

# SPECTRA M-S

Radiant metal ceiling sail with magnetic technology



## QUICK FACTS

- Thermal comfort according to EN ISO 7730
- Very high heating & cooling capacity
- Superior sound absorption values (class A)
- Ceiling panels and activation coils are connected using magnetic technology
- Tool-free fitting and removal of the coils
- Fully recyclable by material type
- Can be combined with AQUILO, CAURUS
- Integration of various components
  - Different lighting designs
  - Sprinklers
  - Smoke detectors
  - Supply / extract air elements

Output (water)	
Cooling	Heating
Up to 91 W/m <sup>2</sup> (8 K), EN 14240:2004	Up to 102 W/m <sup>2</sup> (15 K), EN 14037:2016
Acoustics	
α <sub>w</sub> : up to 1,00	

## Technical description

### General

The SPECTRA M-S radiant sail is a highly efficient radiant ceiling system with superior acoustic effectiveness.

The magnetic connection of the activation coil and ceiling panel allows both components to be prefabricated concurrently and delivered separately to the construction site for assembly there.

The SPECTRA M coil is ideal for refurbishing buildings in which existing metal ceilings are to be activated at a later stage. Furthermore, the coils can be fitted and hydraulically connected independently of the ceiling panels, meaning that the cooling technology can be installed and commissioned before the surface is finished. This also enables operation of the coils in advance for construction heating.

In order to satisfy the acoustic requirements, acoustic fleece is bonded in the back of the ceiling panels. In particularly sensitive areas, additional insulation strips can be inserted at the side of the coil to increase sound absorption without reducing the cooling capacity.

The design of the SPECTRA M coil also makes it possible to separate all components by material type for subsequent feeding into a recycling process. This contributes to a sustainable circular economy even after the useful life of the product has come to an end.

### 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.

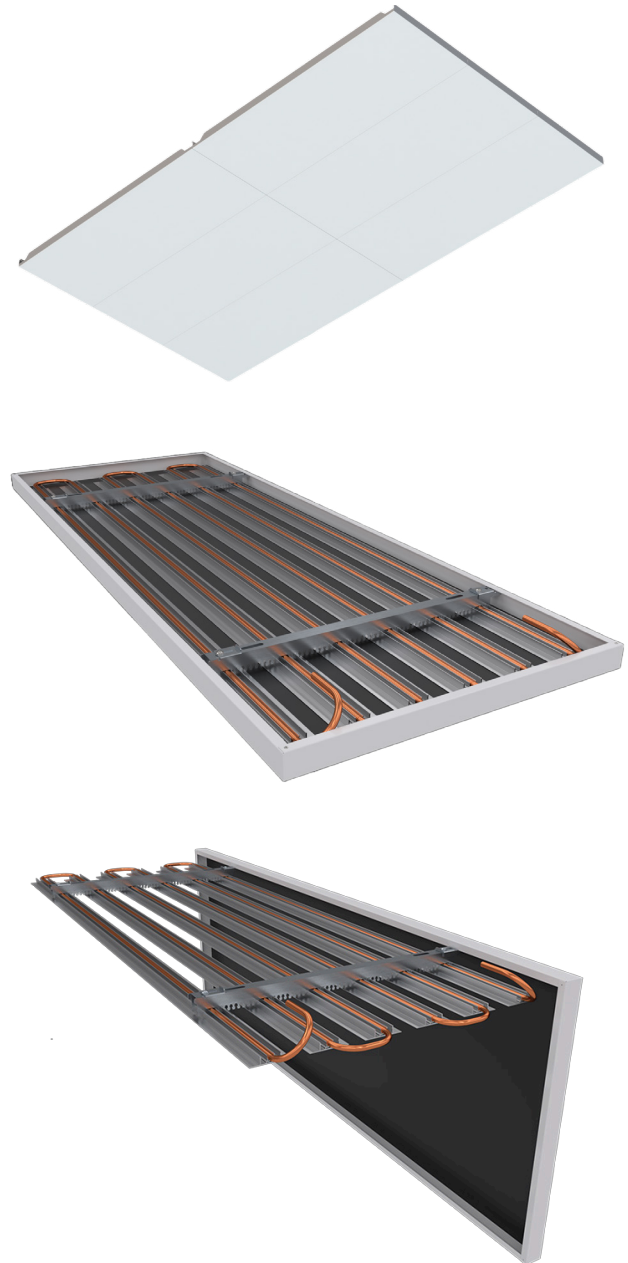
The activation of the SPECTRA M radiant metal ceiling system consists of meandering copper pipes (outside diameter 12 mm), which are pressed into aluminum heat-conducting profiles. The connection between the activation register and the ceiling panel is made with magnet technology.

### Functions

The SPECTRA M-S radiant metal ceiling sail is multifunctional. In addition to the thermal functions of cooling/heating, there is the possibility of further integration: acoustically effective inserts, special supply air solution (CAURUS, AQUILO), various built-in components (e.g. smoke detectors, lighting).

