

# A11-C

## Radiant metal ceiling



### QUICK FACTS

- Thermal comfort according to EN ISO 7730
- With EPD certification
- Very high heating & cooling capacity
- Active area ratio: 75 %
- Advanced sound absorption values (class B)
- Can be combined with all common metal ceiling systems
- Low system weight
- High thermal comfort in rooms with large heating loads
- Can be combined with VENTAMIC, AQUILO, ARCHISONIC®
- Integration of various components
  - Different lighting designs
  - Sprinklers
  - Smoke detectors
  - Supply / extract air elements

Output (water)	
Cooling	Heating
Up to 100 W/m <sup>2</sup> (8 K), EN 14240:2004	Up to 116 W/m <sup>2</sup> (15 K), EN 14037:2016
Acoustics	
α <sub>w</sub> : up to 0,85	



# Technical description

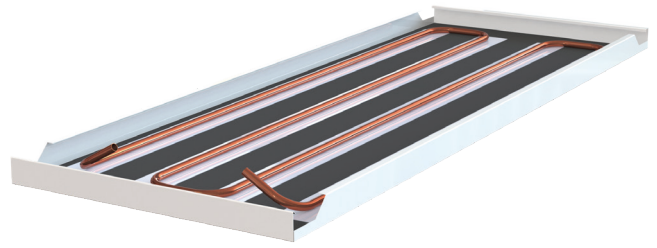
## General

The A11-C radiant metal ceiling delivers high thermal comfort in rooms with large heating loads, without causing draughts. The radiant ceiling system also exhibits advanced acoustic effectiveness.

The innovative A11 activation system has a special structure. The copper pipe and aluminium heat conducting rails are joined together using laser welding technology. The coils are permanently bonded to the metal plates using a special adhesive and high pressure, thereby ensuring optimum thermal transfer. Aluminium panels can also be activated using the adhesive technology, which results in further improvements in performance.

In particularly sensitive areas, additional insulation strips can be inserted to increase sound absorption without reducing the cooling capacity. A full-surface insulation layer is also possible.

The versatility of the product means that all standard installation methods and special solutions that are typical for metal ceilings can be used. This includes options such as C-Channel-, Hook-On- or Clip-In ceiling systems, which makes it easy to adapt to different room designs and architectural specifications.



## Activation

**Water system:** The radiant ceiling is a passive system that in the case of cooling absorbs heat from the room via the ceiling surface, transfers it to the water, which is conducted in activation registers, and dissipates it, respectively emits heat in the case of heating.

The activation of the A11 radiant metal ceiling system consists of meandering copper pipes (outside diameter 12 mm) and aluminum heat-conducting rails (width 80 mm), which are connected by laser spot welding and glued into the ceiling panels.

## Functions

The A11-C radiant metal ceiling is multifunctional. In addition to the thermal functions of cooling/heating, there is the possibility of further integration: acoustically effective inserts or baffles (ARCHISONIC®), use of special supply air elements (AQUILO, VENTAMIC), various built-in components (e.g. smoke detectors, lighting).

## Combinations

- A11-C Radiant metal ceiling + VENTAMIC
- A11-C Radiant metal ceiling + AQUILO
- A11-C Radiant metal ceiling + ARCHISONIC®

# Technical data

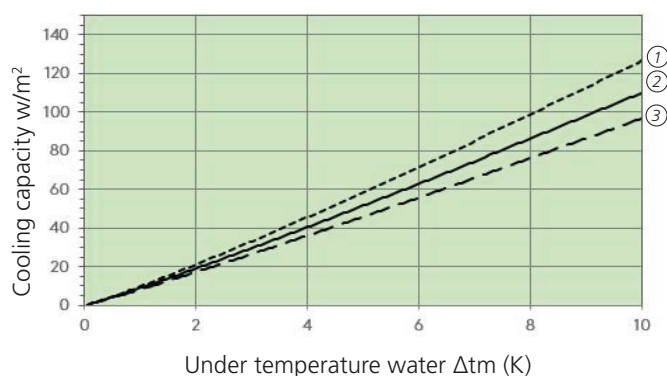
## Capacity

Initial data is presented below.

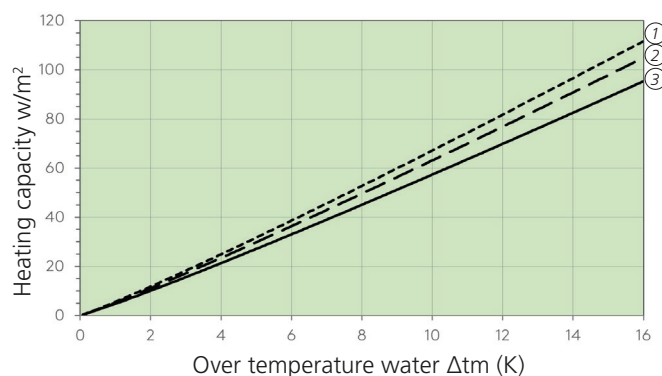
Material ceiling panel	Aluminium	Steel
Perforation	150 mm	Rg 1,5 – 11 %
Distance heat conducting rails (hcr)	100 mm --- ① 150 mm - - ②	150 mm — ③
Activation method	on fleece	on fleece

(Capacity information without project-specific performance-influencing factors.)

