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04 - 2015

Ceilings System

# GYPSUM BOARD CEILINGS ASTM

GYPSUM BOARD CEILING SYSTEMS

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## To our Valued Customers,

Greetings!

Knauf is a family name and a corporate group of global dimensions at the same time synonymous with a type of corporate culture which has become rare. Knauf is a typical Family firm in spite of its size and this is precisely the reason for its amazing success. It is short and direct decision-making paths, the courage to tackle new ideas, innovations, investments and the wealth of ideas contributed by all Knauf employees that characterize the company.

From its beginnings in gypsum processing, Knauf has expanded and diversified to become a corporation with worldwide activities, Knauf UAE has been active in the Middle East for more than a decade.

Knauf shows its commitment not only in the GCC, headquarters in Dubai UAE, but also in the Indian region.

We have offices based in Saudi and Qatar to support the market and dealers.

Knauf provides value-added products and services in the following fields:

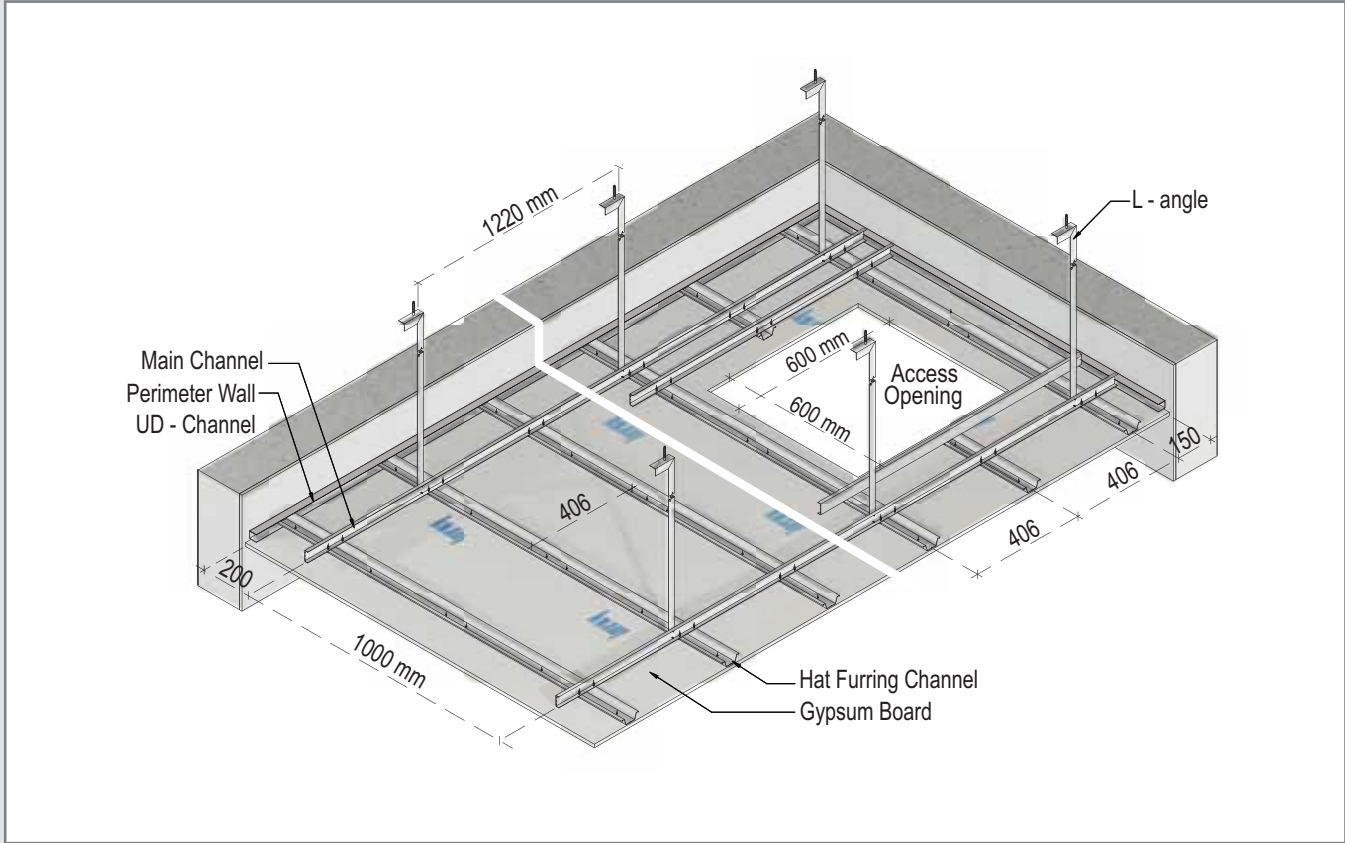
- Building materials and systems based on gypsum and gypsum-related products
- ASTM certified products & systems
- Multi- Purpose Joint compounds
- Knauf Aquapanel interior and exterior wall systems
- Knauf Insulations sustainable, high-performance, cost-effective insulation solutions
- Knauf Heradesign's acoustic designs for Interior and Exterior in ceiling & partition systems
- Knauf Integral's Knauf GIFA Floor, sheet-panelled access floors
- Thermal and sound insulation materials
- Value engineering and technical consultancy for architects and consultants to meet specified design requirements
- On site hands-on training and supervision for contractors when installing drywall systems

Sustainability is central to our vision of doing the right thing for our clients, our people and the communities in which we work. We maintain and provide certificates for individual products and designs to improve quality and performance. Knauf systems combine innovative products to realize speed of installation and warranted high performance-based systems as per ASTM, EN-BS and DIN Standards.