### Combination

- SPECTRA M-S radiant metal ceiling sail + CAURUS
- SPECTRA M-S radiant metal ceiling sail + AQUILO



# Technical data

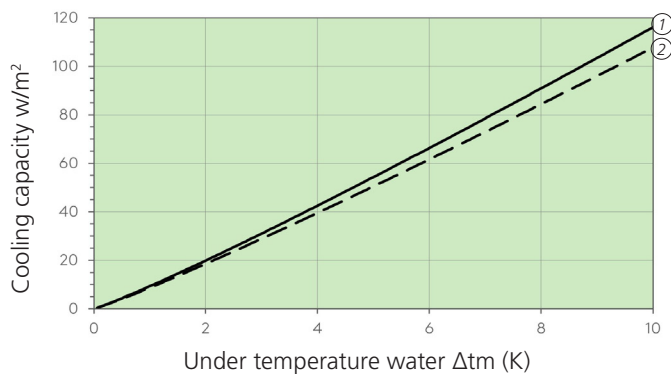
## Capacity

Initial data is presented below.

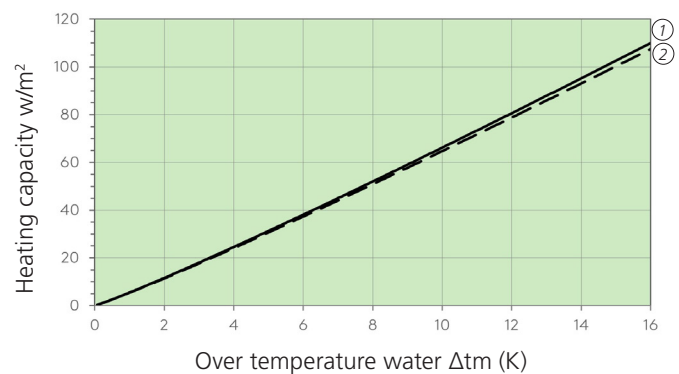
Material ceiling panel	Steel	Steel
Perforation	Rg 1,5 – 11 %	Rg 1,5 – 11 %
Distance heat conducting rails (hcr)	100 mm — ①	120 mm — ②
Acoustic inlay	Fleece	Fleece
Activation method	magnetic	magnetic

(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 Steel 100 mm	up to 91 w/m <sup>2</sup>	up to 116 w/m <sup>2</sup>	up to 102 w/m <sup>2</sup>
② Steel 120 mm	up to 84 w/m <sup>2</sup>	up to 108 w/m <sup>2</sup>	up to 100 w/m <sup>2</sup>

### 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

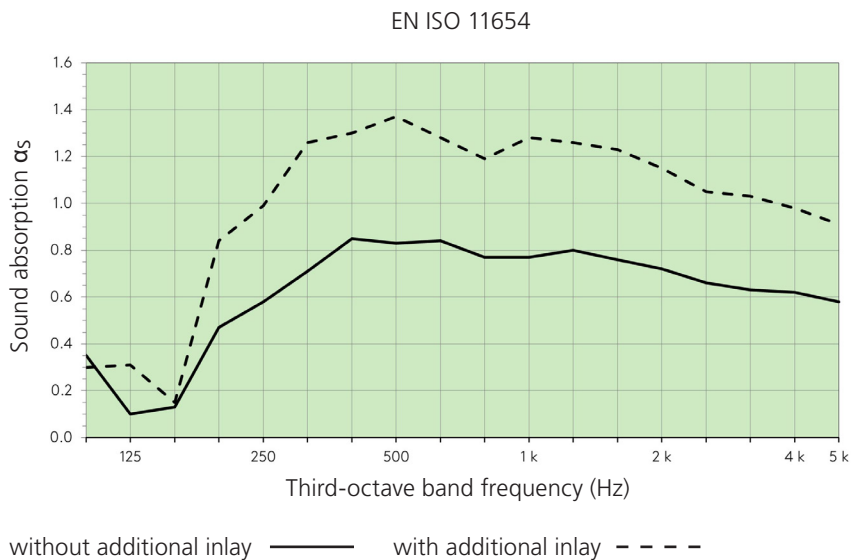
### Surrounding

- 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)	100 mm	100 mm
Installation height	200 mm	200 mm
Acoustic inlay	Fleece	Fleece
Additional inlay (mineral wool)	without ———	with - - - -
Sound absorption $\alpha_p$	250: 0,60 500: 0,85 1k: 0,80 2k: 0,70 4k: 0,60	250: 1,00 500: 1,00 1k: 1,00 2k: 1,00 4k: 0,95
Sound absorption $\alpha_w$	$\alpha_w$ : 0,75	$\alpha_w$ : 1,00
Sound absorption class (EN ISO 11654)	C	A



# System

## Ceiling system

- Sail
  - Square and rectangular panels, single or several connected

## Installation systems

- Installation height: min. 80 mm
  - Threaded rods or ropes

# Materials, weight and dimensions

## Materials and weight

Material	Weight (incl. activation, water)
Steel 0,70 mm	10,0 – 13,3 kg/m <sup>2</sup>

Building material class: B-s2, d0, EN 13501-1 (depending on the acoustic solution).