EN 14240:2004



EN 14037:2016



Version	Cooling 8 K	Cooling 10 K	Heating 15 K
① Aluminium 100 mm	up to 100 w/m²	up to 125 w/m²	up to 116 w/m²
② Aluminium 150 mm	up to 85 w/m²	up to 110 w/m²	up to 98 w/m²
③ Steel 150 mm	up to 75 w/m²	up to 97 w/m²	up to 89 w/m²

### Notice

- SN EN 14240: The cooling capacity is related to the active area according to SN EN 14240:2004. The active area is calculated according to SN EN 14240 from the number of heat-conducting rails x length of heat-conducting rail x distance between heat-conducting rails.
- SN EN 14037: The heating capacity is related to the active area according to SN EN 14037:2016. The active area is calculated according to SN EN 14037 from the length of the ceiling panel x the width of the ceiling panel.

## Recommendations for operation

### Water

- Temperature
  - Cooling 16 – 18 °C
  - Heating 28 – 37 °C
- Temperature distance  $\Delta t$  (VL-RL): 2 – 3 K
- Pressure drop: 20 – 25 kPa
- Water flow: 80 – 150 l/h
- Max. operating pressure up to 9 bar
- Water quality according to: SWKI BT 102-01, BTGA 3.003, VDI 2035

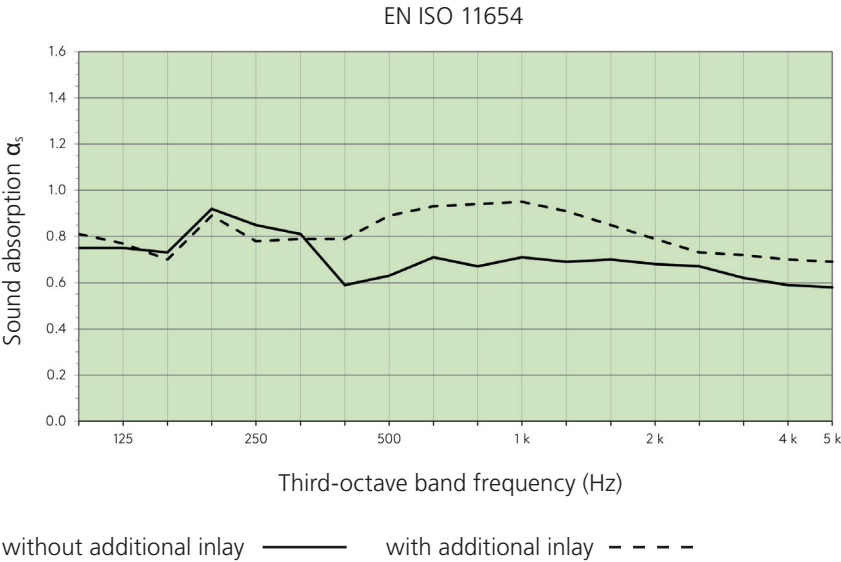
### Surrounding

- Ambient temperatures: +5 – 50 °C
- Humidity: up to 90 % relative humidity

Acoustics

Initial data is presented below.

Perforation	Rg 1,5 – 11 %	Rg 1,5 – 11 %
Distance heat conducting rails (hcr)	150 mm	150 mm
Installation height	200 mm	200 mm
Acoustic inlay	Fleece	Fleece
Additional inlay (mineral wool)	without ———	with - - - -
Sound absorption $\alpha_p$	250: 0,85 500: 0,65 1k: 0,70 2k: 0,70 4k: 0,60	250: 0,80 500: 0,85 1k: 0,95 2k: 0,80 4k: 0,70
Sound absorption $\alpha_w$	$\alpha_w$ : 0,70 (L)	$\alpha_w$ : 0,85
Sound absorption class (EN ISO 11654)	C	B



# System

## Ceiling system

- Closed ceiling
  - Square and rectangular panels
  - Special solutions on request

## Installation systems

- Installation height: min. 100 mm
  - Lay-in system
  - Hook-on system
  - Clip-in system
  - C-channel systems

# Materials, weight and dimensions

## Materials and weight

Material	Weight (incl. activation, water)
Aluminium 1,00 mm	3,5 – 6,0 kg/m <sup>2</sup>
Steel 0,70 mm	6,26 – 8,58 kg/m <sup>2</sup>

Building material class: A2-s1, d0, EN 13501-1 (depending on the acoustic solution).