**Amer Bin Ahmed**

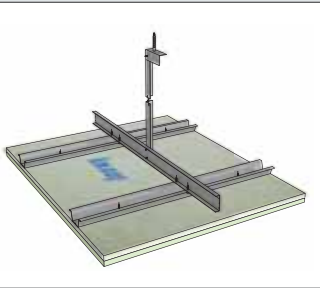
Managing Director  
Knauf GCC & India

# System overview



## Knauf Fire Resistant & Non Fire Resistant, Ceiling Assemblies, Tested in accordance to ASTM E-119

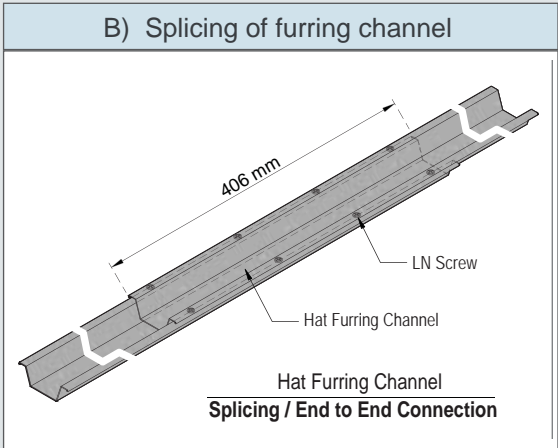
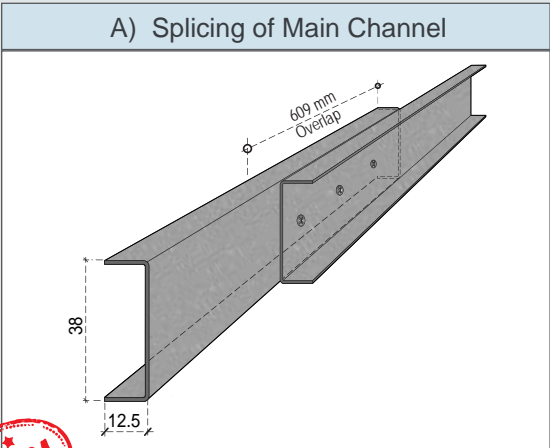
- \* Fire Protection to Floor or Roof Cavity above
- \* Fire Protection to Steel Beams Supporting Concrete Floors



Cladding Thickness	Spacing of Structure			Fire Resistance
	Suspension Hangers (mm)	Upper Channels (mm)	Furring Channels (mm)	
1 x 12.7 mm	1220 mm	1000 mm	406 mm	-
1 x 15.9 mm				-
* 2 x 12.7 mm	1220 mm	1000 mm	406 mm	60 min.
* 2 x 15.9 mm				120 min.

\*Boards types: Knauf Type-X Boards

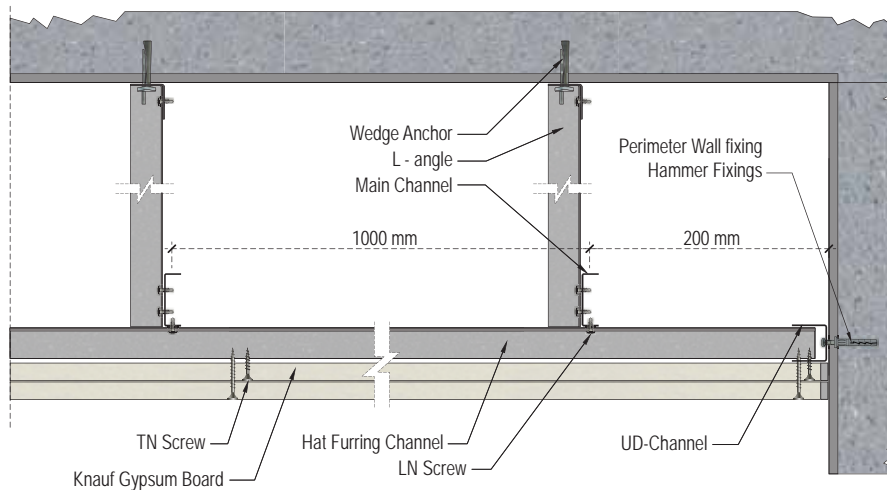
## Construction details



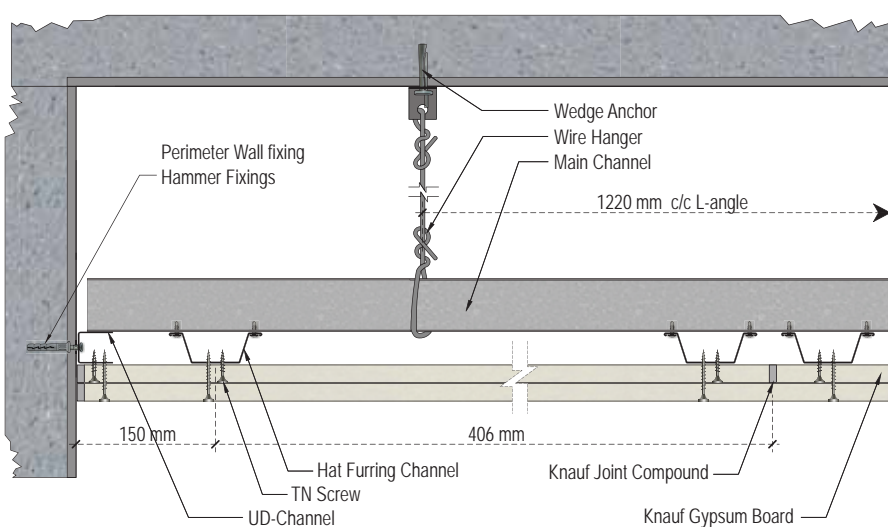
# Construction details for Fire Rated Systems

These details represent some of the most common designs situations relevant to the Knauf KC A001 ceiling systems.

## C) Abutment to wall, perpendicular to primary support channel



## D) Abutment to wall, parallel to primary support channel



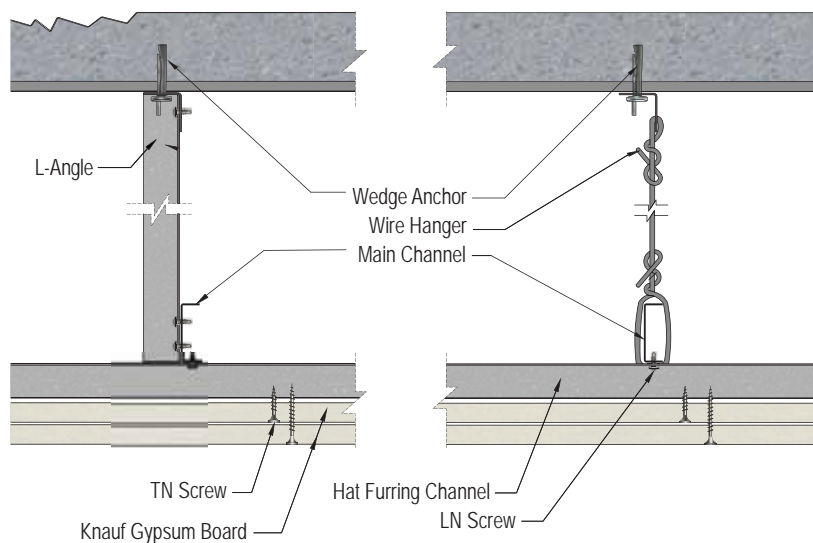
# Construction details for Fire Rated Systems

