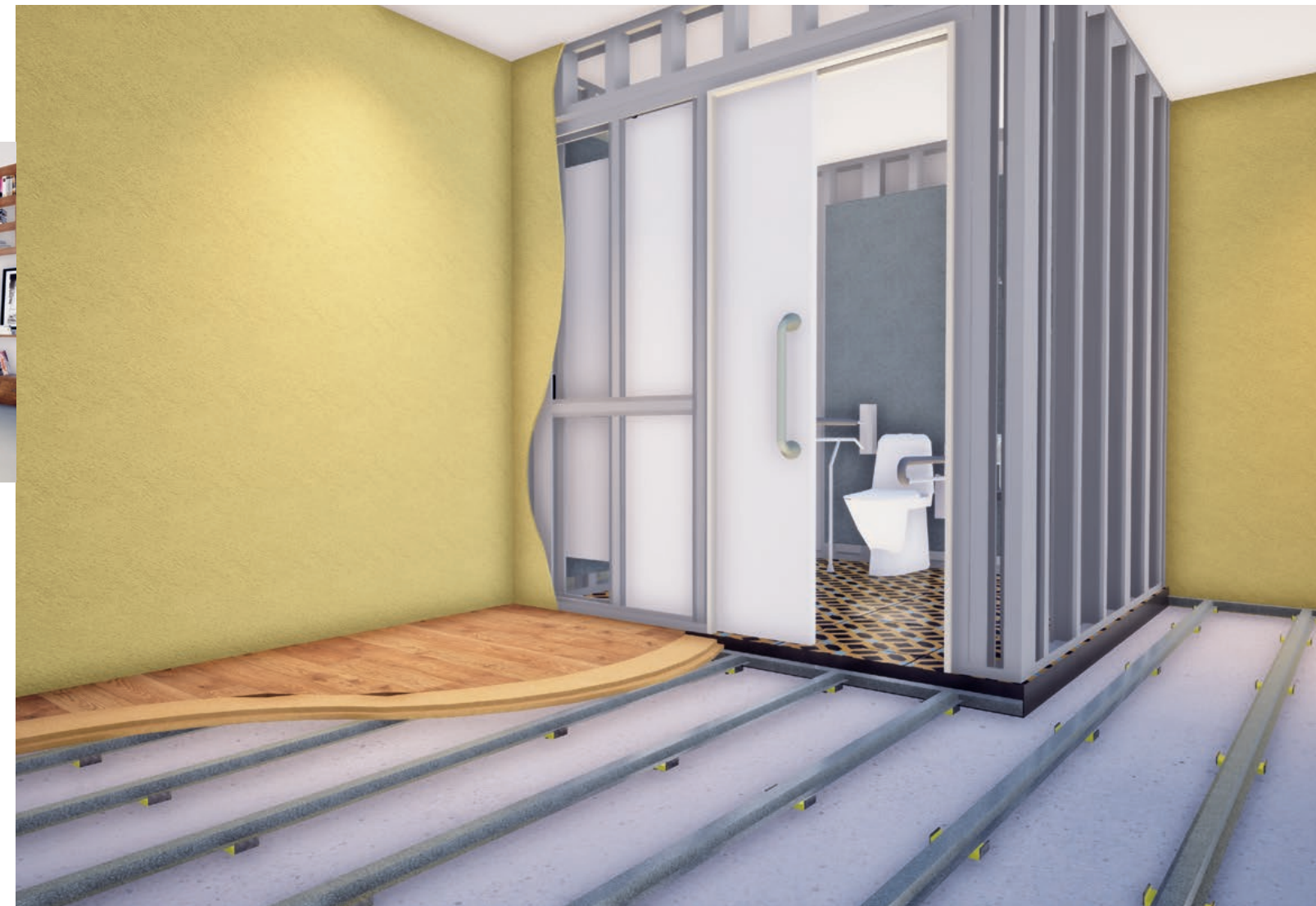
Structural features

KOOLARI® -floor is a modern ready-made structural system integrated in load-bearing intermediate floors in which sound insulation is controlled. The standard structures are suitable for premises or sites intended for residential, accommodation and office use with loads in accordance with those uses. All other structural requirements should be clarified on a site-by-site basis.

Requirements for the sound insulation of a building

- Minimum permissible airborne sound insulation between the apartment and the surrounding premises D_{nT} , w 8 (dB) 55.
- The maximum permissible step sound level of residential apartments from the surrounding area to the kitchen or other room L'_{nT} , w + CI, 50-2500 (dB) 53.