## Dimensions

Length	Width	Height
min. 600 mm	min. 400 mm	min. 30 mm
max. 3000 mm	max. 1200 mm	max. 50 mm

Special dimensions on request.

## Surface

### Versions

- Powder coating
- Digital printing on request

### Colors

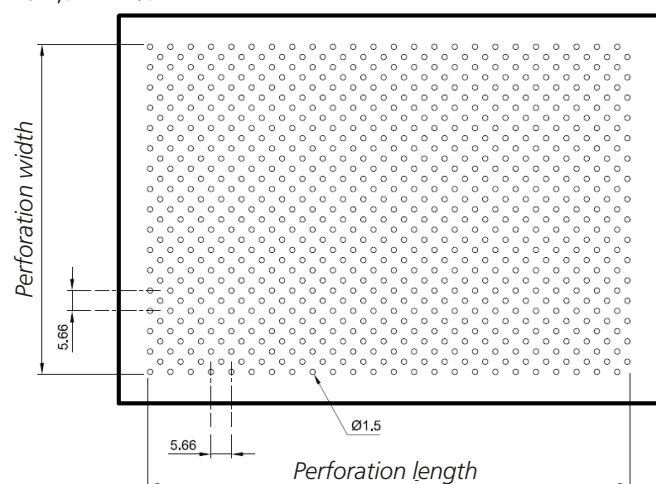
- Standard RAL 9010
- Other RAL / NCS colors on request

### Perforations

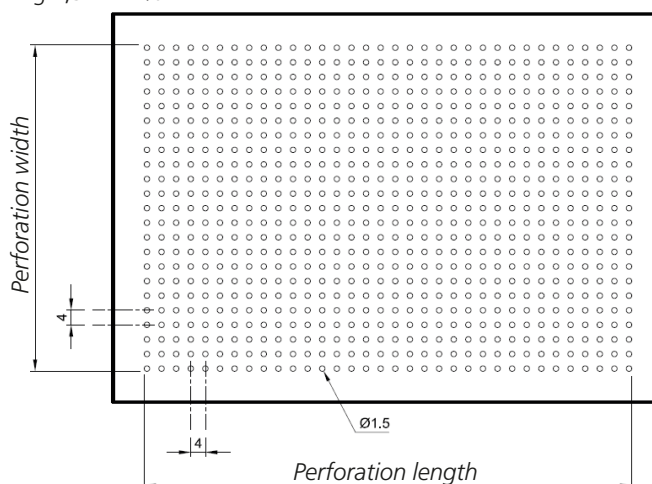
- Standard perforations
- Other perforations on request

Standard perforations:

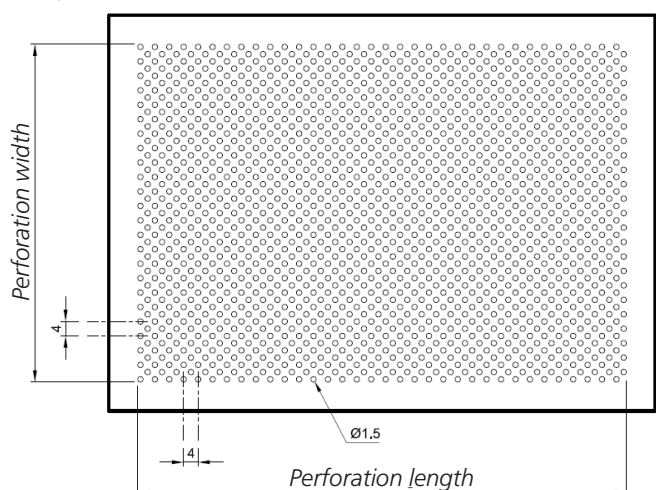
Rd 1,5 – 11 %



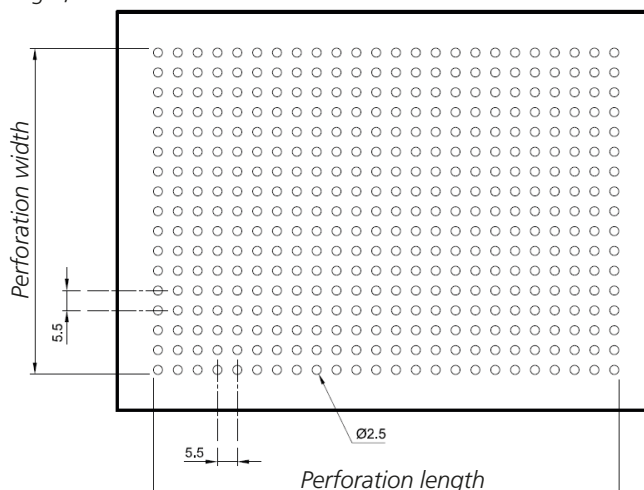
Rg 1,5 – 11 %



Rd 1,5 – 22 %



Rg 2,5 – 16 %



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