## Construction details

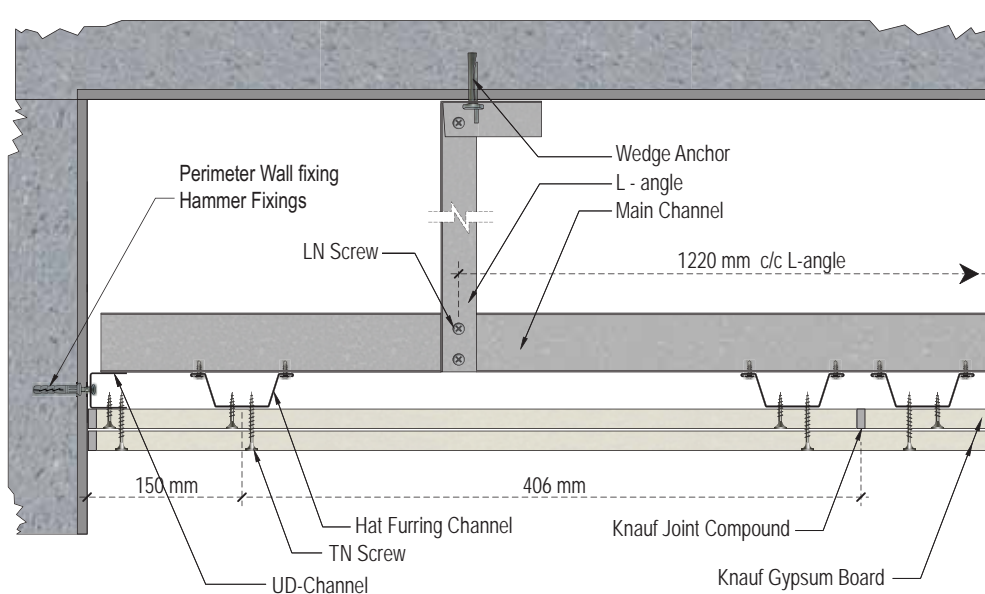
### E) Optional Suspension Support

Option - 1

Option - 2



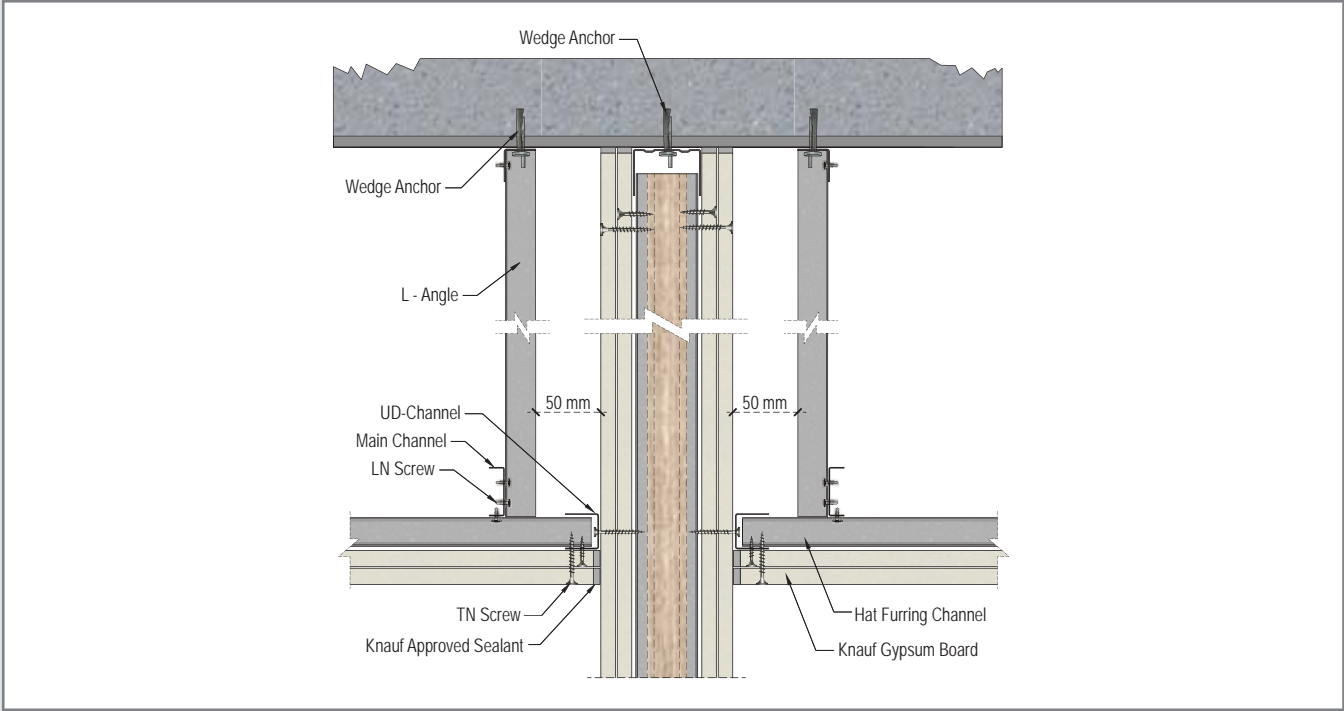
### F) Abutment to wall, parallel to primary support channel, double layer