## Dimensions

Length	Width	Height
min. 500 mm	min. 200 mm	min. 30 mm
max. 2800 mm	max. 1200 mm	max. 40 mm

## Surface

### Versions

- Powder coating
- Digital printing on request

### Colors

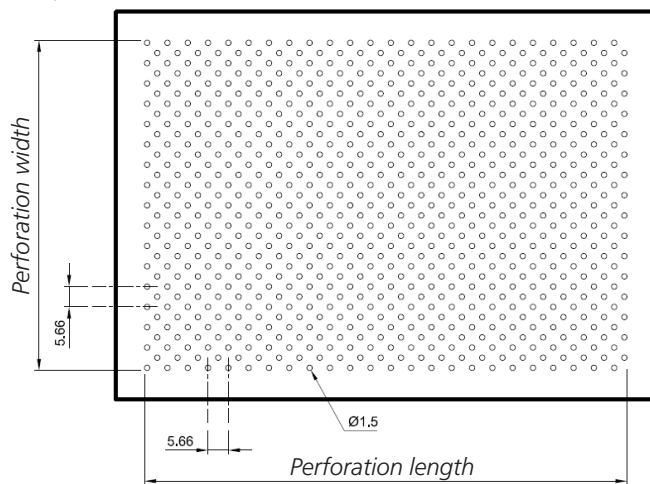
- Standard RAL 9010
- Other RAL / NCS colors on request

### Perforations

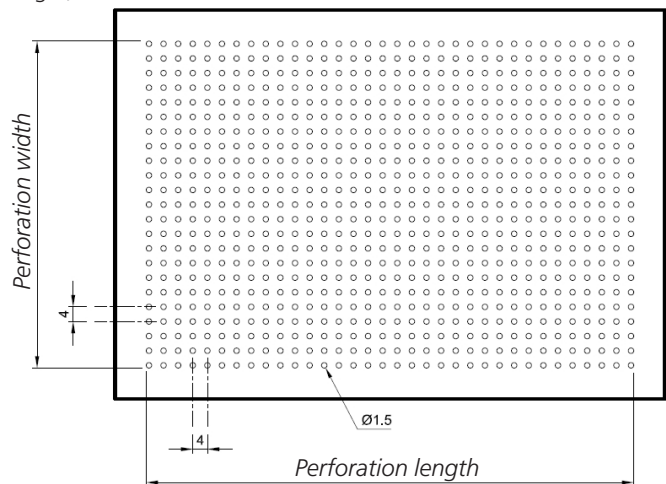
- Standard perforations
- Other perforations on request

Standard perforations:

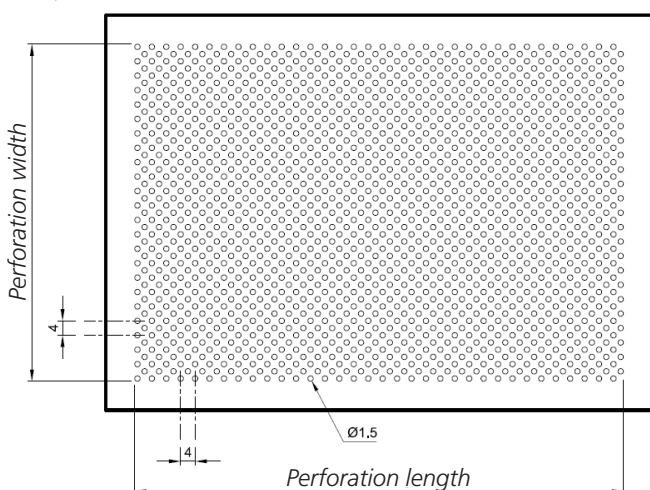
Rd 1,5 – 11 %



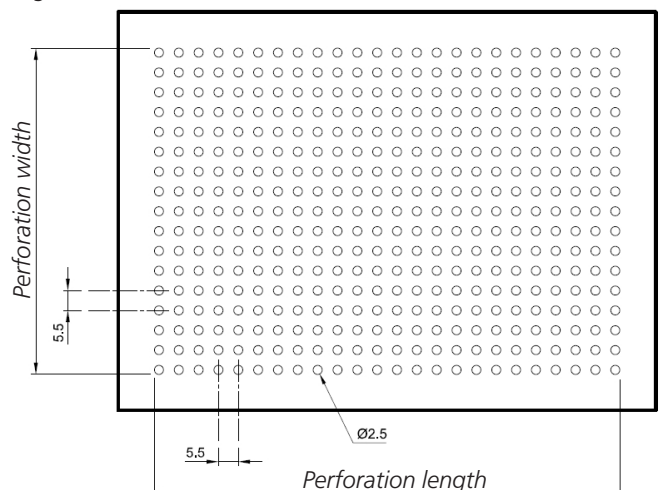
Rg 1,5 – 11 %



Rd 1,5 – 22 %



Rg 2,5 – 16 %



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