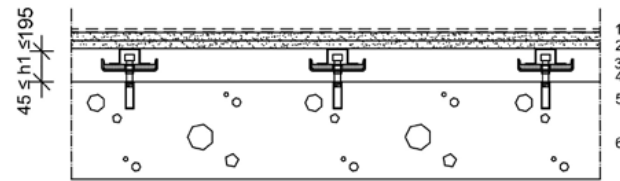
The advantages of dry construction is speed and its light structure, as well as easy installation of HVAC technology.



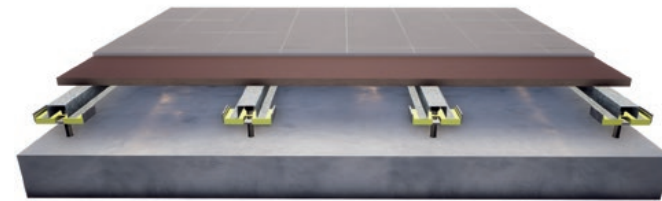
The specific weight of the KOOLARI® floor is approximately 10 kg / m², depending on the structure. Its height can vary between 0 ... 1000 mm. The height of the basic structure of the KOOLARI® floor is 153-223 mm, to which customer-specific changes can be made.

This is called an elevated structure with a KOOLARI® floor height of 224-1000 mm. The options for the lowered structure are 70-115 mm, and zero-elevated structures are also possible for the lower slab beams.

**KOOLARI® floor is a non-living structure
installed on load-bearing structures.**



1. Surface material and treatment according to the room description
2. GYPROC floor plasterboard GL 15 LAPIKAS. The boards are glued with M1 class glue or mortar
3. Load bearing KOOLARI HTL 30/40 x 1.5 k400
4. Adjusting feet with KOOLARI k900 dB silencer
5. Attaching the adjustable feet
6. Load-bearing concrete slab ($\geq 260 \text{ kg/m}^2$)