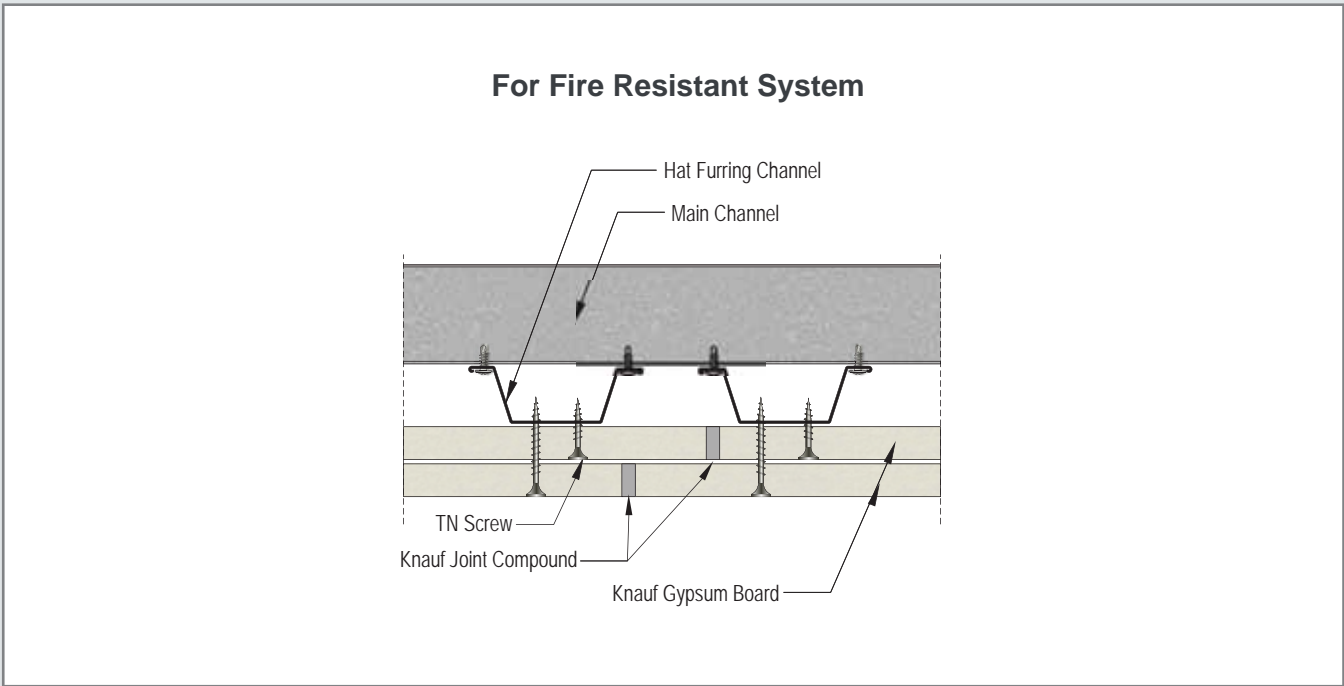


# Construction details for Fire Rated Systems

## I) Junction with partition



## J) Reinforcement of Board Joints (Square edge only)

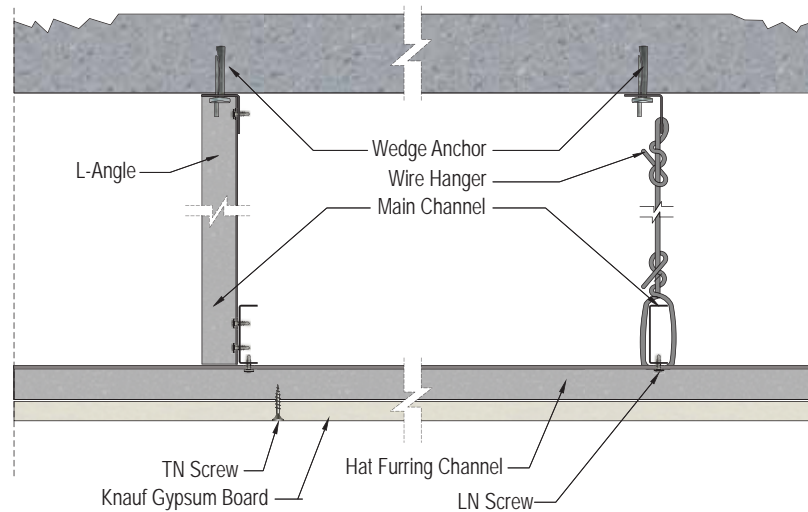


These details represent some of the most common designs situations relevant to the Knauf KC A001 ceiling systems.

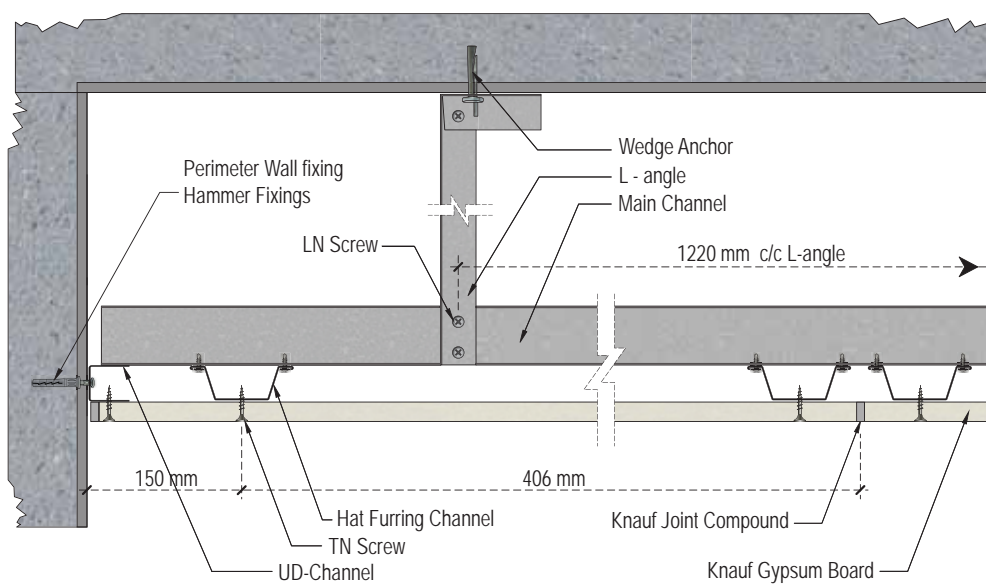
## K) Optional Suspension Support

### Option - 1

### Option - 2



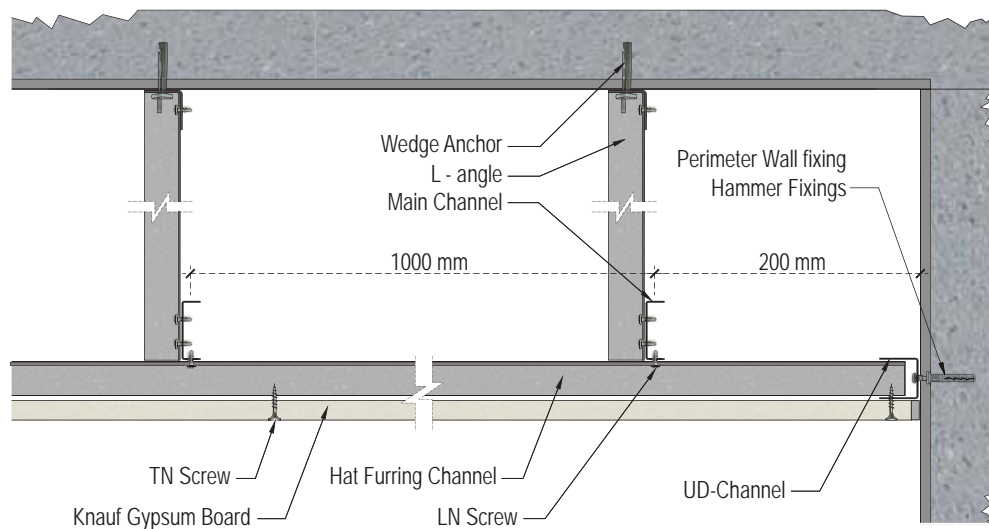
### L) Abutment to wall, parallel to primary support channel



