

# METAL TILE / METAL PANEL - CEILING

with capillary tube mat OVAMAT U 10 / UM 10 / G 10



System description



NEW OFFICE BUILDING IN LUXEMBOURG © CLINA HEIZ- UND KÜHLELEMENTE GMBH

## SYSTEM DESCRIPTION

### Design

The capillary tube mat is fixed on the inside of the metal panel, usually with glue. The metal panels are inserted in a suspended ceiling grid and equipped with an insulating material. On the visible side you get a perforated or unperforated metal panel grid ceiling for the removal or supply of sensitive heat loads. The water circulates noiselessly in the capillary tube mats and regulates the room temperature to a large extent via radiation, partly also via convection.

### Metal panel & Capillary tube mat

All standard metal tiles/metal panels, usually made of sheet steel or aluminium, with or without perforation, can be used. The Clina capillary tube mats type OVAMAT U 10 / UM 10 or OVAMAT G 10 are recommended for this design.

### Length & Width

Regarding length & width the capillary tube mats are manufactured project-related. The dimensions are 10-20 mm smaller than the inner dimensions of the metal panel.

### Hydraulic connection

The connections between the metal panels and the connection to the supply and return lines/ceiling sub-distributors are made on site using a proven push-lock system with flexible hoses. Pipes and sub-distributors are housed in the void of the suspended ceiling.

Of course, the ceiling void can be used for other installations.

### Mounting

On the construction site, the capillary tube mat is fixed directly on the metal in the case of unperforated panels and, in the case of perforated panels, which are usually covered on the inside with an acoustic fleece, the mat is fixed on the fleece, usually with glue.

### Processing

According to the common rules of the drywall construction. Processing of inactive surfaces with metal tiles/metal panels of the same type.

### Lamps & Ventilation

Larger openings (inactive tiles/panels) must be considered in the planning phase. Smaller openings (e.g. for cables) can also be realized during the construction phase.

### Regulation

The system can be controlled room-by-room.

### Fields of application

Suitable for the interior design of spaces with special acoustic or even hygienic requirements, such as office buildings or public buildings, whether new construction or renovation.

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## STRUCTURE



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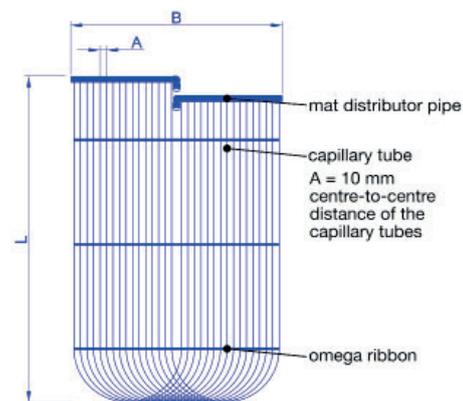
## RECOMMENDED CAPILLARY TUBE MAT

The capillary tube mat OVAMAT U 10/UM 10 or G 10 consists of an oval mat distributor pipe (20 x 12 x 2,0 mm) and capillary tubes (3,4 x 0,55 mm).

The constant distance between the capillary tubes (centre-to-centre distance) is 10 mm and is guaranteed by the omega ribbons.

### Special features

- more exchange surface due to the oval mat distributor pipe
- lower installation height of the connections



OVAMAT U 10

## GENERAL INFORMATION ON CAPILLARY TUBE SYSTEMS

Clina capillary tube mats are used very successfully worldwide for heating and cooling various buildings.

The capillary tube system is extremely **comfortable**:

- noiseless temperature control
- draught-free
- even when heating, the surface temperature of the ceiling is always below the body temperature of the user (high thermal comfort)
- fast reaction

**Advantages** compared to classic single-pipe systems:

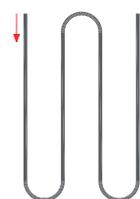
- low pressure loss
- very even temperature distribution and transmission
- larger exchange surface
- ideal for the use of environmental energy due to very small temperature differences between system and room temperature
- in combination with the heat pump, best COP values can be achieved

Capillary tube mats are **safe & durable**

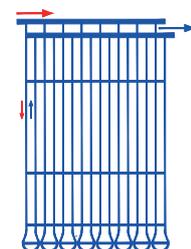
Each individual Clina capillary tube mat is subjected to a leak test before dispatch. The test pressure is 20 bar - which corresponds to approximately 10 times the operating pressure.

All Clina mats are covered by a 15-year extended warranty. The expected service life is more than 50 years under normal conditions of use. All Clina capillary tube mats are produced with high-tech machines & equipment in our manufacturing plant in Berlin-Brandenburg.

Single-pipe system



Capillary tube system



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## ADVANTAGES

### Cooling and heating with one system

In most buildings, the heat requirement to be covered is so low due to the well-insulated building envelope that capillary tube mats invisibly integrated into the metal ceiling not only provide excellent cooling in summer, but can also heat very comfortably and energy-efficiently in the cold season.

### High performance

The specially developed capillary tube mat with an oval mat distributor pipe results in an increased contact surface.

### Good acoustics

This ceiling design enables optimised room acoustics, as the acoustic values of the perforated metal tiles/panels remain unchanged.

### Maximum degree of activation

The dimensions of the capillary tube mat are individually adapted to the size of the tile/panel.

### Easy retrofitting

Can be integrated into an existing grid ceiling with metal tiles/metal panels. The hydraulic connection is located in the ceiling void.

Simple combination of active and inactive tiles/panels of the same dimensions is possible. The grid ceiling is reversible.

### Quick and easy installation

The hydraulic connection is made using a proven push-lock system.

The metal tiles/panels can be installed by the drywall works.

### Individual room control

The temperature can be regulated room-by-room.

## VALUES



### HEATING CAPACITY

according to DIN EN 14037/5

**108,2 W/m<sup>2</sup>**

$\Delta T = 15$  K, active mat surface



### COOLING CAPACITY

according to DIN EN 14240

**94,5 W/m<sup>2</sup>**

$\Delta T = 10$  K, active mat surface



### ACOUSTICS

(applies only to the perforated version)

weighted sound absorption coefficient as specified by the manufacturer

### INSTALLATION HEIGHT:

depending on the kind of metal tile/metal panel ceiling

### SYSTEM WEIGHT :

metal panel (filled with water)  
**1 kg/m<sup>2</sup>** plus ceiling

### PRESSURE STAGE:

PN 10

## REFERENCES

Please note the following documents for further information:

- Metal panel System data sheet
- OVAMAT Product data sheet
- Metal panel ceilings Performance values
- Metal panel Installation guideline
- Website: [www.clina.de](http://www.clina.de)

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