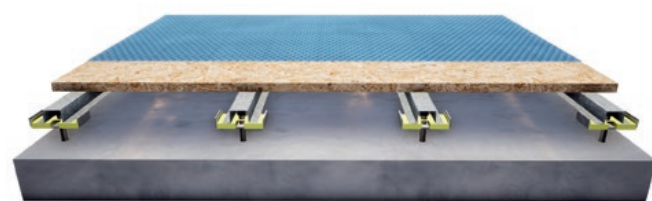
KOOLARI + FILM PLYWOOD



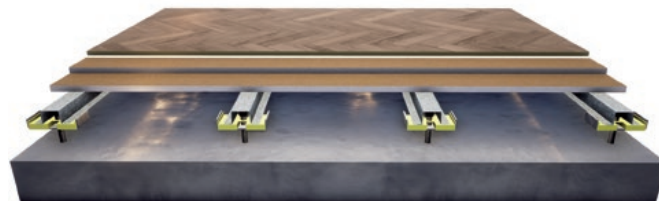
KOOLARI + JOINT PLATE + CAST



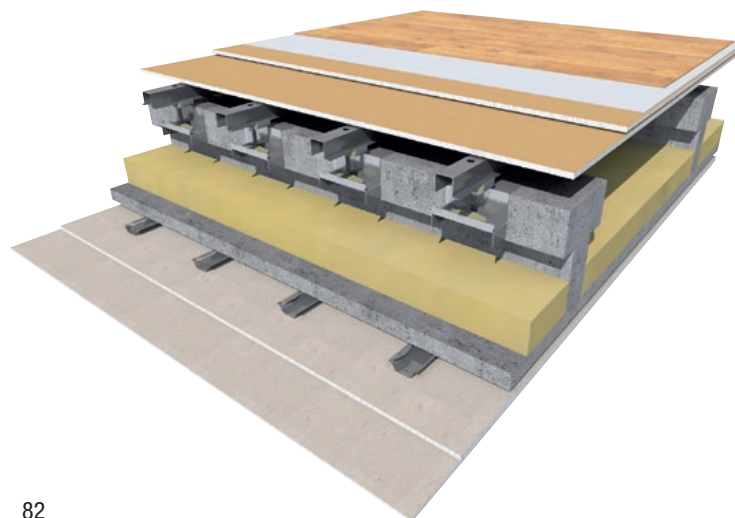
KOOLARI + FILM PLYWOOD



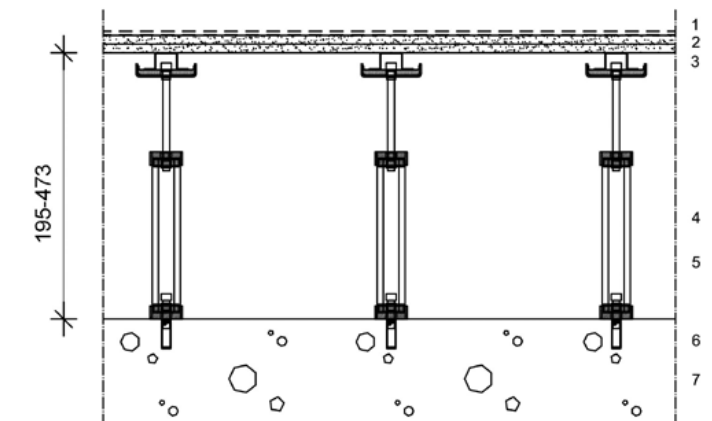
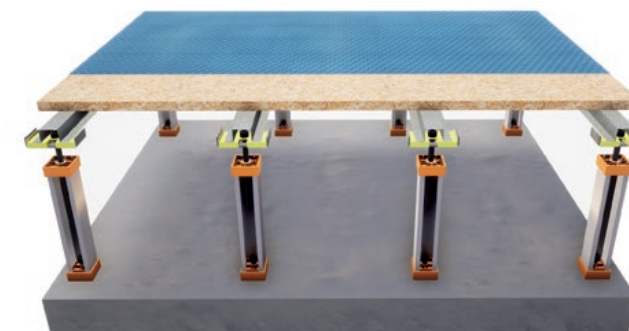
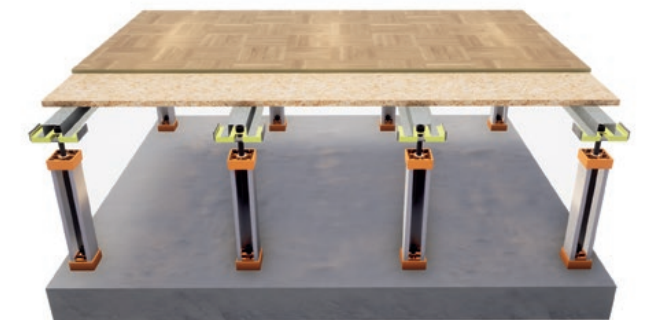
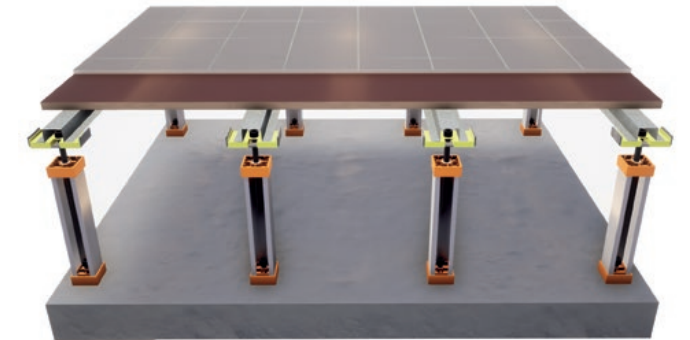
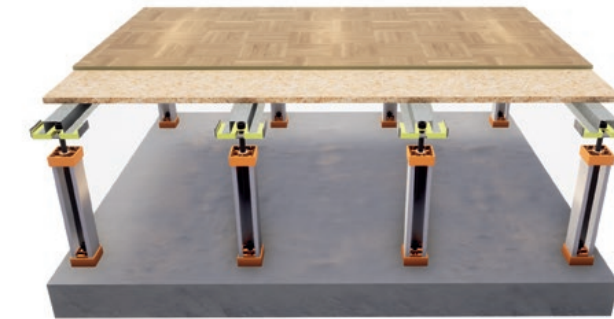
KOOLARI + OSB BOARD / PLATE / SLAB



KOOLARI + 2X15MM FLOOR PLASTER BOARDS



LOWER SLAB BEAM
ZERO (0) ELEVATION
SOLUTION



Key points of the installation plan:

- The plan is based on architect and HVAC pictures
- installation length of bracket profiles -40 mm free installation measure
- all parts directly from stock with stock measurements





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#ETERNALSTEEL #AULISLUNDELL #STEELISFOREVER

AULIS LUNDELL OY PRODUCTS ARE TESTED AND
APPROVED SOLUTIONS FOR BUILDING.

Our operations are certified according to the SFS-EN ISO 9001 quality system, scope:

Purchasing, selling and cutting service of coated galvanized steel sheet with resale.

Development and producing of lightweight structural framing, elements and cold-rolled profiles Brands:

Lundell-Profile®, Koolari®, Liune®, Eko-Pro®, KOOLARI® -floor.

The functional set of systems is based on the continuous development and
quality control of product components.



Certified system since 2004.



Aulis Lundell Oy has been operating under
the environmental management system since 2004.