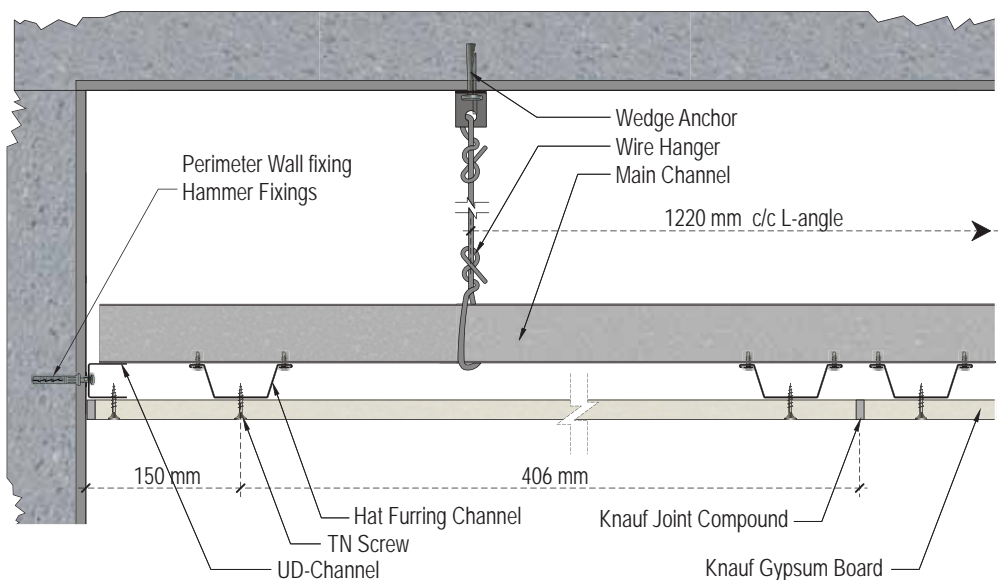
# Construction details for Non Fire Rated Systems

These details represent some of the most common designs situations relevant to the Knauf KC A001 ceiling systems.

## M) Abutment to wall, perpendicular to primary support channel

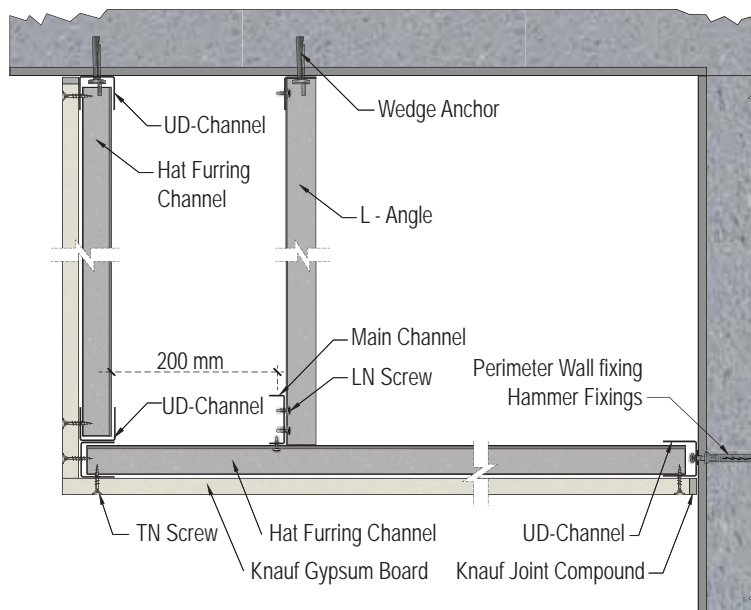


## N) Abutment to wall, parallel to primary support channel

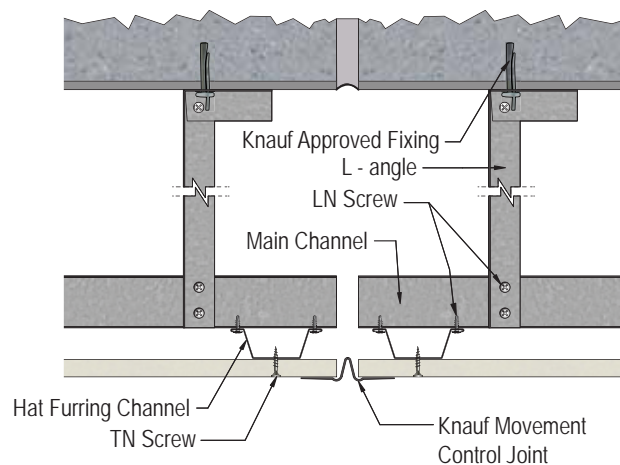


# Construction details for Non Fire Rated Systems

## O) Change of level and bulkhead

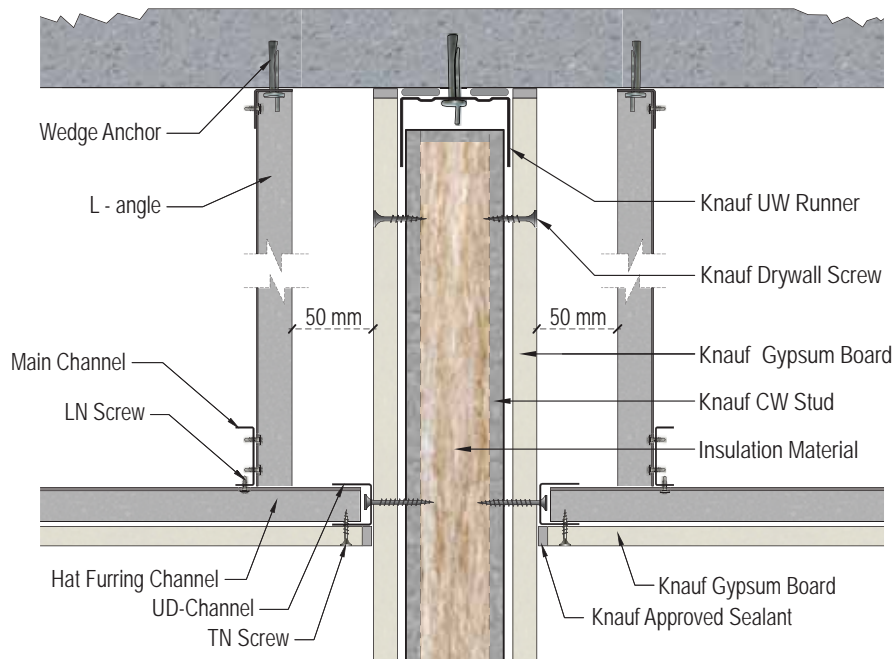


## P) Movement control joint

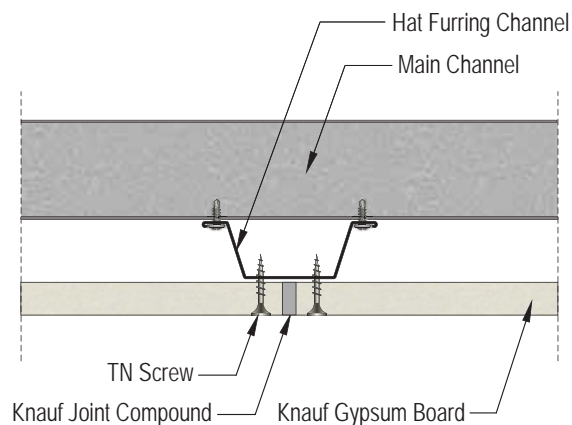


# Construction details for Non Fire Rated Systems

## Q) Junction with Partition



## R) Reinforcement of Board Joint (Square edge Only)



# General information

## General

Knauf KC A001 Ceiling Systems must be installed in accordance with Knauf's recommendations. When creating an airtight space, methods for the reduction of potential "ceiling lift" should be considered.

## Perimeter Fixing

Mark the position of the ceiling line with a Chalk Line (1). Knauf UD channels should be secured to the walls at the required heights, at maximum 609mm centers and 50mm from the ends of channels. The Knauf UD forming the perimeter and the Knauf Main C Channels do not need to be mechanically fixed together (2).

## Suspension

Select the fixing centers suited to the ceiling loading. See page 3 for spacing of dowels.

Fix Knauf approved fixing to the structural soffit with suitable fixings. Use the Knauf L Angle and fix to the approved fixing dowel (3).

## Primary Support Channels – C Channels

The centers of the primary support channels should be aligned at the required height.

Knauf L Angle should be fixed to the Knauf Main C Channels with two Knauf LN Wafer Head Screws (4).

## Splicing of the Main C Channels

If straight lengths of Knauf Main C Channels need jointing, place the channels back to back, with a minimum 609 mm overlap, and fix with two Knauf LN Wafer Head Screws.

## Hat Furring Channels

The Knauf Hat Furring Channels should be positioned at 406mm centers within the perimeter channels to coincide with the abutments of the boards, which will be fixed later. Connect the Knauf Hat Furring Channels to the Knauf Main C Channel by means of Knauf LN Wafer Head Screws (5).

## Insulation

If insulation is required, once the primary support and the ceiling channels have been connected and before the boarding has started, Knauf insulation as specified should be inserted above the primary support channels. Care should be taken to ensure that the insulation is fitted neatly without gaps at abutments or between different rolls.

## Movement Control Joints

Create movement control joints where ceiling runs exceed 10m, coinciding where possible with movement joints in the surrounding structure.

## Boarding

All boards should be fixed to the ceiling grid with the decorative face of the boards outwards and secured with Knauf Screws at maximum 203 mm centers (6).

Boards should be mounted at 90° to the direction of the ceiling channels (7).

Second layer should be installed with staggered joints, as shown in details (J) page 8

## Board Joint Reinforcement

(Only for Fire Resistant System)

Where the cut end of Gypsum board end's Reinforcement through the inclusion of additional Hat Furring Channels should be implemented. A piece of Hat Furring channel should be located approx. 1 inch back from each board edge.

# Installation steps

1

Mark the position of the ceiling line (deducting the thickness of the boards) with a Chalk Line.



2

Fix the UD channel on the perimeter (at 600mm centers and 50mm from end of channel).



3

Predrill the holes for the dowels and fix the L angle with the dowel (e.g. Wedge Anchor) at the recommended spacing.



4

Knauf Main C Channels should be fixed to the L Angle with two Knauf LN Wafer Head Screws at the desired length.



5

Connect the Knauf Hat Furring Channels to the Knauf Main C Channel by means of Knauf LN Wafer Head Screws (2 screws per fixing).



6

Screw spacing for fixing of the boards : max. 300 mm.



7

Fix the boards to the furring channel with Knauf screws.



# Processing of gypsum boards

Cut the paper face with a sharp knife



Score the board by pushing along the cut side, then cut the other paper side



Cut the board 45 degrees



Smooth the cut edge with a beveler



## Cutting and processing the boards

- n Knauf Boards shall be cut by scoring and breaking or by sawing
- n When cutting by scoring, the face paper shall be cut with a utility knife
- n Knauf boards shall be broken by snapping boards in the reverse direction, then cutting the back paper with a utility knife
- n Cut edges should be smoothed with Knauf Beveler / Rasp Combo to obtain neat joints when installed
- n Short edges should be chamfered with Knauf Beveler / Rasp Combo
- n Holes for pipes or other small openings shall be scored on the back and the face outlined before removal / cut out with a purposely designed tool

# Joint treatment

## Cutting and processing the boards

- n Board surface should be cleaned of materials such as dust, oil etc.
- n Filling and covering of joints should only take place after the boards have been allowed to rest in the given humidity and temperature zones, and no more longitudinal changes can be expected, i.e. expansion or contraction.



- n First coat of Knauf Joint filler should be applied with tools of sufficient width to extend a minimum 50 mm beyond both sides of the center of the joint (100 mm width).
- n Knauf Joint Tape should be embedded into the joint filler to reinforce the joint between two gypsum boards.
- n Once the first coat has dried, a second coat of Knauf Joint filler should be applied with 100 mm width on both sides of the center of the joint tape (200 mm width).
- n A very thin third coat of Knauf Joint filler should be applied with a minimum width no less than 150 mm beyond both sides of the center of the joint tape (300 mm width).
- n Once third coat has dried, surface should be sanded and smoothed.



# Cladding of boards

- n Boards should be mounted at 90° to the direction of the ceiling channels.
- n In case of multi layer cladding, apply layers with staggered joints according to application scheme.
- n Press boards of each layer firmly on to the substructure and screw each layer separately.

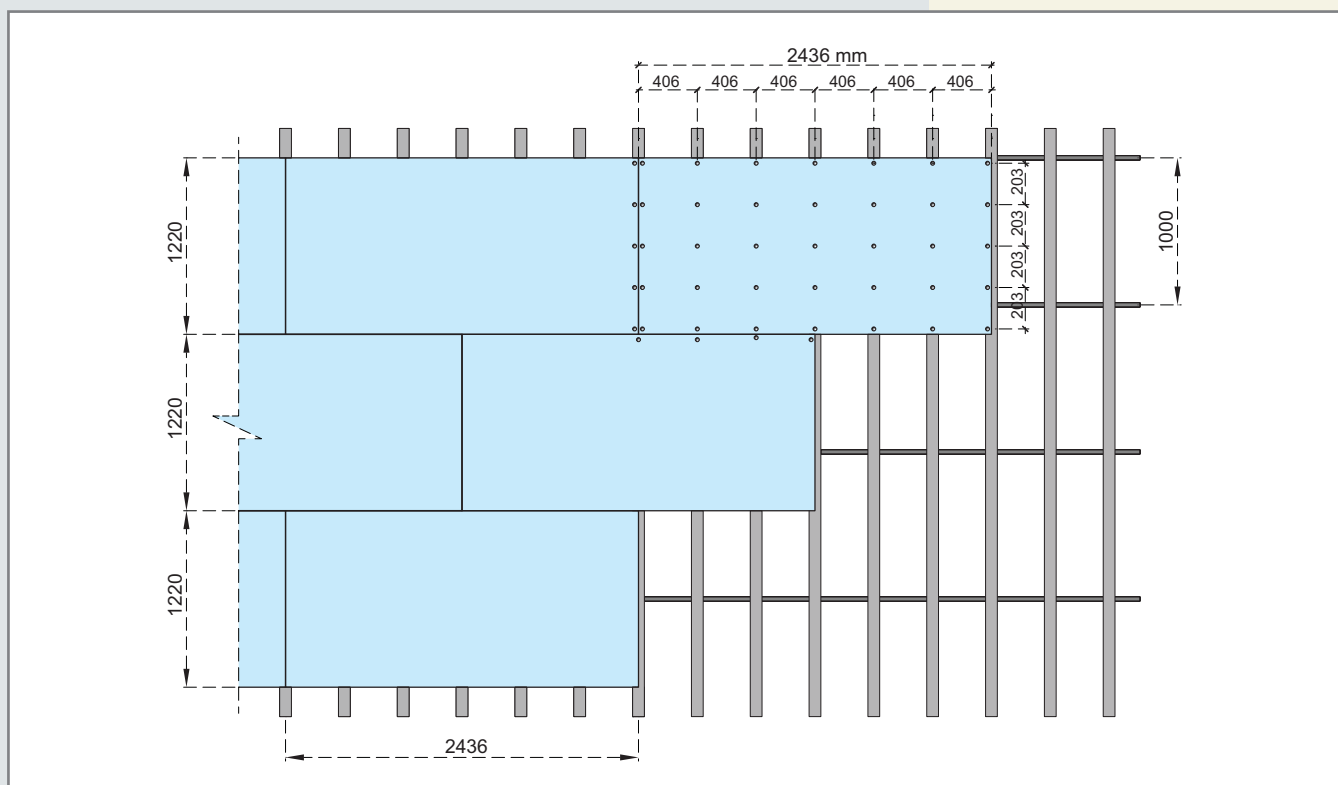
## Spacing of screws

Screw Spacing first layer: 203 mm  
Screw Spacing second layer: 203 mm

## Fastening of cladding

Board thickness	First layer	Second layer
12.7 mm	TN 3.9X25 mm	TN 3.9X35 mm
15.9 mm	TN 3.9X25 mm	TN 3.9X45 mm

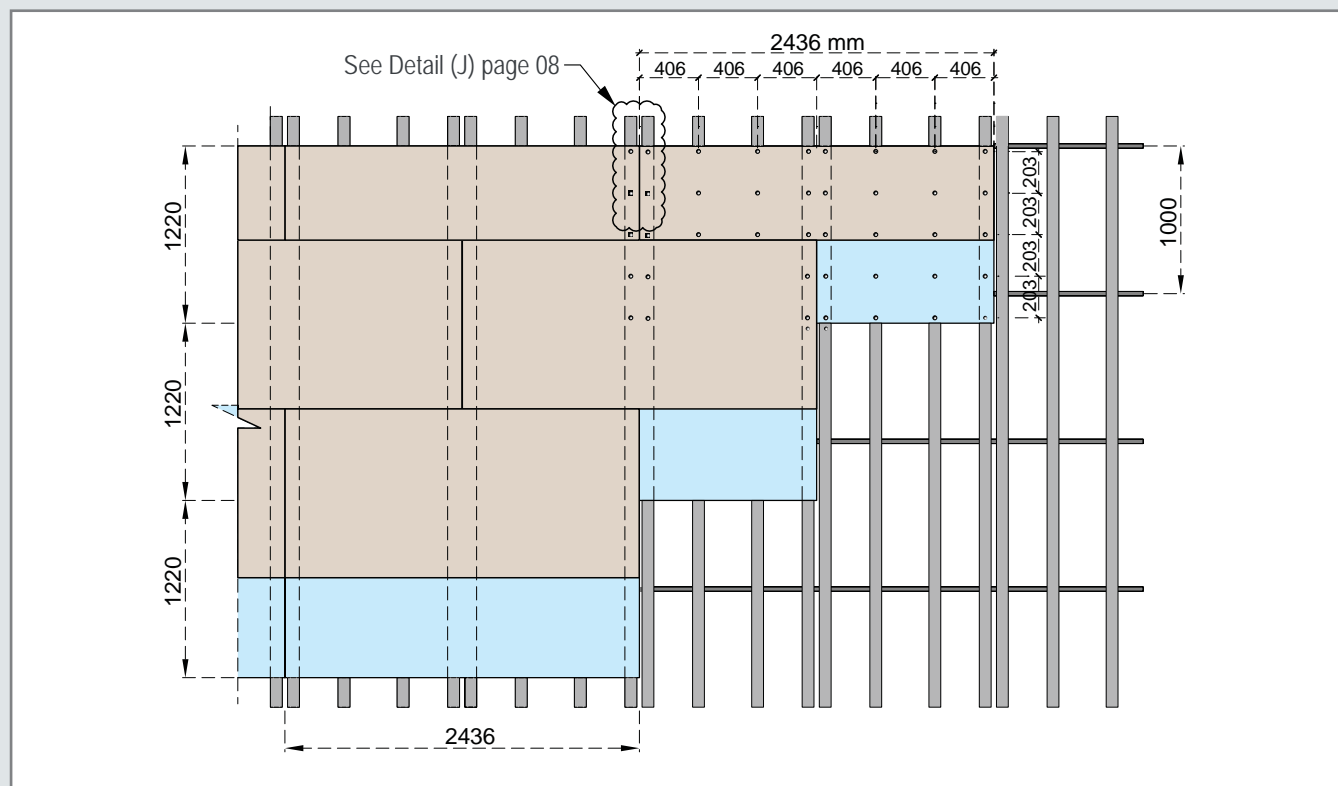
## Single / First layer cladding



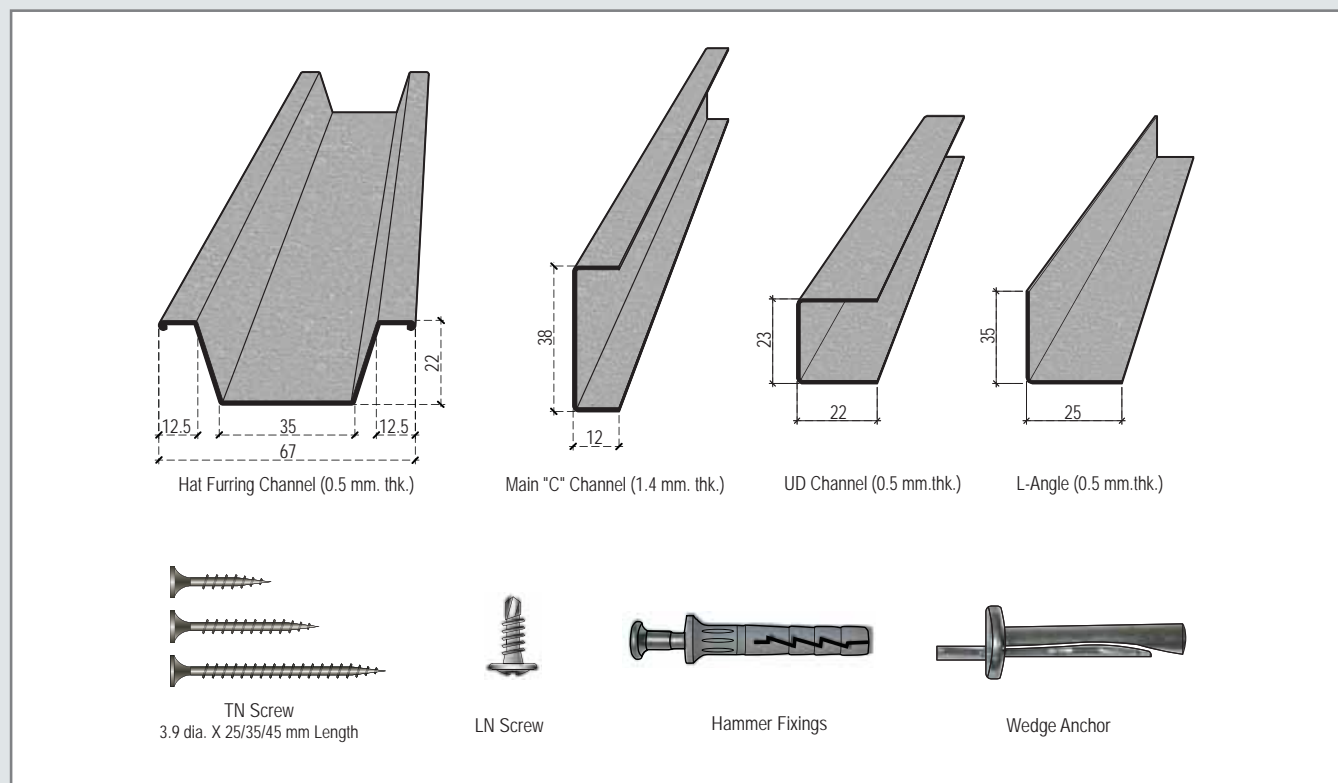
# Cladding of boards

## Second layer cladding

Second layer should be installed with staggered joints.



## System's components



# Certifications

## Estidama Requirements

### Asbestos content

The boards produced at the Knauf factory in Ras Al Khaimah have been tested on asbestos content. No asbestos could be traced in the boards' composition. Complies with the requirements of EN 13964.

### Formaldehyde content

The boards produced at the Knauf factory in Ras Al Khaimah have been tested on DIN EN ISO 16009 for formaldehyde emissions. Maximum concentration levels  $16\mu\text{g}/\text{m}^3$  ( $0.016\text{mg}/\text{m}^3$ ) (complies with the requirements of EN 13964).



## Regional Materials

On a range of 500 miles from factory and quarry location, our boards can provide points for regional materials mentioned in different evaluation criteria (LEED, Estidama, etc.).

## Total VOC content

Our boards have been tested for total Volatile Organic Compounds emissions. Detected amount: below  $0.05\text{ mg}/\text{kg}$ .



## Environmental certifications

For outstanding performances in water and energy management, our factory has been recently awarded the Environmental Performance Certificate from the Ministry of Environment & Water.

Quality Management System ISO 9001: 2008

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We reserve the right to amend technical specifications without notice. The current edition applies. Our guarantee applies only to the defect-free state of our materials. The structural, static and physical characteristics of Knauf systems can only be ensured where only Knauf system components or products recommended by Knauf are used. Consumption, quantity and design specifications are typical figures, which may not be transferable under different circumstances. All rights reserved. Changes, reproductions and photo-mechanical and electronic repetition, even in part, require the specific permission of Knauf LLC, P.O.Box 112871, Dubai, United Arab Emirates.

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